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ACKNOWLEDGEMENT

Provide the list of individuals who contributed in the work and grant details where applicable.

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Volume 4, Issue 1 (January 2023)

Public Health Security

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Public health security refers to the ability of a society to protect and promote the health of its population, particularly in the face of emerging health threats. Ensuring public health security is essential for the well-being of communities and is a key responsibility of government agencies and health care systems.

One significant aspect of public health security is the ability to identify, track, and respond to emerging health threats. This includes diseases that are transmitted from person to person, such as infectious diseases like influenza, as well as diseases that are transmitted through the environment, such as waterborne illnesses. In order to effectively respond to these threats, it is important for public health agencies to have access to reliable data and surveillance systems, as well as the resources and capacity to implement effective interventions [1].

Another important aspect of public health security is the ability to prepare for and respond to disasters and emergencies. This includes natural disasters, such as hurricanes and earthquakes, as well as man-made disasters, such as chemical spills or acts of terrorism. Ensuring that communities have the necessary resources and infrastructure in place to respond to these events can save lives and prevent further suffering.

Finally, public health security also involves addressing social and environmental determinants of health, such as poverty, housing, and access to clean water and sanitation. These issues can have a significant impact on the health and well-being of communities and must be addressed in order to ensure the long-term health and security of the population [2].

Public health security is a significant concern in Pakistan, as the country faces a range of health threats, including infectious diseases, environmental hazards, and natural disasters. One of the major public health challenges in Pakistan is the high burden of infectious diseases, such as malaria, tuberculosis, and HIV/AIDS. The country also faces outbreaks of vaccine-preventable diseases, such as measles and polio, due to low vaccination rates and inadequate vaccination coverage. Pakistan is also vulnerable to natural disasters, such as earthquakes, floods, and cyclones, which can have a significant impact on the health of the population. In addition to infectious diseases and natural disasters, Pakistan also faces environmental health hazards, such as air pollution and water contamination. Poor air quality has been linked to a range of health problems, including respiratory and cardiovascular diseases, while access to clean water is a major concern in many parts of the country.

In conclusion, public health security is a critical issue that affects the well-being of communities around the world. Ensuring that we have the necessary systems and resources in place to identify, track, and respond to emerging health threats, as well as prepare for and respond to disasters and emergencies, is essential for the health and security of the population.

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Review Article

COVID-19 and Various Comorbidities: A Review

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ABSTRACT

Coronavirus currently known as COVID-19, originating from China in December 2019 had caused several severe unusual respiratory illnesses. This virus had spreads among individuals and had now developed into a great pandemic worldwide. More than 50% of COVID-19 patients have at least one comorbidity. Among the people suffering from COVID-19, hypertension is ought to be the most prevalent disease followed by diabetes, cardiovascular diseases, respiratory diseases, liver, and kidney diseases. Furthermore, older individuals (>60 years) are more likely to possess multi-morbidities, therefore, are more prone to the infection caused by the COVID-19. The underlying mechanism of this virus in the still contradictory. The health care sector can manage the symptoms of COVID-19 and comorbidities associated with it with help of management and treatment strategies underlined by the WHO. As it is of utmost need to identify the risk factors and critical clinical outcomes linked with COVID-19 so that the proper steps could be adopted in the future This review extensively elaborates the relationship between COVID-19 and various comorbidities based on up-to-date data extracted from reputed journals and official websites.

INTRODUCTION

Severe acute respiratory disorder caused by the SARS-CoV2 virus is major source of the global pandemic. These are enveloped positive sense RNA viruses belongs to family Coronaviridae, that ranges of about 60 nm to 140 nm in the diameter. Coronavirus's name is Latin. In the ancient language, corona means crown. The structure of virus consists majorly of a core of genetic material that is enclosed by an envelope by means of protein spikes. It provides the shape like a crown. This disease is spread by contact or inhalation of the infected droplets and the incubation time varies from about 2 to 14 days. In December 2019, Wuhan, China, suffered from the first outbreak of COVID-19, from which it gradually spread to the rest of the world. On 30th January 2020, a public health emergency was announced by World Health Organization (WHO), and by March 2020, the pandemic had quickly turned into an epidemic that had affected millions of people globally. It is known by now that COVID-19 has a greater influence on certain populations resulting in adverse clinical outcomes [1]. Case fatality rates (CFR) for this disease vary significantly among countries and is typically changing over time. By 27th January 2021, the virus has affected almost every country with 100 million confirmed cases across the globe and the cumulative death toll surpassed

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2.16 million, raising serious global concern [2]. This review aims to highlight the relationship among primary medical conditions or comorbidities that place people of any age at higher jeopardy for getting infected by COVID-19 with clinical complications built on the most current literature report since the outbreak.

Clinical manifestation of COVID-19 symptoms

This infection of COVID-19 had a very wide-ranging spectrum of severity that ranges from an asymptomatic form to a very severe acute respiratory disease [3]. Asymptomatic patients are those in which corona virus test is positive but they don't have any symptoms and their chest image testing is also normal. Some people develop moderate to mild symptoms as well as got well without any hospitalization as shown in Table 1. Within 5-7 days from the beginning, these mild to moderate symptoms of approximately 1 out of 6 infected individuals, eventually develop into more severe respiratory problems including chest pain, shortness of breath as well as loss of speech [4,5].

Type of severity of symptoms	Clinical manifestation
Mild	Fever, cough, sneezing, runny nose, nausea, vomiting, abdomen pain
Moderate	Cough, fever, pneumonia with no less oxygen level, chest imaging shows lesions
Severe	Pneumonia with low oxygen level
Critical	Kidney damage, heart failure, acute respiratory distress syndrome

Table 1: Severity of COVID-19 in patients and their clinical representation

Comorbidities with COVID-19

The concept of comorbidity is defined as the presence of a medical condition existing simultaneously but independently with another condition in a patient. COVID-19 has a greater influence on populations resulting in adverse clinical outcomes, especially on the patients with comorbidity and the older patients (>60) [6-9]. The number of comorbidities also affects the progression of the patient's infection. The more the number of diseases, the more severe will be the infection [10-12].

Hypertension and COVID-19

Multiple types of research on COVID-19 analyse that out of all the comorbidities, hypertension is the most prevalent with more than 50% of cases in all types of studies [13]. It is reported that initial research on the prevalence of comorbidities showed a 21% to 30% occurrence of hypertension in the patients suffering from Covid-19 which elevated successively to more than 36% with the increasing age [14-17]. It had been estimated that the novel virus had used angiotensin-converting enzyme 2 (ACE2) to target human cells as these exists on the epithelial cells of intestine, lung, blood vessels and kidney. A retrospective study concluded that out of 856 patients, approx. 242 (28.3%) were older and having comorbidities, that includes hypertension 142 (16.6%) as the most common underlying health condition, followed by diabetes 64 (7.5%). Figure 1 presents this study.

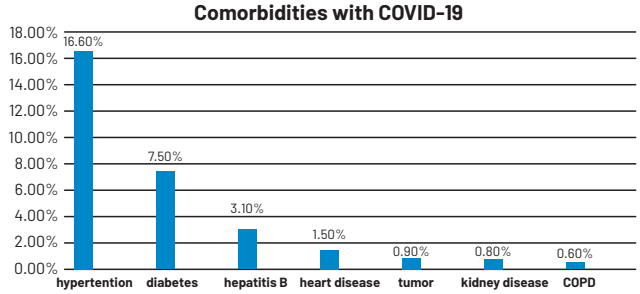

Figure 1: Prevalence of comorbidities according to a retrospective study

Diabetes and COVID-19

Previous statistical research reported diabetes as the second most commonly found comorbidity in COVID-19 patients with a mortality risk of 2.85- to 3.21-fold. Recent studies from the USA stated that, in over a third of hospitalized patients, diabetes mellitus was presented as major comorbidity along with COVID-19 infection [18]. A study from Italy shows that comorbid diabetes along with COVID-19 causes deaths in two-thirds of hospitalized patients [19]. Moreover, developing COVID-19 infection is also associated with impaired T-cell function and elevated levels of interleukin-6 (IL-6) [5]. Other possible reasons include chronic immune system imbalances, metabolic syndrome, or excess nutrition caused by obesity [20].

COPD and COVID-19

Chronic obstructive pulmonary disease has been declared the 3rd leading cause of death by WHO. The clinical presentation of COPD and COVID-19 is difficult to differentiate which leads to delayed recognition of coronavirus disease or inappropriate medical intervention [21]. It has been observed from research studies that COVID-19 in patients can exacerbate the pre-existing COPD resulting in respiratory failure. It is of great importance to highlight the issue as most of the older patients living with COPD. Over 174 million people suffer from COPD worldwide [22] with a case fatality rate of 6.3% [23]. Since it is known from different research studies that SARS-CoV-2 primarily invades the pulmonary alveolar epithelial cells which may result in respiratory distress syndrome and that is a major concern for patients who are already suffering from pulmonary diseases such as COPD [16]. It has been suggested that COVID-19 patients with comorbid COPD require advanced medical support such as a mechanical ventilator.

Renal disease and COVID-19

It has been confirmed to date, there is not only a single risk factor for COVID-19 but according to recent clinical

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research, the major risk factor for severe COVID-19 is chronic kidney disease (CKD) with 16% CFR [24, 25]. Another study estimated the prevalence to be 3% [26]. Research studies show a decrease in the estimated glomerular filtration rate (eGFR) and an increase in the urea in CKD patients suffering from COVID-19 leading to adverse clinical outcomes [27]. COVID-19 in patients with CKD is of utmost concern, especially if associated with hypertension as it can negatively impact the deteriorating kidney function. Therefore, people with greater potential to develop severe disease need meticulously monitoring and intervention.

Asthma and COVID-19

Recent data from the Centres for Disease Control and Prevention (CDC) indicate asthma as a risk factor for COVID-19. Since coronavirus affects the respiratory tract, it can also trigger asthma exacerbations, leading to an asthma attack and acute respiratory disorder [28]. The symptoms for asthmatic patients with COVID-19 include chest tightness, shortness of breath and cough more commonly compared to non-asthmatic patients suffering from COVID-19 [29]. The mechanism of asthma in COVID-19 is uncertain, yet multiple hypotheses are presented suggesting the mechanism, delayed secretion of IFN-λ, and delayed innate antiviral immune response could be the target for SARS-CoV-2 [5]. One of the studies quite surprisingly hypothesized that in asthmatic patients type II inflammatory response cytokines (IL-4, -5, and -13) and accumulation of eosinophils in the respiratory tract act as a defensive factor against COVID-19 [30]. Moreover, it is hypothesized that asthmatic patients had reduced gene expression for the ACE2 protein in their respiratory epithelial cells and therefore it may also play a protective role against COVID-19 [31, 32].

Liver disease and COVID-19

The liver is a vital organ that comes up with extreme clinical challenges if associated with COVID-19. The hypothesis of elevated ACE2 expression that may act as a target protein for SARS-CoV also implies here compared with severe COVID-19 cases [41]. Liver test markers such as gamma-glutamyl transferase (GGT), alanine transaminase (ALT), serum aspartate aminotransferase (AST) as well as total bilirubin (TB) were increased in the patients that were suffering with severe COVID-19 when linked to those with non-severe COVID-19 disease [41]. Another possibility seen in different research studies is that the virus could also be the reason for the damage in the liver, but a pathological analysis of the liver confirmed that virus inclusions were not observed in the liver of an old man who died of COVID-19 [33, 34]. A histological study stated that hepatoxicity can only develop after the long-term usage of drugs so it cannot be said that the hepatic impairment in COVID-19 patients is due to anti-viral therapy until it is used for a long period [35].

Cardiovascular disease (CVD) and COVID-19

CVD can be a comorbid disease, or it may develop in healthy subjects during the course of COVID-19. CVD was found in about 40% of hospitalized COVID-19 patients and 14.5% from 138 hospitalized COVID-19 patients in China, indicating it as one of the commonly found comorbidities [19]. According to the Chinese Centre for Disease Control and Prevention, case fatality rate of the patients with comorbid CVD was found to be 10.5% [23] which is significantly 10-fold higher than other comorbidities [36]. Meta-analysis indicates occurrence of CVD to be 8.4% [37]. The underlying mechanism is found to be elevated levels of angiotensin-converting enzyme (ACE2) as in diabetes as well as hypertension. A retrospective study of 1906 laboratory-confirmed COVID-19 patients concluded that individuals with pre-existing CVD are at greater risk of developing severe COVID-19 than those without CVD [38].

Cancer and COVID-19

Cancer is rare comorbidity. Due to compromised immunity due to the malignancy and anticancer treatments, cancer patients are more expected to get infected by COVID-19 [39, 40] with an elevated risk (~3.5-fold) of requiring ICU admission and mechanical ventilation compared with patients without cancer [41, 42]. A nationwide analysis in China revealed that out of all the types of cancer, lung cancer was the most frequently observed 5 (28%) of 18 patients and 10 (19.2%) of 52 patients. Large scale findings in China established the case fatality rate of cancer as 5.6% compared with 2.3% in the general population [43]. This suggests that despite the adverse clinical outcomes of COVID-19, cancer patients should continue receiving curative cancer therapy. COVID-19 with comorbid cancer brings great challenges for oncologists to manage both diseases without deteriorating the clinical outcomes. It is suggested that immunosuppressive treatment should be avoided or have dosages decreased in cancer patients suffering from COVID-19 to suppress the severity of the infection.

Older patients with comorbidities

Of the numerous possible risk factors of COVID-19, older age is one of them [8-10]. Reduction of estimated 10-year survival has been observed in older people of age 50 years [11]. Similarly, comorbidities have a critical impact on COVID-19 patients as different research studies declared that elderly people are more prone to get infected by this novel virus especially those with coexisting health problems. It is known that elderly people have poor immunity and are more likely to have other abnormalities or adverse health conditions compared with younger patients. This makes them more susceptible to infectious

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virus. A retrospective study was conducted specifically on older patients with COVID-19 showed a significantly higher mortality rate of 34.5% (19/55) for patients of age 65 or more, compared with younger patients at 4.7% (7/148)[7]. A meta-analysis was conducted, concluded that there is a significant association of older age with the disease severity [12]. Some comorbidities impacted by COVID-19 are discussed in Table 2.

Sr. No.	Disease	Prevalence	CFR	SARS-CoV-2 targets	Symptoms	Severity	References
1.	Hypertension	21-36%	6.0%	Upregulated ACE-2 expression	High blood pressure with pneumonia like symptoms	Moderate severity	[16, 42]
2.	Diabetes mellitus	11-17.4%	7.3%	impaired phagocytic cell activity, elevated levels of interleukin-6 (IL-6) and ACE2 expression	Pneumonia like symptoms	High s everity	[16, 42]
3.	COPD	2.0-7.5%	6.3%	Supressed respiratory system, Upregulate ACE-2 expression	Exaggerated respiratory suppression, hypoxemia	Moderate severity	[44]
4.	CKD	2.6-3.6%	16%	Upregulation of ACE2 enzyme	Impaired kidney function	High severity	[45]
5.	Asthma	>3%	6%	delayed secretion of IFN-λ, delayed innate antiviral immune response	Chronic respiratory diseases along with symptoms of pneumonia	Less severity	[45]
6.	Liver disease	2.9%	16%	elevated ACE2 expression in liver cells	lobular inflammation and apoptosis, elevated levels of liver test markers	Moderate severity	[45]
7.	CVD	5.8-8.9%	10.5%	Supressed immunity	acute myocardial injury as well as chronic impairment to the cardiovascular system	High severity	[45]
8.	Cancer	2.7-3.5%	5.6%	compromised immunity	anaemia, hypoproteinaemia, lymphopenia and high levels of highly sensitive C-reactive protein	Mild severity	[45]

Table 2: Impact of COVID-19 on comorbidities based on recent research data

CONCLUSIONS

Comorbid patients are more susceptible to COVID-19 with adverse clinical manifestations and high mortality rate compared with those without underlying health conditions. Hypertension is the most prevalent disease followed by diabetes, CKD as the second common and cancer as the rarest disease among COVID-19 patients. Due to multiple diseases and low resistance, older patients (>60 years) are more vulnerable to get infected with COVID-19 requiring ICU, ventilator, and other supportive measures. Medications such as ACE inhibitors, ARBs and other comorbidity related medicines are recommended to be continued in ongoing pandemic. Hence, this review shows that patients with comorbidities are more likely to get infected from SARS-CoV2 with exacerbation of poor clinical outcomes than those without any comorbidity and how some comorbidities like hypertension, asthma and cancer shows less severity of clinical outcomes in patients with COVID-19, compared to cardiovascular diseases, diabetes, and CKD. Future research will further elaborate the link between COVID-19 and comorbidities as it is of utmost need to highlight the relation between COVID-19 and comorbidities to contain the infection.

Conflicts of Interest

The authors declare no conflict of interest.

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Original Article

Assessment of Self-care Practices among Heart Failure Patients in District Head Quarter Hospital Timergara Dir Lower

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ABSTRACT

In both hospitals and the community, nurses play a critical part in the provision of healthcare. The improvement of heart failure patients' self-care behaviors is greatly helped by nurses. **Objective:** To determine the level of self-care practices among heart failure patients at the District Head Quarter Hospital of Timergara Dir Lower. **Methods:** A cross sectional study design was used to determine the level of self-care practices among heart failure patients. Self-Care Heart Failure Index (SCHFI) version 7.2 was used for data collection. After receiving written informed consent, 150 hospitalized heart failure patients were recruited through a consecutive sampling technique from the Department of Internal Medicine and Cardiology at DHQ Hospital Timergara Dir Lower. Data were analyzed with SPSS version 26.0. **Results:** It was found out that 44% of the study participants were females, 56% were males, 80% were married, 6% were illiterate and 86% had caregivers at home. Moreover, the mean score of the self-care subscales were inadequate (i.e., self-care maintenance: 68.5, symptoms perception: 67.26, self-care management: 68.56 and self-care confidence: 69.15, cutoff value: 70). The level of self-care was significantly associated with gender. In-addition, the marital status was significantly associated with the level of self-care in the sub-domains of self-care maintenance (p=0.011) and self-care management (p=0.001). **Conclusions:** Results of the study specified that majority of the heart failure patients had lack of adequate self-care practices. Therefore, efforts should be done to help them in performing an adequate self-care activity to remain healthy and reduce their hospital re-admissions.

INTRODUCTION

The role of nurses in the delivery of healthcare, both in hospitals and in the community, is crucial. Nurses perform a very effective part in the self-care behavior enhancement of patients with heart failure (HF) [1]. Clinical signs of heart failure include shortness of breath (SOB), edema, chest pain, difficulty in sleeping, lethargy, weakness, lack of energy, anxiousness, and depress mood. In addition to receiving medicine, patients should be treated to perform healthy practices. If the patient is not educated regarding self-care behavior, their symptoms will be more worsening [1]. The Heart failure (HF) prevalence is rising rapidly, worldwide more than 64 million people are suffering from this disease and is one of the major causes of mortality [2]. Over eight million individuals will be affected, with a predicted 46% increase in prevalence up to 2030, in every nine deaths, one will be caused by HF [3]. More over 6 million Americans have this disease, and in 2018, there were almost 900,000 newly diagnosed cases of heart failure (American Heart Association, 2018). The major cause of hospitalization is advance age over 65 years. Growing age is also said to be a factor which raise the prevalence of disease, according to documented cases of more than 1,000,000 hospital admissions per year [4]. Similarly, the number of patients with HF in Europe has increased to almost 6.5 million [5]. In Pakistan, uncontrolled obesity, excessive consumption of fast food, a lack of physical

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activity, and unrestricted cigarette use are the key contributors to the rising incidence rate of heart disease. In addition, the cost of treating heart patients is more expensive than the cost of treating other diseases [6]. Especially, in Pakistan, the heart disease patients occupied 35-40% from the total burden of the disease in the country [6]. Heart failure accounts for an average of 2.2% of hospital admissions worldwide, and considered one of the major cause of the re-admission. It is a highly frequent reason for re-admission [4-7]. In the United State (US) and Japan the re-admission rates after 6 months of discharge are estimated to be about 27%, while 25% in Europe. Though, it is expected that this ratio will be increased in the future and 25% of heart failure patients will be re-admitted after the discharge of one month, and around 50% will be re-hospitalized in the six months after discharge [8]. Management of the Heart failure patients involved many factors. Therefore, managing its medical condition is a challenging endeavor. The leading factors are both self-care management and self-care ignorance practices, such as medication ignorance, consistently fail to reduce level of drinking water and salt consumption, uneducated about specific symptoms and treatment accordingly, and failing to follow up properly. The patients ignoring and unawareness not only keep the patient on potential risk but, a main cause of patient re-hospitalization [1]. A number of studies have highlighted that lack of self-care capacity after the hospital discharge as one of the major components responsible for re-admission [9]. Patients suffering from Heart failure is a very much neglected area in Pakistan. There is a dearth of cross-sectional studies on assessing the level of self-care practices among patients suffering from heart failure, which leads to a rush of re-admission, morbidity, and mortality of the Heart Failure patients [10]. Therefore, it is important to assess the level of self-care practices among Heart Failure patients. The current research may help the community by knowing the self-care deficit in heart failure patients, which may improve the health status of the patients, and may also decrease the hospital readmissions and may eventually may reduce the overall health care costs of the country. The purpose of this research was to assess the level of self-care practices among patients suffering from heart failure in district head quarter hospital Lower Dir. Self-care Practice describes all the tasks that the patient carries out on his or her behalf to maintain a satisfactory degree of health and well-being. The "Self-Care Heart Failure Index" was used to measure it (SCHFI v.7.2). An appropriate self-care practice was one with a score of at least 70, while an inadequate self-care practice was one with a score of less than 70.

METHODS

The research was undertaken through cross sectional study design to assess the level of self-care practices among heart failure patients. The study was conducted in District Head Quarter (DHQ) hospital Timergara Lower Dir and the study population was patients diagnosed with HF and admitted to the above-mentioned facility. Cardiology and medical wards of the hospital were selected for the study. Last three months admitted HF patients were considered as the study populations. To recruit participants, consecutive sampling technique was used in the current study. The estimated sample size for the study was n=150, calculated through Raosoft Sample Size Calculator with specifications as study population: 245, confidence level: 95%, margin of error: 0.05 and response distribution: 50%. All patients diagnosed with HF and meeting the study criteria were selected for the study. Patients were evaluated by the researcher to decide their suitability for inclusion. Patients of both genders, aged 18 or above, diagnosed with HF and admitted to the DHQ Hospital Timergara District Lower Dir. Moreover, those patients who can easily understand the Urdu language were also included. Patients were excluded, who were not willing to participate in the research voluntarily, mentally ill, having visual or auditory problems and unconscious. As well as Heart Failure patient who were the member of the health care team. Self-care Heart Failure Index version 7.2 was used for data collection after informed written consent was taken from study participants. The questionnaire consists of two parts. The first one is demographic characteristics which includes 5 items, and the second portion consists of 39 items alienated across 4 scales: Part A: Self-care maintenance, which includes 10 items. Part B: self-care monitoring which includes 11 items, Part C: Self-care management, which consists of 8 items, and part D: self-care confidence, which consists of 10 items. Each domain score was further standardized accordingly. The questionnaire was translated to national (Urdu) language according to the translation protocols. The content validity index of the Urdu version was 0.89. Data collected from pilot test were used to assess the reliability of the Urdu version of SCHFI 7.2. The calculated Cronbach's alpha was 0.93, indicating excellent reliability [5, 11]. Before the commencement of data collection, an approval was obtained from the Institutional Ethical Review Board (ERB) of the Khyber Medical University, Peshawar Khyber Pakhtunkhwa. Then an official permission was obtained from the medical superintendent of DHQ Hospital Lower Dir. Finally, the patients were approached and a written informed consent was taken from them before further proceeding with the data collection. All patients who participated in the study were volunteers, and study

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participants were given the right to opt out of the study at any time. Data were analyzed by Statistical Package for Social Sciences (SPSS) version 26.0. Data were interpreted by descriptive and inferential statistics. Data were summarized by descriptive statistics by calculating means and standard deviations for numerical variables, while frequency and percentages were calculated for the categorical variables. Inferential statistics were used to find the association between demographic variables and mean score of self-care practice subscales. In this regard, independent sample t-test and One Way ANOVA was used. p-value of less than 0.05 was set as the level of significance.

RESULTS

Table 1 shows that, there were more male study participants 84 (56%) and 66 (44%) were female. The result shows that there was a range in the marital status of the study subjects from unmarried to widow. A large proportion of study participants were married 120 (80%), followed by widow 18 (12%), the unmarried subjects 6 (4.0%), and 6 (4%) were divorced. Majority study participants were intermediate and secondary level. Illiterate ratio was 9 (6%), primary education 18 (12.0%), secondary school certificates subjects were 51 (34%), higher secondary education 54 (36%), and 18 (12%) were graduates. A large proportion of the research subjects 129 (86%) responded that they had caregivers at home, while 21 (14%) replied that they don't have any caregiver at home.

Variables		Frequency (%)
Age	Mean + SD	55.98 + 15.280
Gender	Male	84 (56%)
	Female	66 (44%)
Marital Status	Single	6 (4.0%)
	Married	120 (80.0%)
	Divorced	6 (4.0%)
	Widow	18 (12.0%)
Education level	Illiterate	9 (6.0%)
	Primary	18 (12.0%)
	Secondary	51 (34.0%)
	Intermediate	54 (36.0%)
	Graduate	18 (12.0%)
	Post Graduate	00 (0%)
Care-givers at home	Yes	129 (84.0%)
	No	21 (14.0%)

Table 1: Demographic characteristics of the study participants

The Table 2 shows that in all domains of self-care behavior, there are was low/inadequate self-care practice score.

Variables(Subscales of Self-care Practice)	Categories/Levels	N (%)
Self-care Maintenance	Inadequate self-care practices	120 (80%)
	Adequate self-care practices	30 (20%)
Symptoms Perception	Inadequate self-care practices	108 (72%)
	Adequate self-care practices	42 (28%)
Self-care Management	Inadequate self-care practices	93 (62%)
	Adequate self-care practices	57 (38%)
Self-care Confidence	Inadequate self-care practices	102 (68%)
	Adequate self-care practices	48 (32%)

Table 2: The frequency (N) and percentage (%) distribution of different domains of self-care behavior in the (HF) patients

Table 3 shows the mean score of the self-care practice in all four domains. It indicated that in all categories the mean score revealed an inadequate self-care practice.

Variables	Mean ± SD
Self-care Maintenance	68.05±6.71
Symptoms Perception	67.26±5.65
Self-care Management	68.56±8.61
Self-care Confidence	69.15±5.79

Table 3: Mean Score of the Subscales/domains of Self-care Practice

Table 4 shows comparison of mean scores of the four self-care behavior/practice domains with the demographic variables involved in the study. It indicated that there was a significant association between gender, marital status and the presence/absence of caregivers at home. In this regard, it was found the mean self-care practice score of females was significantly lower than males in all the four subdomains of the self-care practice. Additionally, the marital status shows a significant association with self-care maintenance and self-care management subdomains of the self-care practice. Moreover, the presence of caregivers at home showed a significantly higher score than those patients with no caregivers with respect to all four subscales of the self-care practice. Conversely, the other variables, i.e., age of the participants and educational status showed no significant association with the self-care practice mean score.

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Demographic variables		Mean ± SD Self-care Maintenance Mean Score	Sig.	Mean ± SD Symptom Perception	Sig.	Mean ± SD Self-care Management	Sig.	Mean ± SD Self-care Confidence	Sig.
Age (Years)	18 to 32	70.33 ± 7.64	F= 1.35	64.49 ± 3.32	F=0.51	69.79 ± 15.41	F= 0.16	74.16 ± 1.44	F= 0.959
	33 to 47	66.25 ± 5.30	p= 0.27	67.61 ± 5.74	p=0.68	66.87 ± 7.54	p=0.922	67.75 ± 5.32	p= 0.420
	48 to 62	69.88 ± 6.63		68.11 ± 6.08		68.89 ± 8.86		69.04 ± 7.13	
	63and above	66.25 ± 7.18		66.44 ± 5.49		68.94 ± 8.34		69.37 ± 4.13	
Gender	Male	70.44 ± 6.20	t= 3.09	69.33 ± 5.6	t= 3.19	71.98 ± 8.13	t= 3.517	68.30 ± 5.04	t= -1.247
	Female	65.00 ± 6.17	p= 0.003	64.62 ± 4.62	p=0.003	64.2 ± 7.26	p=0.001	70.34 ± 6.51	p= 0.219
Education Level	Illiterate	61.66 ± 8.88	F= 1.49	66.67 ± 8.79	F= 0.84	63.54 ± 3.6	F=0.509	74.16 ± 5.77	F= 0.811
	Primary	65.41 ± 6.69	p= 0.220	65.58 ± 4.64	p= 0.508	69.79 ± 8.53	p=0.729	70 ± 3.53	p= 0.525
	Secondary	70.14 ± 6.40		69.05 ± 4.77		67.27 ± 8.98		68.68 ± 4.51	
	Higher	67.50 ± 6.85		65.94 ± 5.72		69.44 ± 8.67		68.19 ± 6.9	
	Secondary	69.58 ± 4.85		68.11 ± 7.36		70.83 ± 10.2		70.41 ± 7.14	
Marital Status	Gradation	67.50 ± 7.07	F= 4.162	66.30 ± 1.53	F=2.584	73.43 ± 19.89	F=3.243	73.75 ± 1.76	F=0.304
	Single	67.98 ± 6.73	p= 0.011	67.76 ± 5.74	p=0.065	68.97 ± 8.0	p=0.030	69.02 ± 6.19	p=0.822
	Married	80.00 ± 0.00		71.74 ± 00		62.5 ± 00		72.00 ±	
	Divorced	66.66 ± 6.05		63.40 ± 4.84		65.1 ± 10.15		68.33 ± 2.58	
	Widow	68.66 ± 7.01		68.05 ± 5.5		69.62 ± 8.69			
Care-givers at Home	Yes	64.28 ± 1.88	t= 3.403	62.42 ± 4.11	t= 2.581	62.05 ± 4.57	t= 2.24	69.77 ± 5.94	t= 2.919
	No		p= 0.002		p=0.013		p=0.03	65.71 ± 2.78	p= 0.010

Table 4: Comparison between Demographic Variables and Self-care Practice Score

DISCUSSION

The objective of this study was to assess the level of self-care practices among heart failure patients. For this purpose, SCHFI version 7.2 scale was used. Accordingly, the study showed that the mean score of all the four sub-domains of the self-care were lower than the cutoff point of 70, which indicated an inadequate self-care practice. The findings are congruent with a study conducted in United State of America (USA) in 2019, which revealed that score of all sub-scales of self-care were inadequate [12]. Similarly, another study conducted in Jordan also showed that the mean self-care practice score was lower than the cut-off value [13]. Moreover, other studies also indicated a low self-care score in all domains of self-care practice [14-16]. The average age of the participants was 55.98 ± 15.280 years, which indicates that it was the sample of younger and was similar to a study conducted by Davis *et al.*, but different from the other study population conducted on heart failure patients, which indicated older age patients [17, 18]. There were no statistically significant associations between age categories and self-care behavior by applying analysis of variance (one-way ANOVA), results for the four sub-domains of self-care behavior. It was in line with another study conducted in Colombia in 2012, the study findings communicated that there were no age differences in the self-care score [19]. In contrast, a study conducted in Isfahan, Iran in 2019 showed that age effects on the self-care behavior such as age-related changes in vision, hearing loss and as well as cognitive impairment led to disability in self-care. Old age patients are mostly dependent on others, because they are facing some difficulties in managing their care [20]. The reason for this study findings is different due to younger participant's involvement in the study with a mean age of 55.98, most of the study participants was younger and was able to perform their self-care activities by themselves. The study participants were mostly able to understand and perform activities independently. In the current study there was a significant difference in gender regarding self-care behavior especially in the sub-domains of self- care behavior. The male participants of the study were more self-care oriented as compared to female subjects. The study was in line with another study conducted in Australia (Queensland) in 2016, the study revealed that the male study participants were more self- care oriented as compared to female study participants. This significant difference between genders in self-care in our sample is due to the effect of culture, as it was reported that males are often more socially dominant and get more care assistance in Pakistani society; therefore, they felt more confidence in self-care [21]. In contrast a study conducted in Ethiopia in 2014, the finding of the study revealed that gender was not an important factor of self-care behavior predictor [22]. Similarly, a study conducted in Pakistan (Karachi) in 2017, which revealed that gender did not influence the overall Self-care behavior [23]. Align with previous studies conducted in Colombia in 2012, the study findings reported that, there were no differences in both groups either in the improved self-care behavior scale score between women and me [19]. Interestingly, a study conducted in Italy 2015 revealed that male participants of the study were less self-care oriented compared to female participants in the sub-

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domain of self-care behavior, self-care maintenance and self-care management. Male participants represented very poor self-care behavior regarding heart failure management [24]. In the current study the relation between marital status and the self-care maintenance and self-care management was significant, which is congruent with the study conducted in USA in 2015, finding of the study revealed that those people who were married performed self-care more effectively as compared to those, who were unmarried and divorced. The spouse provides health care assistance in Heart Failure management [25]. The current study is in line with a study, conducted in Australia (Queensland) in 2016, the study revealed that married people having a spouse were found to perform self-care management behavior better than those who are divorced or single and living alone. The spouses provided important psychological and physical support in assisting better health care in Heart Failure patients [21]. Furthermore, finding of the current study is consistent with the study conducted in Northwest Ethiopia in 2021, findings of the study was that being divorced or separated was strongly associated with a slight but important reduction in the self-care behavior score [26]. Moreover, a study conducted in Germany in 2013, aligns with the current study that has found that unmarried patients are more likely to be less interested in self-care as compared to married patients. Furthermore, unmarried patients had less good social support needed for physical activities and good self-care behavior [27]. In the current study care-givers were significantly associated with self-care behavior. This strengthens the findings of earlier studies which also reported that caregiver at home facilitates heart failure patients and their self-care behavior. The current Study findings was aligned with a study conducted in Chicago (USA) in 2016, the findings of the study revealed the importance of caregivers and insist in the presence of caregivers, to support the heart failure patient in assisting in their self-care behavior. Furthermore, the researcher elaborated that taking medication, and performing physical activities without a caregiver as a big challenge for the heart failure patients without a caregiver [28]. The current study is consistent with a study conducted in Queensland in 2016, according to the finding of study, those patients having care-giver at home, their performance in self-care behavior was very good at the baseline [21]. Furthermore, in connection with previous research finding revealed the same result that care-giver at home offered physical and psychological support to patients suffering from heart failure problem. A systematic review revealed that caregivers facilitated the HF patients in self-care activities including salt (sodium restrictions), symptoms recognition and medication management by support and daily reminders [25]. This showed that role of patients' caregivers in self-care management approaches would benefit heart failure self-care. Similarly, the current study supported the results of prior study conducted in Pakistan in 2017. The study findings were; care-givers at home and family members benefit the heart failure patient in managing their self-care, which represent the Pakistani culture in which self-care is not only limited to the self; it is in fact a family culture in which every individual of the family supports and cares for the patient [23]. The study further revealed that 95.6% of patients were living in joint families [23]. Moreover, a study conducted in the USA in 2015, the study findings revealed that caregiver support enhances the self-care behavior of heart failure patients by providing assistance in disease management. If the relationship between the patient and caregiver is consistent and healthy, then the disease management occurs without difficulty, whereas, if the relationship is incongruent then it develops distress on heart failure patient, which worsening the health status of the patient [29]. The current study differs from a research study conducted in Italy in 2015, which revealed that caregivers at home were not statistically significant for the management of heart failure patients. The aforementioned study further explained the finding in detail, that patient reported of having the caregiver at home were more practically compromised with a $p< 0.001$, similarly with higher comorbidity of p-value of less than 0.001, and they were cognitively more impaired with a $p < 0.001$ [24]. This was a cross-sectional study design. Therefore, interventional studies can be helpful for heart failure patients to evaluate the effectiveness of interventions to improve the self-care practices of the heart failure patients.

CONCLUSIONS

It is concluded that majority of the heart failure patients are unable to perform an adequate self-care practice. The significant socio-demographic factors associated with the level of self-care practices are gender, marital status and presence of caregivers at home. Therefore, there is a need of interventions to enable the heart failure patients to perform an adequate level of self-care practices, which will keep them healthy and will reduce their hospital readmissions.

Conflicts of Interest

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Original Article

Assessment of Knowledge Towards Radiation Hazards and Protection Protocols Among Medical and Dental Students

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ABSTRACT

Recently the use of radiography is growing significantly due to technology advancements and overdependence for diagnosis that's the reason everyone is exposed to radiation and there is a linear relationship exists between radiation exposure and adverse effects on the body. **Objectives:** To compare the radiation hazards and protection protocols knowledge among the final year medical and dental students of private university. **Methods:** It was an analytical cross-sectional study conducted on final year students of Medical and Dental College of private university at Karachi Pakistan. All students in final year MBBS and BDS irrespective of age and gender were the source population. The study populations (n=85) were those students who were randomly chosen to fill the questionnaire. The study tool in this research included a structured questionnaire. Each correct answer was scored as 1 point. Percentages and frequencies will be recorded for qualitative variables. The total knowledge scores between medical and dental students were compared using the independent t-test. **Results:** The data were analyzed on a total of (n=85) students. The mean ages were 22.91±0.71. From total sample 59 (69%) were girls and 26 (31) % were boys. There were (n=45) students from the final year MBBS and (n=40) students from BDS referred as group I and II respectively. There was significant difference (t(83) = -3.052, P=0.003) in the knowledge scores of group I (8.95±3.30) and group II (11.40±4.07). **Conclusion:** Majority of Dental students have high knowledge scores as compare to medical students.

INTRODUCTION

Radiological evaluation is essential for the diagnosis of many diseases in medicine and dentistry. In today's world with the advent of CT and CBCT which are giving much better results as compared to conventional radiographs, one tends to advise these even in situations where it is not justified [1]. In diagnostic radiography, the use of ionizing radiation (IR) has both helpful and undesirable effects on patients [2]. The biological effects of IR on the human body can be of two types of effect deterministic and stochastic effects. Deterministic effects are proportional to the dose whereas stochastic effects are produced by sub-lethal radiation-induced damage to DNA [3]. Sometimes adverse effects appear instantly after exposure, on the other hand, they may not visible for several years [4, 5]. The protection of people and the environment from the harmful effects of exposure to ionizing radiation is defined as radiation protection [6]. Radiation protection has three main rules which are named distance, exposure time, and shielding for external irradiation. It also has three core principles namely dose limitation, justification, and optimization (ALARA, as low as reasonably achievable [7, 8]. This negative effect due to IR is on an increasing trend, it can be associated with insufficient knowledge and attitude towards radiation hazards, radiation doses of standard imaging, and

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protection protocols among medical and dental practitioners [9, 10]. The lack of optimization criteria for referring doctors and radiological staff has aggravated the incidence of ionizing radiation, which can be harmful not only to radiological staff but also to patients [11-13]. The amount of radiation exposure from radiographs depends on multiple variables like the speed of film, exposure aspect, the technique used to take radiographs, collimators, and the use of a protective barrier. Physicians who advise radiological examinations tend to underestimate the actual doses involved and may have less knowledge about the risks to the health of people, and do not discuss them with their patients [1]. When high-dose scans like computed tomography and fluoroscopy are done without optimization. especially in a country like Pakistan where there is a limited number of health amenities that offer radiological services for a population of 243 million. Insufficient knowledge of radiation risk can be seriously detrimental. In many studies, it was indicated that the doctors were unaware of the radiation hazards and do not consider this when prescribing radiographic examination. It is observed from the literature search that the studies focused on assessing the knowledge of medical and dental practitioners regarding radiation protection concerns in India, Iran, and Saudi Arabia recorded the highest number of publications on this topic revealing the areas where they need to focus. On the other hand, Pakistan falls into a category where the least number of studies found on this important topic. This explains why we need to work on this important topic so we can improve our safety standards regarding radiation protection measures [14]. Dental and medical students acquire knowledge about the fundamentals of radiology in their final year, and they practice interpretation of clinical radio-diagnosis during their internship. Most of them usually underestimate the proper use of dental imaging tools, protective measures, and their associated radiation risks. The objective of the research is to compare the radiation hazards and protection protocols knowledge among the final year medical and dental students of private university.

METHODS

This research was a cross-sectional analytical study. It was conducted on final-year students of the medical and dental College of a private university in Karachi Pakistan. All medical and dental students in their final year MBBS and BDS irrespective of age and gender considered as source population. The research populations comprised of those students who were randomly chosen to fill out the questionnaire. The students for research were selected using a computer- generated simple random sampling technique using their enrollment numbers. However, when any of them refused to participate, the next number from the list was taken as well. Questionnaires with missing page and incomplete in which all 15 questions were not answered were excluded from the study. The total number of medical and dental students was 150 among them the study was performed on a total of 85 students. In this research, the study tool included a structured questionnaire comprising two parts: A and B. Part A covered the questions about the demographic data of the students, and Part B comprised Fifteen questions in which ten questions consist of dichotomous responses (yes/no) and five questions are of multiple-choice type. In the fabrication of the questionnaire help from previous studies was taken with the permission of the authors [1, 15]. Questionnaires will be distributed among the students after taking their written consent and self-administered. Each correct response was scored as 1 point and each wrong response was scored as 0 points. The higher score shows the better knowledge of participants. All the responses were analyzed and recorded. Participants that responded with 4, 5 to 7 and >7 up to 15 correct responses were considered as having "low competence"; "moderate competence" and "high competence" in IR knowledge. This scale was developed with the help of a previous study based on a study by Koole *et al.*, in which the competence levels of undergraduate dental students were assessed [16]. Data were assessed through Statistical Package for the Social Sciences SPSS software (version 20.0); for qualitative variables, percentages and frequencies were recorded. The total scores of correct responses between medical and dental students were compared using the independent t- test. The significance level was kept at $p \leq 0.05$.

RESULTS

The data were analyzed on a total of (n=85) students. The mean ages of the students were 22.91±0.71. Out of the total 59 (69%) were girls and 26 (31) % were boys. There were (n=45) students from the final year MBBS and (n=40) students from BDS. In the current study, medical students who were studying in their final year of MBBS at the time of the research were referred to here as group 1, and students who were studying in their final year of BDS were referred to as group II. An independent sample t-test was conducted to compare the knowledge scores of both groups. There was a significant difference (t (83) = -3.052, P=0.003) in the knowledge scores with the mean score for group I being 8.95±3.30 lower than group II with a mean score of 11.40±4.07. The magnitude of differences in the means (mean difference=-0.244, 95% CI) was significant. In the comparison of both groups majority of participants in group II have high knowledge scores as compared to group I participants who have low to moderate scores as shown in table 1.

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S. NO	Groups	Level of competence (max scores =15)	Mean ± SD	p-Value
1-	Group I (n=45)	Low15 (1-7)	8.95±3.30	0.0038*
		Moderate 19 (8-10)		
		High 11 (11 to 15)		
2-	Group II (n=40)	Low 9 (1-7)	11.40±2.07	
		Moderate—-9 (8-10)		
		High —-22 (11 to 15)		

*Statistically significant

Table 1: Comparison of total Knowledge scores among students in both groups

Regarding the knowledge about the harmful nature of X-rays, high-speed films, and the position of the radiographer with regard to protective screen respondents of both groups had the same level of knowledge. Group I had better knowledge about the Function of the Dosimeter, adverse effects of high radiation dose, and an indication of X-Ray in a pregnant woman in comparison to group II. Group II had better knowledge about the Principle of ALARA (as low as reasonably Achievable), National Council on Radiation Protection (NCRP), and International Commission on Radiological Protection (ICRP) recommendations, as well as they, showed better results regarding the knowledge of Digital radiography, Protocol for the management of radiographic waste, use of protective barrier, screen material, radiosensitive and radio resistant organ of the human body as shown in Table 2.

S. NO	Knowledge Items	Response	Medical students (n=45)	Dental Students (n=40)	Total correct responses (n=85)
1-	X-Rays are Harmful	Yes	45	39	84
		No	—	01	
2-	While taking X-rays ALARA principles should be applied.	Yes	31	31	62
		No	14	09	
3-	Are you aware of NCRP/ICRP?	Yes	30	31	61
		No	15	09	
4-	Do high-speed films reduce patients' exposure	Yes	45	39	84
		No	—	01	
5-	While taking radiographs one must stand behind a protective screen.	Yes	43	39	84
		No	02	01	
6-	A dosimeter is used to measure the radiation dose	Yes	42	36	78
		No	03	04	
7-	Digital radiography requires less exposure than Conventional	Yes	30	31	61
		No	15	09	
8-	Radiographs are absolutely contraindicated for pregnant patients	Yes	25	38	63
		No	20	02	
9-	High radiation doses lead to cancer	Yes	43	20	63
		No	02	20	
10-	Are you aware of the protocol for radiographic waste manage ment?	Yes	08	23	31
		No	37	17	
11-	Which material does the screen consist of	Lead	08	25	23
		Glass	37	15	
		Steel	0	0	
		Plastic	0	0	
12-	What do you use as a protective barrier?	Lead apron	11	26	37
		Thyroid collar	34	14	
		Shielding gloves	0	0	
		Protective devices	0	0	
13-	Which among the following is the most radiosensitive organ/tissue?	Skin	13	28	41
		Kidney	32	01	
		Neuron	0	0	
		Liver	0	0	
14-	Which among the following is the most radio-resistant organ/ tissue?	Bone	25	12	37
		Muscle cells	16	28	
		Lungs	02	0	
		Mammary gland	02	0	
15-	Which among the following do you think will be the most appropriate way of awareness of radiation protection and hazards?	Lectures	35	18	53
		Tutorials	01	0	
		workshop	04	01	
		Departmental rotations	05	21	

Table 2: Knowledge of radiation hazards and protection among medical and dental students

DISCUSSION

Our study results provide current evidence of knowledge, awareness, and practice about radiation protection among medical and dental students in Karachi Pakistan and the majority of dental participants have high knowledge scores as compared to medical participants which could be attributed to the inclusion of the subject of Oral Radiology in the curriculum of dental students whereas, the medical students are not exposed to the subjects until they enter their internship. Among all medical and dental professionals' knowledge conveyed during student life decide attitude, practice, and clinical behavior in their professional life. The current study reported, 99% of participants knew the harmful nature of x-ray, radiation exposure with high-speed films, and the position of the radiographer with regard to protective screen these results are in accordance with Motwani Mukta *et al.*, and Rahul *et al.*, it might be due to fact that participants in these studies are at the same level of education (final year) and study setting are same [1, 17]. In accordance with ADA guidelines, during pregnancy taking dental radiographs is not absolutely contraindicated but if a radiographic investigation is compulsory, it can be carried out with

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appropriate safety measures [18]. Our study discloses that the majority of medical students in comparison to dental students are aware of the criteria for ordering radiographs for pregnant women and the adverse effects of high radiation doses these results are in disagreement with Motwani Mukta *et al.*, results of the possible reason for this disagreement is the difference in the curriculum of both countries [1]. According to current study results majority of dental students are aware of the ALARA principle as well as NCRP/ICRP recommendations as compared to medical students so it can be inferred that those who were unfamiliar with the term cannot apply ALARA in practice and consequently patient receive unnecessary radiation exposure these results are in agreement to the results of Prabhat *et al.*, and Asha *et al.*, where the majority of dental students have awareness about it [3, 19]. In accordance with other studies, the present study reported about 77% of dental participants and 66% of medical participants knows that digital radiography requires less exposure than the conventional technique. It can be inferred that dental students are more aware of digital radiography and its advantages than medical students [3, 17]. It might be because almost all radiographs taken during dental procedures are digital in nature. Dental students were more aware than medical students of radiographic waste management. These results are in disagreement with Asha *et al.*, where the majority of medical students were aware of radiographic waste management this implies that special efforts need to be taken to improve the knowledge of medical students in this field in our country [19]. Properly selected lead apron reduces the effective radiation dose by 75%–90% [20]. Recent study reported in comparison to medical student's majority of dental students mentioned that they are using lead aprons on regularly in corroboration with previous study [21]. This reveals that knowledge related to the usage of the lead apron is not even among the students of both fraternities and they have to be closely taught and examined.

CONCLUSIONS

In comparison to both groups majority of dental participants have high knowledge scores as compared to medical participants who have low to moderate scores.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Association of Quality of Life and Pain Intensity in Patients of Trigger Points

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ABSTRACT

Myofascial trigger points are hyperirritable, unpleasant when compressed, and they have the ability to generate anomalies of the autonomic nervous system, referred pain, and motor dysfunction. **Objective:** To determine the Association of quality of life and pain intensity in patients of trigger points. **Methods**: Data were gathered from the Central Park Teaching Hospital, the Mayo Hospital, the Doctors Hospital, and the Jinnah Hospital. Our investigation focused on the prevalence of disability and quality of life in patients with trigger points. For quality of life and pain, we used the SF 36 Functional Limitation and General Health questionnaire; a visual analog scale was used. **Results:** Out of 152 patients, 87(57.2%) were males, and 65(42.8%) were females. The patients mean age was 38 ± 12.78 yrs. with a minimum age of 22 yrs. And maximum age of 72 yrs. 4(2.6%) patients has mild Pain, 67(44.1%) have moderate pain, 81(53.3%) have severe pain. 67(44.1%) patients have poor Health quality, 81(53.3%) have moderate health quality, and 4(2.6%) have good health quality. P-value for pain intensity and general health was 0.00, so we reject the null hypothesis and accept the alternative hypothesis, which indicated a significant difference between pain intensity and general health. p-Value was 0.012 for pain intensity and physical functioning. **Conclusion:** Hence it was concluded that the majority of the patients with trigger points have a poor quality of life and severe Pain. There was an association between quality of life and pain intensity.

INTRODUCTION

Structures in skeletal muscles that exhibit some types of brokenness were shown to be myofascial trigger points. The writing also suggests that the physio obsessive component of myofascial trigger focuses was connected with changes in strong action and the repercussions for blood flow and nearby digestion. Myofascial trigger focuses may present as dynamic or dormant. They were logically overly sensitive to palpation because of agony, change in solid movement, restriction in joint versatility, and autonomic signs. The presence of different algetic chemicals, such as bradykinin, substance P, and serotonin, affects how the dynamic myofascial trigger points behave [1, 2]. Based on the palpation of the muscles, for the proper identification of myofascial trigger points. However, different authors point out that palpation requires a combination of knowledge, training, and fundamental clinical practice. Likewise, different instruments, such as electromyography, child elastography, and ultrasonography, can be used to evaluate subjects with myofascial trigger points [3, 4]. One further useful method for evaluating patients with myofascial pain was infrared thermography. It was a safe method for evaluating how the

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body's skin temperature behaved and depended on microcirculatory, metabolic, and autonomic activities [5, 6]. Fibromyalgia condition (FMS) was characterized by persistent and diffuse outer muscular pain, despite the tests using infrared thermography in subjects with myofascial torment, there was no normalization in the method for infrared picture investigation [7]. The pain caused by at least one hyperirritable spot in the skeletal muscle that is connected to touchy-visible knobs in rigid groups is referred to as a "myofascial trigger point" (MTrPs). Additionally, it was explained that large dynamic MTrPs completely replicated the generally unrestricted clinical pain experienced by FMS patients, indicating that MTrPs can be an important part of pain management. Patients with FMS frequently have a number of dynamic trigger points that are connected to combined pressure hyperalgesia and cause more pain in the local area. In point of fact, trigger points have been regarded as this population's primary source of extreme discomfort. Patients with FMS may experience focal sharpening as a result of fringe inputs from dynamic MTrPs [8-11]. They believed that particular body parts were where the generally unrestrained agony was located. Local and referred agony have been caused by dynamic trigger points in the trapezius muscle, which are repeated patterns of neck and shoulder pain in FMS. According to previous research, the number of dynamic MTrPs found in FMS patients was found to have a direct correlation with torture power. However, it has been discovered that dormant MTrPs in the scapular rotator muscles alter the pattern of this muscle group's muscle enactment [12-14]. A treatment needle was directly inserted into the MTrPs during dry needling, a less invasive procedure. The evidence from clinical preliminary studies did not support or refute the hypothesis that needling treatments are effective beyond a self-influenced outcome. The quadratus, lumborum, multifidus, and latissimus dorsi muscles can be effectively treated with dry needling on MTrPs, according to a previous study [15, 16]. However, previous research has demonstrated that the immediate reduction in regional and referred pain that occurs after dry needling. Myofascial discharge was a restorative therapy with characteristics of myofascial release [17,18]. The rationale of the study was that, MTrPs were likely to be present in Upper trapezius disability and may vary in muscle distribution and type (i.e., active or latent). We conducted present study with aimed to determine the Association of quality of life and pain intensity in patients of trigger points

METHODS

Study was completed within 6 months, Data were gathered from the Central Park Teaching Hospital, the Mayo Hospital, the Doctors Hospital, and the Jinnah Hospital. The SF 36 Questionnaires were given to respondents in the form of a pamphlet. To avoid biases, it was kept safe after being collected. Our study population includes both male and female trigger point patients. Our investigation focused on the prevalence of disability and quality of life in patients with trigger points. For quality of life and pain, we used the SF 36 Functional Limitation and General Health questionnaire; a visual analog scale was used. Using a SF 36 Questionnaire for quality of life and a Visual Analog Scale for measuring pain after informed written consent was obtained, basic demographic information such as age, sex, self-reported weight, height (from which the Body Mass Index (BMI) was calculated as weight in kg divided by height in meters squared), and smoking were gathered. It was analyzed using SPSS version 25. Bar charts were created after the frequency and percentage were removed from qualitative data. After the mean and standard deviation were looked at, the histogram and the Pi-Chart were taken out of the quantitative data. The chi square method was used to compare pain intensity, overall health, and physical function. p-value was less than 0.05.

RESULTS

Out of total 152 patients, 87(57.2%) were males and 65(42.8%) were females, Patients mean age was 38 ± 12.78 yrs. with minimum age of 22 yrs. and maximum age of 72 yrs (Table 1).

Variables	Frequency (%)
Male	87(57.2)
Female	65(42.8)
Mean Age (Years)	38.8224
Minimum Age (Years)	22.00
Maximum Age (Years)	72.00

Table 1: Statistical data for gender and age

Patients have moderate pain 67(44.1%), severe pain 81(53.3%) and mild pain 4(2.6%)(Figure 1).

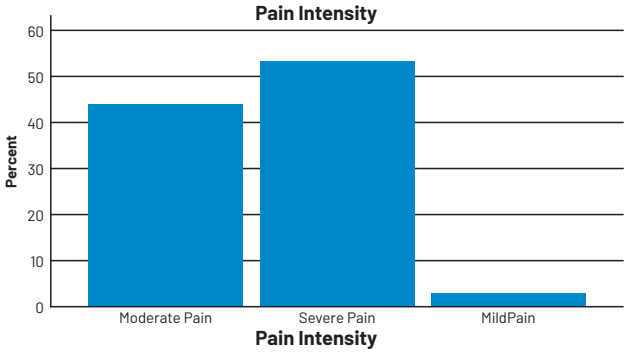

Figure 1: Graphical representation for pain intensity

General health's of patients were poor 67(44.1%), moderate was 81(53.3%) and good were 4(2.6%) and Physical functioning of patients was poor 34(22.4%), moderate was

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86(56.6%) and good was 32(21.1%)(Table 2).

Parameter	Frequency (%)
Poor (general health)	67(44.1)
Moderate (general health)	81(53.3)
Good (general health)	4 (2.6)
Poor (physical functioning)	34 (22.4)
Moderate (physical functioning)	86 (56.6)
Good (physical functioning)	32(21.1)

Table 2: Statistical data for general health and physical functioning

Pain intensity was moderate in 67 patients, severe Pain in 81 and mild Pain was in 4 patients. p-value was <0.0.5, So, we reject the null hypothesis and accept the alternative hypothesis which indicated that there was a significant difference between pain intensity and general health. p=0.00 shown in table 3.

Pain intensity	General health			p-value
	Poor	Moderate	Good	
Moderate Pain	67	0	0	.000
Severe Pain	0	81	0	.000
Mild Pain	0	0	4	.000

Table 3: comparison between pain and general health

p=0.012, p-value was <0.0.5, So, we reject the null hypothesis and accept the alternative hypothesis which indicated that there was a significant difference between pain intensity and physical functioning.

Pain intensity	Physical functioning			p-value
	Poor	Moderate	Good	
Moderate Pain	23	35	9	.012
Severe Pain	11	49	21	.010
Mild Pain	0	2	2	.001

Table 4: Statistical data for pain intensity

*Physical functioning

DISCUSSION

According to current study Out of total 152 patients, 87(57.2%) were males and 65(42.8%) were females. Patients mean age was 38 ± 12.78 yrs. with minimum age of 22 yrs. and maximum age of 72 yrs. 4(2.6%) patients have mild Pain, 67(44.1%) have moderate Pain, 81(53.3%) have severe Pain. 67(44.1%) patients have poor Health quality, 81(53.3%) have moderate health quality and 4(2.6%) have good health quality. Physical functioning of patients was poor 34(22.4%), moderate was 86(56.6%) and good was 32(21.1%). p-value for pain intensity and general health was 0.00, So, we reject the null hypothesis and accept the alternative hypothesis which indicated that there was a significant difference between Pain Intensity and General Health. p-value was 0.012 for pain intensity and physical functioning, So, we reject the null hypothesis and accept the alternative hypothesis which indicated that there was a significant difference between pain intensity and physical functioning. According to previous reviews, the myofascial torment was a common and agonizing event in practically everyone's life. Patients with myofascial agony may have a range of side effects, including excruciating agony brought on by a functional trigger point, an easy restriction of movement, and bending of the posture due to dormant trigger points that were frequently disregarded. According to estimates, aversion to agony is a fairly even-handed stress torment edge in people with TrPs. In order for the underlying delicateness to measure up to estimates after the therapeutic or trial intercession, pressure algometer proved useful in estimating the tension torment edge at a TrP site. One of the main causes of time lost from work was MPS, which can result in delayed dejection and a drastic decline in QOL [19]. According to current study, 43(28.3%) patients were limited at all in vigorous activity, 55(36.2%) were limited a little and 54(35.5%) were not limited at all. 34(22.4%) patients were limited at all for moderate activity, 73(48.0%) were limited little and 45(29.6%) were not limited at all. 25(16.4%) patients were limited at all while lifting, 63(41.4%) were limited a little and 64(42.1%) were not limited at all. 34(22.4%) patients were limited at all while climbing several stairs, 74(48.7%) were limited a little and 44(28.9%) were not limited at all. As previously reviewed, Simons examined the SF-36 sub scores of MPS patients and discovered that the job, agony, and energy ratings were especially low. In terms of agony, energy, actual versatility, rest, and profound responses, patients with MPS had more regretful overall personal contentment than healthy individuals Even while myofascial torment should be noticeable at any age, women who are childbearing age were more likely to experience it [20]. According to previous study, Chang *et al.*, assessed the SF-36 sub scores of patients with MPS and found that the role, Pain, and energy scores were distinctly low. Patients with MPS had the worse health-related quality of life than healthy individuals in terms of pain, energy, physical mobility, sleep, and emotional reactions [21]. According to current study, Patients got sick as definitely true were 28(18.4%), mostly true were 44(28.9%), don't know where 35(23.0%), mostly false were 24(15.8%) and definitely false were 21(13.8%). According to previous study, we had similar observations in our group. The age range of patients with MPS was 16-78 (mean, 40.2 yrs) years which was similar to those found in other studies. The myofascial trigger points frequently seen in upper trapezius muscle (79%) among the studied muscles. It was reported that the most prevalent MTrP was found in the trapezius muscle. Similarly, Chaplin and Morton have reported the frequency of TPs as 84.7% in trapezius. This study also shows that increased frequency of MTrPs was found in upper trapezius followed by levator scapulae, supraspinatus, and infraspinatus. Pressure

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algometer has been used in various researches to measure pressure pain threshold [22].

CONCLUSIONS

Hence it was concluded that majority of the patients with trigger points have poor quality of life and severe Pain. There was association between quality of life and pain intensity.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Awareness of Post-Operative Patients Regarding Informed Consent Form in Public Tertiary Care Hospital of Peshawar Khyber Pakhtunkhwa: A Cross Sectional Survey

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ABSTRACT

The informed consent form is one of the components of bioethics. Written consent from the patient must be obtained prior to any medical or surgical procedure to give the patient freedom of choice. This factor has always been neglected when caring for patients in most third world countries. **Objective:** To assess postoperative patient awareness of informed consent at Peshawar KP Tertiary Public Hospital (HMC). **Methods:** This study was conducted from April 2021 to August 2021 at Hayatabad Medical Complex, a tertiary care public hospital in Peshawar. A total sample of 70 patients was drawn by consecutive selection. An adopted and pre-tested questionnaire was used for data collection. Questions were filled in by having the patient understand the question and receiving the answer from the patient. **Results:** The majority (59%) of the patients included in this study were male, while the mean age was 35 years and the majority of the patients (44%) were illiterate. Awareness of variables (2-7) was 60%, 47%, 30%, 47%, 69%, and 53%, respectively, while awareness levels from questions 8-12 were 59%, 47%, 82%, 40%, and 60%, respectively. **Conclusions:** The results of the current study indicate that the perception of informed consent among patients in tertiary care public hospitals is reasonably satisfactory, although some lack of participant knowledge of key issues has been identified and needs to be improved through education and awareness.

INTRODUCTION

Informed consent is a process that flows from the interaction between the health care provider and the patient [1]. Informed consent is an essential part of health care; it is defined as consent by the client to a proposed medical or surgical procedure, and it is the basic right of the client to get information about the relevant facts, risk and benefits of the procedure that is planned for the client. Informed consent is the due right of client as well as the patient's attendant; they need to be well informed about what will happen after or during the surgery and any other surgical or medical procedure [2]. Giving the patient the freedom to choose is goal of informed consent. Patients can experience a lot of stress during the decision-making process, and the goal of informed consent is to help them make good decisions [3-5]. Autonomy of a client is an integral part in the health care facility [6]. A patient's informed consent is more than just signing a form. It involves the patient and the healthcare provider

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exchanging information, which is necessary for medical treatment and research [7, 8]. Ever since the revelation of Nazi war crimes about half a century ago, informed consent has become an essential component of human subject research in the West. This holds true at least in theory, if not in practice. East is expected to follow the lead of the West in ethical principles and research, both being driven and lead by the western researchers [9]. Unfortunately, like other countries in the world especially the advanced, the situation is not praise worthy in Pakistan. In our healthcare setting, providers simply ask patients to sign informed consent forms for planned surgery. The consent form contains a night shift note "I am ready for surgery and all kinds of anesthesia." Nurses and doctors do not provide adequate information to patients about surgical or medical procedures, the possible benefits and risks of those procedures, and the type of anesthesia the client needs [10]. If it is evident that the patient was not properly informed, nurses must also step in. In this scenario, the nurse may inform the doctor, request additional information from the patient, or postpone a procedure until the patient is able to make decisions on their own [11-13]. Many factors contribute to the inability of patients to obtain adequate consent. One of these factors is language. Most patients admitted to the ward are illiterate and do not understand what is written on the informed consent form. A second major factor is the dominant behavior of clinicians, including physicians and surgeons. They don't want to be questioned by their patients. Patients usually don't want to hear bad news, and doctors tend to stick to the same clever explanations used in clinical practice [9]. In order to ensure that the procedures required for informed consent are carried out appropriately, it is essential for all medical professionals not just nurses to possess sufficient ethical and legal knowledge regarding informed consent, to be sensitive to the subject, and to comprehend their roles and responsibilities [14, 15]. To our knowledge, no such study has been conducted in Khyber Pakhtunkhwa to investigate patient awareness of informed consent in Peshawar public hospitals.

METHODS

A cross-sectional survey design was used to achieve the study objectives from April 2021 to August 2021. All the patients who have gone through surgical procedures in tertiary care hospitals were our study population. The sample size was calculated and estimated with a 95% confidence interval of 70 patients. Patients were selected consecutively from the surgical department of Hayatabad Medical Complex undergoing surgical intervention. Pre-design and validated questionnaires were used for data collection that was checked for validity from the experts and a pilot test for the survey. The study objective and purpose was explained to each patient before consent. After understanding the question, I asked them to tick the options. We stayed with the patients until all questions had been answered and each questionnaire lasted at least 15 minutes for each patient. Inclusion Criteria: All patients undergoing surgical intervention were included in the study, regardless of age or gender. All patients with medical problems who were unwilling to participate in the study were excluded from the study. Data were analyzed using SPSS version 16.0. Frequencies and percentages were calculated for categorical variables and mean and standard deviation were calculated for continuous variables. A chi-square test was applied to check for associations between categorical variables.

RESULTS

In the current study the number of male patients were higher than female participants, and table 1 shows all the demographic characteristics of the study participants (table 1).

Characteristics	Numbers N=70
Gender	
Male	41(58.6)
Female	29(41.4)
Age	
Mean ± SD	35.5 ± 14.8
Marital Status	
Married	49(70)
Unmarried	21(30)
Qualification	
Nil	31(44.3)
Matric	12(17.1)
FA/Fsc	13(18.6)
Graduate	8(11.4)
Master & Above	6(8.6)
Socio Economic Status	
Poor	28(40)
Middle Class	33(47.1)
High Class	9(12.9)

Table 1: Demographic data of the participants

Table 2 shows the level of responses of the participants regarding informed consent, while the frequency and percentage of all the 13 items of the questionnaire were received. The knowledge level regarding variables 2, 4, 6, 8, 10 and 12 of the patients was found to be satisfactory whereas the knowledge level of the patients regarding variables 3, 5, 9 and 11 was found to be low and unsatisfactory(table 2).

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S.No	Variable	Yes (%)	No (%)
1.	Have you been operated?	100(100%)	00(00%)
2.	Did your doctor give you adequate information about your operation?	42(60%)	28(40%)
3.	Were you aware of your surgeon name before operation?	34(47%)	36(53%)
4.	Were you told about the type of surgery?	49(70%)	21(30%)
5.	Did the doctor/nurse explain alternative treatments	21(30%)	49(70%)
6.	Did the doctor/nurse explain the advantages and disadvantages of this surgery?	34(47%)	36(53%)
7.	Did the Doctor/Nurse explain you the importance of this procedure?	48(69%)	22(29%)
8.	Did the doctor/nurse explain the type of anesthesia required for the surgery?	38(53%)	32(47%)
9.	Did the nurse explain the risks and complications associated with anesthesia?	40(59%)	30(41%)
10.	How many hours before surgery did the doctor/nurse tell you not to eat?	34(47%)	36(53%)
11.	Have you been informed by your doctor/nurse about the time of the surgery	59(82%)	11(18%)
12.	Did your Doctor/Nurse inform you that for how long you will be under anesthesia for this operation / Procedure?	28(40%)	42(60%)
13.	Are you satisfied with the information provided by your doctor/nurse before signing the informed consent form?	42(60%)	28(40%)

Table 2: Responses of the participants regarding informed consent

Chi-square test was applied to see an association between two categorical variables. Some of the background variables were found to be associated with the knowledge level of the study participants. For example, marital status and variable-6 (Did your Doctor/Nurse tell you how many hours you will not eat before operation?) was found to be different across the two marital groups (p=0.045 less than the alpha-value). Similarly, a strong association was found between qualification and awareness of surgeon name before the operation (p=0.005 quite less than alpha) Furthermore, an association was found between socioeconomic status and the awareness of the participants regarding duration of anesthesia during operation (p=0.009) (Table 3).

S.No	Row variable	Column variable	p-value
1.	Marital status	Did your Doctor/Nurse tell you how many hours you will not eat before operation?	0.045
2.	Qualification	Were you aware of the surgeon name before operation?	0.005
3.	Qualification	Did the nurse/doctor tell you about the surgery?	0.034
4.	Qualification	Did the doctor/Nurse tell you about any other treatment option?	0.041
5.	Qualification	Did the doctor/nurse explain you the importance of operation?	0.025
6.	Qualification	Did the doctor/Nurse tell you the duration of anesthesia during operation?	0.005
7.	Socioeconomic status	Were you aware of your surgeon name before operation?	0.004
8.	Socioeconomic status	Were you told about the surgery?	0.025
9.	Socioeconomic status	Did the doctor/nurse tell you the pros and cons of the operation?	0.020
10.	Socioeconomic status	Were you told about the duration of anesthesia?	0.009

Table 3: Association of informed consent with selected variables

DISCUSSION

Patients in third world countries like Pakistan come to tertiary care hospitals generally are not aware of the informed consent before any surgical procedure. The current study which addressed almost thirteen questions regarding the informed consent form, the awareness about the informed consent form was found to be low. Regarding the questions 3, 5, 9 and 11the knowledge level of the participants was low. In the rest of the questions, the knowledge level of the participants was comparatively better. The awareness regarding the process of informed consent is low among the patients. Similarly, study was conducted by Bhurgri and Qidwai in the Aga Khan University Hospital; community health center department which shows the same results where lack of awareness among the patients regarding the informed consent was observed. The awareness was found to be only 20% among the patients [16]. Patients' decision making regarding treatment alternatives is totally dependent upon the medical and nursing staff. Whatever the advice comes from these personnel, the patients follow them. In the current study when the patients were asked whether they were told the alternative options, only 30% said that they were told about other treatment options. A similarly study was conducted by O'Dwyer *et al.*, in Ireland where fifty nine percent of the patients understood the alternative treatment option. In this way results of this study can be compared to the international studies [17]. Every patient whether he/she gets treatment from public or private set up, to get information about the surgical or medical procedure or even a medical treatment. In the current study, the information given to them by their doctor or nurse was not adequate. Only thirty eight percent of the patients said they had been informed well about the procedure. A similarly study was conducted by Burns *et al.*, in Adelaide; Australia to know whether the patients get

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adequate information about the surgery. Majority of the patients were not satisfied with the information provided to them before surgery [18]. Patients have the right to be given full information regarding the risks and complications of the surgical procedure. In the current study, only 40% of the patients replied that they were given information about the risks and complications of the surgical procedure before the surgery was performed. Similar study was conducted in Auckland (New Zealand) where the patients felt a need that there must be specific information regarding the surgical procedure as well as the complication should be communicated to the patients by the senior doctors who undertake the surgical procedure [19]. Ethics is considered to be the backbone of medical profession. In advanced countries the patients are fully autonomous in making their decision regarding any medical or surgical procedure. The physicians have to abide by the rules of the institutions. In the current study the results show that either there is no implementation of ethical rules or the nurses and doctors don't bother to apply these in their clinical practices. Only 54% of physicians were aware that the consent process was regulated by law. More than half of the respondents (66%) were aware that a patient rights law had been passed in Croatia. There were no differences between different specialties (p=0.638). Only 38% of physicians were well informed about the consent collection process [20]. Physician and surgeon he provided detailed information to the patient 33% of the time, and the anesthesiologist 16% of the time he provided detailed information to her (he $p \geq 0.05$ for all questions) that contradict the findings of our study. In the current study the response of the question regarding complication whether the patients were informed, majority of the patients were not aware of the complications of the surgical procedure. Only 26% said that were told before the operation regarding the complication of the surgical procedure. A similar study was conducted by Marasini *et al.*, in Nepal to examine knowledge, attitudes, and fears associated with surgical procedures. They were also asked about complications and the importance or necessity of surgery. 60% were aware of weighing risks and benefits. This means that patients in the third world countries are somehow aware of the ethics and ethical rules while going under surgical procedures [21]. Most of our population is not literate and they are not aware of the informed consent. They take it as a necessary component of the surgical procedure. It is the right of the patients that they should know about the surgery, the importance of the surgery and the risks and complication of the surgical procedure. In the current study, patient responses indicate that surgeons and nurses did not bother to give patients all the information about the surgery. A study was conducted among male and female general practitioners in the Hyderabad district to examine perceptions of informed her consent. Surprisingly, awareness was found in 128 people (91.4%), but unfortunately only 64 people (45.7%) were practicing it. The remaining 76 of them (54.3%) did not practice at all. This shows that practitioners are aware of this but do not want to practice it [6]. People with low literacy rates cannot understand what is written in the consent form. However, if subjects engage in such behavior, their peers, relatives, or other close people should be consulted. The language should be concise so that the contents of the consent form can be fully understood.

CONCLUSIONS

The results of the current study show that awareness regarding the informed consent among the patients in public tertiary care hospitals is somehow satisfactory among the patients but it needs to be improved through education and awareness as in several important questions, there was lacking regarding the information given to them. Qualification and socioeconomic level of the participants were found to be associated with the knowledge of the participants.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Chronic Liver Disease: Liver Cirrhosis and Diagnostic Features

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ABSTRACT

Chronic Liver diseases can cause liver cirrhosis, a late stage when the normal liver tissue becomes scar tissue, irreversibly damaging liver. **Objective:** To determine the causes of liver cirrhosis in different patients using computed tomography (CT). **Methods:** It is a cross-sectional study conducted in the Radiology Department of Private Hospital Gujrat, Pakistan from 1, August 2022 to 30, November 2022. Abdominal non-contrast CT of the patients was performed in a supine position. A sample size of 82 patients has been calculated via a convenient sampling technique using a mean approach from previous related articles. Patients with renal stones on CT KUB were excluded. The data was analyzed using SPSS version 26. **Results:** Liver cirrhosis seen to be more common in men 65(79.3%) than women 17(20.7%). Liver cirrhosis is seen to be more common at the age of 30-39years 51(62.2%), followed by 40-49years 29(35.4%), and 18-29years 2(2.4%). Most common cause of liver cirrhosis is hepatitis C 39(47.6%). The most common symptom in liver cirrhosis is loss of appetite 34(41.5%), followed by weight loss 23(28.0%). The most common finding is a change in liver volume 33(40.2%), followed by coarse liver 26(31.7%). **Conclusions:** Liver cirrhosis is seen commonly in men in the age range of 42 to 54 years. The most common symptoms of liver cirrhosis are loss of appetite followed by weight loss. One of the best modalities to rule out chronic liver disease specifically liver cirrhosis is CT scan.

INTRODUCTION

When cirrhosis reaches a late stage, normal liver tissue is replaced with scar tissue, irreversibly damaging the liver. The liver's healthy functioning is maintained by scar tissue [1]. Cell healing comes next, and the end outcome of the repair process is tissue scarring. Cirrhosis in its advanced stages is fatal. Liver dysfunction develops over time as a result of liver cirrhosis [2]. The patient has the end-stage liver disease when the liver eventually starts to decompensate. The liver functions to process the diet and medications and normal function of creating protein get decreased by scarring. And when the time passes, with age the risk of GI bleeding and hepatocellular carcinoma become high risk, which also leads to portal hypertension in some patients. Interferon therapy can help extend enough liver function in instances of cirrhosis when the liver is still adjusting, especially in those brought on by hepatitis C virus infection. Determining each patient's stage of cirrhosis and closely monitoring the course of the illness is therefore crucial [3]. According to estimates, one in 400 Americans has cirrhosis of the liver. The people aged 45 to 54, who make up around 1 in 200 of the population, are most likely to have cirrhosis. Cirrhosis is the sixth leading cause of death in the US for those aged 25 to 64, and it results in over 26,000 fatalities each year [4, 5]. Some common symptoms of cirrhosis are drinking alcohol for a long time, hepatitis virus, diabetes, obesity, and drug injection with sharing needles. Hepatic cirrhosis is not cancer but cirrhosis affects the majority of those with liver cancer. You run a higher chance of developing liver cancer if you have cirrhosis [6]. Hepatitis B and C frequently result

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in cirrhosis, which increases the risk of liver cancer in those who have them. Cirrhosis, which raises the risk of liver cancer, can result from any cause of liver illness [7]. Even if one person is having liver cirrhosis, there is no need to seek emergency medical attention [8]. But as cirrhosis worsens, more scarring develops, and liver function keeps deteriorating. Liver failure may eventually develop into a life-threatening condition [9]. Early signs of cirrhosis include loss of appetite, fatigue or weakness, nausea, fever, and a sudden drop in weight [10, 11]. Simple bleeding and bruises, skin or the whites of your eyes having a yellow tint, rough skin, edema (swelling) in your ankles, foot, and legs, fluid accumulation in your abdomen, urine with a brownish or orange tint, stool with blood in it, confusion, brain fog, memory loss, and personality changes are other more well-known symptoms of cirrhosis that start to appear as liver function declines [12-14]. The Child-Pugh classification is used clinically in the evaluation of the severity in liver cirrhosis for the patients with CLD and its consequences includes radiologic examination heavily. In these individuals, computed tomography (CT) is more frequently employed, and in some limited circumstances, MRI, where indicated. A few authors have looked at using MRI to grade the severity of cirrhosis, but no study has compared CT and MRI for this purpose so far [15, 16]. This study sought to evaluate the use of abdominal CT for assessing the degree of cirrhosis owing to viral hepatitis. During a physical examination, a doctor will look for the following signs and symptoms of cirrhosis and Imaging examinations show the internal anatomy of liver [17, 18]. These tests can also show how much scarring you have, how much fat is in your liver, and how much fluid is in your abdomen. The liver's stiffness and fat content are determined by a specialized ultrasound procedure called transient elastography. An endoscopic retrograde cholangiopancreatography and/or upper endoscopy may be recommended in order to check for bile duct issues as well as varices or bleeding in the esophagus, stomach, or intestines [19-22]. This study determined the role of a CT scan in assessing liver cirrhosis. CT is a non-invasive, three-dimensional modality that is used to assess a patient's liver changes at a very large scale. There will be no superimposition of the organs in this modality and a detailed image will be obtained.

METHODS

It is a cross-sectional study conducted in the Radiology Department of Private Hospital Gujrat, Pakistan. This study was held during the period of four months from 1, August 2022 to 30, November 2022. Data for this research was evaluated on a CT scan machine after informed consent from the patients. Abdominal non-contrast CT of the patients was performed in a supine position. A sample size of 82 patients has been calculated via a convenient sampling technique using a mean approach from previous related articles [15, 22]. This study was conducted on 82 patients with normal and abnormal abdominal CT findings. Patients with renal stones on CT KUB were excluded. The data interpreted and analyzed on SPSS 26.0.

RESULTS

A sample size of 82 patients has been calculated via a convenient sampling technique using a mean approach from previous related articles. This study was conducted on 82 patients with normal and abnormal abdominal CT findings. Patients with renal stones on CT KUB were excluded. Figure 1 shows the age of the patients. The age of the patients is categorized into three groups. Liver cirrhosis is seen to be more common at the age of 30-39 years 51(62.2%), followed by 40-49years 29(35.4%), and 18-29 years 2(2.4%).

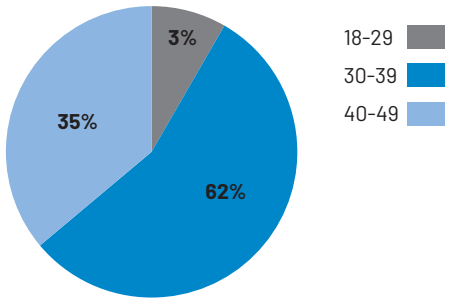

Figure 1: The age of the patients

Figure 2 shows the gender of the patients. Most of the patients diagnosed with liver cirrhosis on CT were male 65(79.3%) while females were only 17(20.7%). Liver cirrhosis is seen to be more common in men than women.

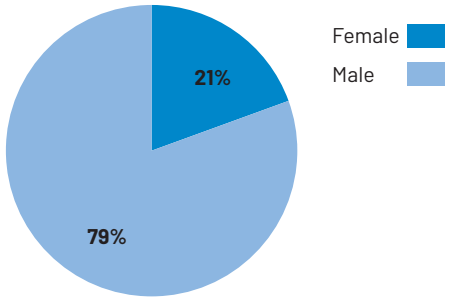

Figure 2: The gender of the patients

Table 1 shows the causes of liver cirrhosis in patients. Most common cause of liver cirrhosis is hepatitis C 39(47.6%), followed by alcoholic liver disease 17(20.7%), hepatitis B 14(17.1%), fatty liver disease 10(12.2%), and other 2(2.4%).

Causes	n (%)
Hepatitis b	14 (17.1%)
Hepatitis c	39 (47.6%)
Alcoholic liver disease	17 (20.7%)
Fatty liver disease	10 (12.2%)
Other	2 (2.4%)
Total	82 (100%)

Table 1: Causes of liver cirrhosis

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Table 2 shows the findings of liver cirrhosis on CT in patients. The most common finding is a change in liver volume 33(40.2%), followed by coarse liver 26(31.7%), heterogeneous liver 13(15.9%), nodular liver surface 7(8.5%), and small PV diameter 3(3.7%).

Findings	n (%)
Coarse liver	26 (31.7%)
Heterogeneous liver	13 (15.9%)
Nodular liver surface	7 (8.5%)
Change in volume of the liver	33 (40.2%)
Small portal vein diameter	3 (3.7%)
Total	82 (100%)

Table 2: Findings of liver cirrhosis on CT

DISCUSSION

Liver dysfunction develops over time as a result of liver cirrhosis. The patient has end-stage liver disease when the liver eventually starts to decompensate. This cross sectional study was conducted to evaluate liver cirrhosis using CT scan, which is a non-invasive, three-dimensional modality causing no superimposition of the organs. The current study found that Liver cirrhosis is most commonly observed in the age group of 30-39 years as 51(62.2%) and majority of them were males such as 65(79.3%). A systematic review in 2014 by Bertolotti *et al*. included population-based and large cohort studies from three continents and studied more than 10 studies in which he formulated that only 1.2% of people under the age of 19 had FL, and the prevalence rose with age to a maximum of 25.6% in age groups beginning at 30 to 40 years. In that review, a multivariate analysis revealed a positive correlation between the prevalence of FL and a number of risk factors, including male gender, which is relates to the results of the current study [23, 24]. The current research reveals that the Liver cirrhosis in patients cause of liver cirrhosis is hepatitis C 39(47.6%), followed by alcoholic liver disease 17(20.7%), hepatitis B 14(17.1%), and fatty liver disease 10(12.2%). A similar study in United States by scagoline *et al.* in 2015 found that 633,323 individuals in United States had cirrhosis about 0.27%. Cirrhosis with diabetes, alcohol abuse, hepatitis C and B was co related , and cirrhosis was the fraction of 53.5% from mainly hepatitis C [25]. A recent seminar is published in 2021 on liver Cirrhosis the relevancy with our current results such as Cirrhosis is extremely common around the world and may result from a variety of factors, including obesity, NAFLD, excessive alcohol intake, hepatitis B or C , and autoimmune disorders [26]. Another common finding in the present study is a CT evaluation shows the change in liver volume and coarse liver due to chronic liver disease which is also supported by the Yeom et al in 2015 said that liver cirrhosis and its early morphological abnormalities such as changes in liver volume and coarse liver can be detected by computed tomography [27].

CONCLUSIONS

Liver cirrhosis is seen to be more common in men at the age of 42 to 54 years. One of the best modalities to rule out chronic liver disease specifically liver cirrhosis is CT scan.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Clinical Frailty Score as a Predictor of Mortality among Patients with COVID-19 Presenting to a Tertiary Care Hospital

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ABSTRACT

The association of Clinical Frailty Scale (CFS) with COVID-19 mortality has got prognostic value in some research work. National Institute for Heath and Care Excellence (NICE) guidelines suggest use of CFS in making important decisions regarding COVID-19 patients' management. **Objective:** To determine the prognostic validity of clinical frailty score with COVID 19 severity among patients presenting to a tertiary care hospital. **Methods:** It was a comparative cross sectional study carried out at COVID-19 dedicated ICU, HDU and ward, Jinnah Hospital Lahore from January 2021 to June 2021. Forty-eight patients, fulfilling the inclusion criteria, were recruited for the study after informed consent. Subjects were categorized as low and high frailty on basis of CFS score and outcome was evaluated. Data were entered and analyzed using SPSS version 24.0. **Results:** Among forty-eight subjects included in study, in subjects with age range of 40 - 60 years, 58.3% were having low CFS score and 50.0% were having high score. In low score group, 54.2% had ward stay with nasal or face mask oxygen as compare to 25.0% in high score group. Forty five percent had HDU/CPAP/ BiPAP in low CFS score group as compare to 41.7% and 33.3% required invasive ventilation with high score. (p=.005). **Conclusion:** COVID-19 patients with high frailty have with increase severity of disease requiring ICU invasive ventilation and increased mortality compared with non-frail patients with COVID-19.

INTRODUCTION

COVID-19 disease is so far the largest pandemic of 21st century affecting major parts of the globe after its origin in 2019 in China. It is highly contagious infection caused by a novel coronavirus [1]. Severe disease presentation is seen in around 20% of patients necessitating hospital admission [2]. Clinical Frailty Score has been suggested as a significant determinant of COVID-19 mortality and specifically addressed in NICE guidelines in risk stratification of Covid patients, although some studies have pointed out its overestimation of COVID-19 prognosis [3-5]. Frailty is directly linked to advancing age with upto 40% of old age patients had high CFS score are in middle to old age [6]. Limited number of studies tried to systematically establish the link between CFS score severity and mortality outcome of COVID-19 but their results were inconclusive results and hence, the concern of CFS score as a prognostic marker for COVID-19 patients remains unaddressed [5, 7]. Frailty is biological syndrome of reduced resistance and reserve to stressors resulting from physiological decline, which predisposes to adverse outcomes. A meta-analysis of multiple (n:34) studies including 18042 patients was carried out by Kastora *et al.*, regarding clinical frailty scale as a point of care prognostic indicator of mortality in COVID-19 patients. The mortality rates were significantly higher in CFS 4–5 patients group as compared to patients with CFS 1–3 (p = 0.0008). Similarly, mortality was even more pronounced in CFS 6–9 patient group when matched to CFS 1–3 category (p<0.0001). Other

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co morbidities like ischemic heart disease, chronic kidney disease and hypertension were independently associated with reduced survival of COVID-19 patients. The rationale of this study was to further define the role of CFS score in COVID-19 patients as a prognostic parameter. This study was also designed to review other patient and disease specific variables of prognostic interest like acute kidney injury, cardiac injury or delirium complicating covid-19 patients' management [8, 9].

METHODS

A Comparative Cross sectional study was conducted from January to June 2021 in COVID – 19 dedicated ICU, HDU and ward of Jinnah hospital Lahore. Subject with age 40 and over of either gender symptomatic patients with PCR positive for COVID-19 with severe infection as Patients with COVID-19 are considered to have severe illness if they have SpO2 <94% on room air at sea level, PaO2/FiO2 <300 mm Hg, a respiratory rate >30 breaths/min, or lung infiltrates >50% were included through a non-probability / consecutive sampling. Patients having recent myocardial infection, those undergone recent surgery and with cytokine syndrome were excluded for the study. A sample size of 48 was calculated from win-pepi ver: 11.14 for estimating an odds ratio with 95% Confidence interval, 90% precision and expected prevalence of the outcome in absence group i.e. low CFS (score 1-3) of 10% and expected odds ratio of 3.09 with high CFS score (6-9) and ratio of 1 in both group using following formula.

na = [Zα/22 / log2(1-RP)]*[1/X+1/Y]

After informed consent and approval from ethical committee, a detailed clinical and demographic history was taken and subjects were categorized as low and high frailty on basis of score and outcome was evaluated. Data were entered and analyzed using SPSS version 24.0. Quantitative data was presented by mean and SD. Categorical variables were presented as frequency and percent. Survivors and non-survivors were also compared for age, gender, CFS and presence of comorbidities and a p value of .05 was taken as statistically significant.

RESULTS

Forty-eight patients were included in study, with 24 in low Clinical Frailty Score (CFS 1-3) (n=24) and 24 in high score (CFS 7-9). With respect to age, among patients of less than 40 years, 29.2% were having low CFS score and 8.3% were having high CFS score. In the age group of 40 - 60 years, 58.3% were having low score and 50% was having high score. Among 60 - 80 years, 12.5% had low score and 41.7% had high score. (p < .035). A major component of male patients (62.5%) was particularly having high CFS score. (p=.383). Smoking was more common in high CFS score groups (41.7%) as compared to 33.3% in low score groups (p=.551). most of the diabetic patients (62.5%) were 37.5% were diabetes in high score. (p=.083). Ischemic heart disease was low (12.5%) in 12.5% in low score group as compare to 50.0% in high score. (p=.005). Similarly, other comorbidities like malignancy (4.2%) and chronic respiratory illness (25%) (p=.009) were more prevalent in high score group. Among low CFS score group, 25.0% were having non-severe disease, 70.8% were having severe disease and 4.2% were critically ill as compared to high score group where 58.3% had severe disease and 41.7% had critical illness. Regarding hospital stay in low CFS score group, 54.2% had ward stay with nasal or face mask oxygen as compared and 45.8% had HDU/CPAP/ BiPAP. A large number of patients (33.3%) needed invasive ventilation within high score category. (p=.005). Seventy five percent of the patients with low CFS score survived as compared to fifty percent in high CFS scores (p=.074) (Table 1).

Variables n=48		Clinical Frailty Scale		
		Low Score (CFS 1-3) (n=24)	High Score (CFS 7-9) (n=24)	p-value
		F (%)	F (%)	
Age of patients	< 40 years	7(29.2)	2(8.3)	.035
	40 - 60 years	14(58.3)	12(50)	
	60 - 80 years	3(12.5)	10(41.7)	
Gender of patients	Male	12(50)	15(62.5)	.383
	Female	12(50)	9(37.7)	
Smoking status	Yes	8(33.3)	10(41.7)	.551
	No	16(66.7)	14(58.3)	
Diabetes	Yes	9(37.5)	15(62.5)	.083
	No	15(62.5)	9(37.5)	
Ischemic heart disease	Yes	3(12.5)	12(50)	.005
	No	21(87.5)	12(50)	
Malignancy	Yes	0(0)	1(4.2)	.312
	No	24(100)	23(95.8)	
Chronic respiratory illness	Yes	0(0)	6(25)	.009
	No	24(100)	18(75)	
COVID severity	Non severe	6(25)	0(0)	.001
	Severe disease	17(70.8)	14(58.3)	
	critical illness	1(4.2)	10(41.7)	
Hospital stays	ICU invasive ventilation	0(0)	8(33.3)	.005
	HDU CPAP or BIPAP	11(45.8)	10(41.7)	
	Ward stay Nasal Cannula or Face mask	13(54.2)	6(25)	
Outcome	Survived	18(75)	12(50)	.074
	Non-Survived	6(25)	12(50)	

Table: 1 Demographics and clinical characteristics of the cohort

Survived and non-survived subjects were also compared for socio-demographic and clinical variables. Among subjects with < 40 years 26.7% were survived while 5.6% were deceased. Mortality was increased to 44.4% in 40 - 60 years age group and peaked to 50% among 60-80 years age group (p < .013). Most of the male patients (77.8%) carried grave prognosis. Survival was also decreased in patients who were smoker as 55.6% of smokers could not survive (p=.045). Most of the diabetic and ischemic heart disease patients were having high mortality rates (72.2% and 50%

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respectively). Preexisting malignancy and chronic respiratory illness accounted for 5.6% and 16.7% of deaths respectively. Among survived group, 16.7% were having non severe disease, 76.7% were having severe disease and 6.7% were critically ill as compare to non-survived group where 5.6% had severe disease and 44.4% had critical illness. (p=.002). Regarding hospital stay, in survived group 53.3% had ward stay with nasal or face mask oxygen as compared to 16.7% with non-survived patients. Forty percent of patients in survived group had HDU/CPAP/BiPAP as compared to 50.0% in non-survived group 33.3% patient were given invasive ventilation among non-survivors. (p=.012). Sixty percent of patients who survived had low CFS score (p=.074)(Table 2).

Variables n=48		Outcome		
		Survived F (%)	Survived F (%)	p-value
Age of patients	< 40 years	8(26.7)	1(5.6)	.013
	40 - 60 years	18(60)	8(44.4)	
	60 - 80 years	4(13.3)	9(50)	
Gender of patients	Male	13(43.3)	14(77.8)	.020
	Female	17(56.7)	4(22.2)	
Smoking status	Yes	8(26.7)	10(55.6)	.045
	No	22(73.3)	8(44.4)	
Diabetes	Yes	11(36.7)	13(72.2)	.014
	No	19(63.3)	5(27.8)	
Ischemic heart disease	Yes	6(20)	9(50)	.030
	No	24(80)	9(50)	
Malignancy	Yes	0(0)	1(5.6)	.192
	No	30(100)	17(94.4)	
Chronic respiratory illness	Yes	3(10)	3(16.7)	.499
	No	27(90)	15(83.3)	
COVID severity	Non severe	5(16.7)	1(5.6)	.002
	Severe disease	23(76.7)	8(44.4)	
	critical illness	2(6.7)	9(50)	
Hospital stays	ICU invasive ventilation	2(6.7)	6(33.3)	.012
	HDU CPAP or BIPAP	12(40)	9(50)	
	Ward stay Nasal Cannula or Face mask	16(53.3)	3(16.7)	
Outcome	Low Score (CFS 1-3)	18(60)	6(33.3)	.074
	High Score (CFS 7 -9)	12(40)	12(66.7)	

Table 2: Patients Characteristics and Their Outcome

DISCUSSION

The coronavirus disease 19 (COVID-19) pandemic has jolted the whole world with its rapid infectivity waves and morbidity, with 312,000 confirmed cases and 44,819 fatalities were recorded in first wave in UK by Yang *et al.* Clinical presentation of COVID-19 varies widely with most of the patients being minimally symptomatic on one end to critically ill patients needing invasive ventilation at the other end. COVID-19 pathogenesis is influenced by multiple risk factors like age, diabetes, obesity and presence of ischemic heart disease [10–12]. In our study, critical illness was much higher (41.7%) in patients with higher clinical frailty scores. Consequently, use of invasive ventilation (33.3%) was much more pronounced in this group. The mortality rate of COVID-19 is different in various parts of the world variable depending on available health resources and demographic circumstances [13]. A high mortality rate was observed in Belgium by Ortiz-Prado *et al.*, population (16.34%) while mortality rates were similar in USA and China population (5.95% and 5.6% respectively) [14]. A higher mortality rate (50%) was observed in critical illness patients included in our study. Mortality rates were high (33.3%) in patients requiring invasive ventilation. Excess mortality rate was similar worldwide in old age group and further rose in the presence of multiple comorbidities [15, 16]. Diabetes and smoking were strongly linked to mortality (72.2% and 55.6% respectively) in our study as well. Frailty is a well-known contributor of disease burden by affecting patient survival and increased expenditure of health resources. Natural aging and preexisting medical conditions aggravate frailty scores thus leading to poorer outcomes [17, 18]. Our study also showed a very high mortality (66.7%) associated with high clinical frailty scores of 7 and above. Thus, high mortality from COVID-19 among older people reported in multiple studies was primarily governed by high CFS scores [19-21]. Limitations of our study were small sample size and single center experience.

CONCLUSIONS

COVID-19 patients with high frailty have increased severity of disease requiring invasive ventilation more frequently and have increased mortality compared with non-frail patients with COVID-19.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Comparison of The Effectiveness Between Preoperative Ibuprofen Verses Placebo on the Success of the Inferior Alveolar Nerve Block in Patients with Irreversible Pulpitis

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ABSTRACT

The inferior alveolar nerve block is the simplest often utilized injection procedure in dentistry, and numerous variations of the traditional nerve block have lately been reported. The dentist or surgeon must consider a variety of aspects before choosing the optimum approach, considering the treatment's effectiveness probability and potential problems. **Objective:** To compare the effectiveness of preoperative ibuprofen verses placebo in enhancing the success of inferior alveolar nerve block in patients with irreversibly inflamed pulp. **Methods:** This randomized control trial was performed for a period of 6 months. Data collection was done after taking approval from hospital ethical committee of Altamash Institute of Dental Medicine. 236 patients were included in this study. The participant was told to assess their level of discomfort after the endodontic treatment. **Results:** From 236 patients, the minimum age was found 18 years and maximum age was 45 years. Males were 123/236 (52.1%) while females were 113/236 (47.9%). Effectiveness of both materials was found in 74/236 (31.4%) patients. Effectiveness of materials was found significant in both groups (Ibuprofen, Placebo) having p-value 0.012**. Conclusions:** The effectiveness of materials was significant in both groups (Ibuprofen, Placebo). Effect modifier like age, duration of pain and gender has no significant association with effectiveness of materials.

INTRODUCTION

In dentistry, inferior alveolar nerve block (IANB) is the greatest often performed technique. In this procedure, a needle is inserted close to the mandibular foramen to place a local anaesthetic substance solution close to the nerve fibre before it enters the foramen. The more utilized mandibular injection approach for providing local anaesthetic for endodontic intervention is the inferior alveolar nerve block (IANB). Nevertheless, effective pulpal anaesthesia is not routinely achieved with the IANB [1]. Clinical investigations conducted in the field of endodontics have indicated that the inferior alveolar nerve block is unsuccessful between 44 and 81 percent of the time. Consequently, it might be beneficial to increase the percentage of IANB procedures that are successful in endodontics [2-5]. Nociceptor peripheral terminals produce receptors that are sensitive to both chemical and

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physical stimulation. Different ion channels are activated as a consequence of this. Prostaglandins are an example of an inflammatory mediator that bind to different protein receptors to cause an inflammatory response. Decreased activation of these receptors is a result of actions that lower the total amount of prostaglandin, such as taking ibuprofen [6]. In patients having symptomatic teeth with irreversible pulpitis and normal periapex, a recent study has reported increased failing probability for local anaesthetics is because of the prostaglandin induced sensitization of peripheral nociceptors [7, 8]. IANB inability in healthful or inflamed pulps has been associated with a number of factors in earlier research. The causes involve the anatomical variations of the pulpitis (such as accessory innervations, bifid IAN, and the anatomic placement of the mandibular canal), anaesthetic agent concentrations, anaesthetic solution volumes, patient anxiousness levels, and a participant's prior experience with productive anaesthesia [9-12]. NSAID reduce concentrations of prostaglandins that promote inflammation by inhibiting the cyclooxygenase enzyme in the mechanism that creates them [13, 14]. Therefore, preoperative administration of (NSAID) to improve IANB success has been suggested as a strategy [15]. This approach has been investigated as a strategy through administration of several NSAIDs. Amongst these strategies, ibuprofen (IBU) is an excellent selection for clinical trials analysis because in patients diagnosed with irreversible pulpitis it has revealed significant improvement in efficacy of IANB. One study revealed that pretreatment with ibuprofen 30minutes before injection inhibited the increased NA channel production observed during inflammation [16]. The purpose of this study was to compare the effectiveness of preoperative medication of placebo versus ibuprofen on the success of inferior alveolar nerve block.

METHODS

The institutional ethical review board's ethical approval was obtained before this investigation was carried out. It was carried out at the Altamash Institute of Dental Medicine's department of operational dentistry. The sampling method used was a non-probability sequential method. By using WHO Sample size calculator; Prevalence of ibuprofen is 41%, Prevalence of placebo is 24%, Power of test is 80%, Level of significance 95%, Therefore the sample size of this study was 118 participants in each group and the total sample size in this respective study was 236 participants. Every participant was asked for verbal informed permission; those who declined were not included in the research. The participation standards included either gender, age 18 to 45, with deep carious or extensively rebuilt posterior teeth, a background of sharp shooting pain lasting 10 to 12 hours, absence of apical radiolucency or ligament widening on radiographs, sensuality to percussion, and having symptomatic irreversible pulpitis as confirmed by prolonged responding to cold test with Green Endo-Ice. (1,1,1,2 tetrafluoroethene). The exclusion criteria were, patients having allergies hypersensitivity, asthma, urticaria or other allergic reactions as confirmed by thorough history taking procedure, pregnant or lactating patients. patients having history of significant medical condition, patient with necrotic pulp tissue as confirmed by cold test with green Endo ice was excluded from the study. The researcher performed single blinding of ibuprofen after receiving informed permission. Ibuprofen and a placebo capsule, both of which looked the same, were synthesized as two capsules each. The placebo capsule was similar to the ibuprofen capsule but did not comprise ibuprofen, containing 400 mg of the medicine each capsule for a total of 800 mg. Avicel PH-105 microcrystalline cellulose NF powder included in the placebo pill. In order to blind the participant, randomization was performed using yellow opaque size 0 capsules with six-digit arbitrary numbers allocated to the ibuprofen and placebo capsules. Ibuprofen 800 mg or a placebo pill was given for 45 minutes before a conventional IAN BLOCK and lengthy buccal injection were given with a 27-gauge needle. Participants were checked for lip numbness every five minutes for 15 minutes after the IAN BLOCK. The teeth were segregated with rubber dams after 15 minutes of injection (60 minutes after the ingestion of ibuprofen or placebo pill), and endodontic access was carried out. Instructions were given to patient to definitively rate any pain that is felt during endodontic procedure access. If the pain felt by the patient, then the procedure will be immediately stopped, and patient was asking to give rating for their discomfort by using a VAS. The successful IAN BLOCK will be defined as the ability of a patients to allowing easy access and instrumentation of the tooth without causing any pain (VAS score of 0) or only mild pain (VAS score of 1-3).The patients who will have severe pain (VAS rating of 7-10) during access into pulp chamber will be receiving additional buccal injection with cartridge of 4% of Articaine in 1:100,000 epinephrine .After 5minutes waiting period for the infiltration to take its effects, the rubber dam will be placed and endodontic access will be performed. Input and analysis of the statistics will be done using SPSS Version 20. The mean standard deviation (SD) for quantitative variables like age and pain endurance will be determined. Quantitative factors like gender and effectiveness will be calculated using frequency and percentages. Pearson (chi square test) will be applied by using p=<0.05 as significant to determine the effectiveness between both groups. Effect

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modifiers (confounders) like age, gender duration of pain will be controlled through stratification.

RESULTS

From 236 patients, males were 123/236 (52.1%) while females were 113/236 (47.9%) (Figure 1).

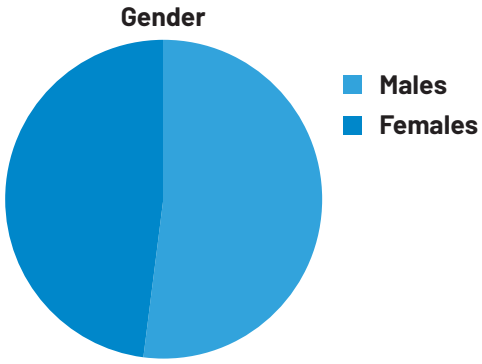

Figure 1: Pie Chart of Gender

The lowest and maximal ages were determined to be 18 and 45 years, respectively, with an average age of 29.48 years and a standard deviation of 7.72 years. The minimum duration of pain was found 10 hours and maximum was 12 hours with mean and standard deviation of duration of pain was 10.89±0.89 hours (Table 1).

Variables	Minimum	Maximum	Mean ± SD
Age (yrs)	18	45	29.48±7.72
Duration of pain (Hours)	10	12	10.89±0.89

Table 1: Descriptive Statistics (n = 236)

Effectiveness of both materials was found in 74/236 (31.4%) patients while it was not effective in 162/236 (68.6%) patients. Effectiveness of material was found significant in both groups (Ibuprofen, Placebo) having p-value 0.012 (Table 2).

Group	Effectiveness of materials		Total	p-value
	Yes	No		
Ibuprofen	46	72	118	0.012
Placebo	28	90	118	
Total	74	162	236	

Table 2: Effectiveness of Materials in Both Groups (Ibuprofen, Placebo) (n = 236)

After stratification, When Chi-square test applied to see the effect of effectiveness of materials in both groups with respect to gender, there was no significant association found between them having p-value greater than 0.005. Effectiveness of materials was not found significantly associate with the duration of pain in both groups having p-value 0.201 and 0.283. After stratification of age, there was no significant association found between effectiveness of material and age because both having p-value greater than 0.05 (Table 3).

Variables	Group	Effectiveness of materials		Total	p-value
		Yes	No		
Male	Ibuprofen	25	36	61	0.074
	Placebo	16	46	62	
Female	Ibuprofen	21	36	57	0.072
	Placebo	12	44	56	
< 12 hours Duration of Pain	Ibuprofen	33	46	79	0.201
	Placebo	19	59	78	
≥ 12 hours Duration of Pain	Ibuprofen	13	26	39	0.283
	Placebo	9	31	40	
< 32 years Age group	Ibuprofen	21	32	53	0.068
	Placebo	12	40	52	
≥ 32 years Age group	Ibuprofen	25	40	65	0.079
	Placebo	16	50	66	

Table 3: Stratification of outcome in both groups with regards to gender (n = 236)

DISCUSSION

In the current research, 236 individuals were chosen after meeting the inclusion and exclusion requirements; their ages ranged from 18 to 45 years, with an average age of 29.48 years and a standard deviation of 7.72 years. The minimum duration of pain was found 10 hours and maximum was 12 hours with mean and standard deviation of duration of pain was 10.89±0.89 hours. There were 52.1% male patients while females were 47.9%. Ianiro *et al.*, [17] examined the effects of ibuprofen and a placebo in a prior trial that included 40 individuals with irreversible pulpitis. Prior to giving local anaesthetic, the drugs were given. The IAN block was deemed effective if the sufferer had no discomfort in response to cold or no pain during endodontic access. The combining of acetaminophen and ibuprofen had a successfulness of 76%, whereas the placebo category had a successfulness of 46%, according to the researchers. In contrast, the effectiveness percentage for the ibuprofen group in the current trial was 38.9%, while the effectiveness percentage for the placebo category was 23.7%. Some therapeutic research discovered that treating individuals with painful irreversible pulpitis just ibuprofen preoperatively did not substantially increase the effectiveness probability of the IAN block [18, 19]. The impact of oral premedication with ibuprofen, ketorolac, or a placebo on the anaesthetic effectiveness of the IAN block was examined by Aggarwal *et al.*, [20]. Ibuprofen capsules in the dosages of 600 mg, 20 mg, or placebo were administered to three sets of 24 patients each, 1 hour before to the delivery of local anaesthetic and 1 hour 15 minutes prior the start of endodontic access. There was no discernible distinction between the 3 groups in terms of the positive outcome for the IAN block, which was 27% with ibuprofen, 39% with ketorolac, and 29% with a placebo (P >.05). The researchers concluded that IAN block effectiveness chances in

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participants with irreversible pulpitis are not substantially increased by preoperative medication of ibuprofen or ketorolac. Oleson *et al.*, [21] examined how preoperative ibuprofen treatment affected the effectiveness of the IAN block in 100 subjects with symptomatic irreversible pulpitis. Following administering local anaesthetic and one-hour prior beginning endodontic access, whether 800 mg of ibuprofen or a placebo was administered. Effectiveness was characterized as no or little discomfort during access or first instrumentation (visual analogue scale recordings). With no statistically meaningful difference (P =.57) between the 2 groups, the effectiveness probability for the IAN block was 41% with ibuprofen and 35% with a placebo. They concluded that in participants with painful irreversible pulpitis, a dosage of 800 mg preoperative ibuprofen did not result in an enhancement in the effectiveness of the IAN block. In individuals with asymptomatic irreversible pulpitis, Parirokh *et al.*, evaluated premedication with 600 mg of ibuprofen, 75 mg of indomethacin, or a placebo 1 hour prior to local anaesthetic [22]. They discovered that pretreatment with the IAN block resulted in considerably greater effectiveness percentages for the indomethacin and ibuprofen groups compared to the placebo category, 62%, 78%, and 32%, correspondingly. Nevertheless, no individual mentioned experiencing unprovoked discomfort. As a consequence, only individuals who arrive at the endodontic appointment without experiencing any kind of sudden discomfort will be affected by the research 's findings.

CONCLUSIONS

The effectiveness of materials was significant in both groups (Ibuprofen, Placebo). Effect modifier like age, duration of pain and gender had no significant association with effectiveness of materials.

Conflicts of Interest

The authors declare no conflict of interest.

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Original Article

Digital Healthcare Technologies in a Comparative Perspective: The Case of Taiwan and Sweden

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ABSTRACT

In discussing the potential benefits and drawbacks of healthcare technologies, questions arise within a social perspective as to what digital healthcare technologies have to offer. **Objective:** To analyze the symbolic interaction framework to understand the implementation of digital healthcare technologies and the resulting interaction with medical doctors. **Methods:** Interviews were conducted with eight doctors; five Taiwanese and three Swedish doctors were participated. Semi-structured interviews were used to collect data from the participants. Interviews were audio-recorded, transcribed, and data analysis guided by symbolic interaction theory. **Results**: Four themes were identified from the interviews: 1) Interpreting digital healthcare technologies, 2) Interaction with digital healthcare technologies, 3) Digital dilemma and (4) Future of digital culture. **Conclusions:** The results reveal many issues regarding digital healthcare technologies, such as: symbolic meanings, purposes of usage, expectations, problems, and possible solutions. To the best of the author's knowledge, this is the first study to explore the perspectives of Taiwanese and Swedish medical doctors towards digital healthcare technologies using symbolic interactionism.

INTRODUCTION

Innovations bring heterogeneous objects that extend the recognized boundaries of society and spark dialogues regarding the benefits and drawbacks. Thus, social change takes place [1]. In 2005, Wired magazine reported that healthcare is the most deteriorated and simultaneously most adaptable area for innovation. However, it needs a minimum of thirty years to standardize scientific findings in the area [2]. New solutions often incorporate new problems, which could be in the realm of ethics, cultural values, politics, beliefs, the economy, etc. Clinical research and practices are rapidly being transformed by the digital healthcare system to help cure rare diseases and lessen "cognition error" [1, 3]. Symbolic interactionism is a theory within sociology and psychology that explores meanings [4]. Symbolic interactionism analyzes the meanings appearing from the corresponding interaction of individuals in a social context with other individuals, and it describes how society is formed and perpetuated [4, 5]. The theory is a systematic approach for empirical research to understand the interpretation process and knowledge generation [6]. Taiwan and Sweden have different histories, cultures, beliefs, and healthcare systems [7, 8]. The healthcare expenditure of Taiwan is 6.3% of GDP, and in Sweden, it is 11.0% [9]. Life expectancy in Taiwan is 80 years, and in Sweden, it is slightly higher at 83 years [9]. During the current pandemic (SARS-COV-2), Taiwan and Sweden employed digital technologies along with the manual approach, which

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worked well without going through a national lockdown [10-13]. Thus, it is important to know the attitude of local doctors towards digital healthcare technologies. Moreover, there are few studies conducted on the attitude of doctors towards digital healthcare technologies [14, 15], yet none has used symbolic interactionism. In this work, the symbolic interaction framework is employed to understand the implementation of digital healthcare technologies and the resulting interaction with medical doctors. Moreover, a symbolic interaction framework helps to understand the digitalization process and its impact on the healthcare system and policies, as well as the issues digitalization brings and their potential solutions.

METHODS

Human-environment interaction is culturally bound; therefore, cross-cultural studies enrich perspectives and refine interdisciplinary rationality [16]. This paper aims to understand and analyze the "meaning" of digital healthcare technologies by exploring the perspectives of Taiwanese and Swedish doctors and their interactions with such. Moreover, this project seeks to generate new knowledge about the good, bad, and irrelevant innovations in digital healthcare technologies. The main focus was on the following questions:

1. How do you describe digital healthcare technologies?
2. How do you describe the digital healthcare technologies in your country?
3. How do you perceive the interaction between patients and digital healthcare technologies in your country?
4. How would you define the situation in your country with satisfaction/frustration?
5. How would you describe the practice of medicine in your country after 10 years?

Medical doctors were identified through Google searches, LinkedIn profiles, and social connections in Taiwan and Sweden with the expectation of diverse views on medicine. Five Taiwanese medical doctors were interviewed in-person in various cities at their office or a nearby café. Three Swedish medical doctors were interviewed via Skype or Zoom. This group possesses diverse backgrounds. For example: one Taiwanese doctor has both clinical and academic involvements; one Taiwanese and one Swedish doctor are full-time academic scholars with research involvements; one Taiwanese and two Swedish participants are currently residents; one Taiwanese participant is a 6th year MD student with internship experiences; and one Taiwanese participant is a dentist. Semi-structured interviews were used to collect data from the participants. Data collection was carried out between October of 2020 and November of 2020. Before each interview, the goal of the study was described and participants were asked for permission to allow the interview to be recorded with assurances of the confidentiality and anonymity regarding interview data. Interviews were later transcribed using Speechnotes (https://speechnotes.co/). The data presented in this article is the republication of a chapter from the author's master's thesis available in the [Swedish University of Agricultural Sciences] repository [https://stud.epsilon.slu.se/17166/][17].

RESULTS

1) Interpreting digital healthcare technologies
2) Interaction with digital healthcare technologies
3) Digital dilemmas
4) The future of digital culture

Theme 1: Interpreting digital healthcare technologies

Taiwanese perspective

The doctors described digital healthcare technologies as new tools that provide them with more weapons to fight against disease and as a convenient and cost-effective way to obtain reports of complex genomic testing. They endorsed digital healthcare technologies, such as electrosurgery, portable devices, and electronic charts. *"The new technologies provide us [with] information about the specific gene related to a disease, but it's a problem if we don't have [the corresponding] treatment."* They further elaborated that artificial intelligence (AI) is also very interesting. *"New technology [has an] effect on our behavior [because] it may replace some of us, but it also induces new working opportunities."* The doctors said that it is interesting to employ AI in diagnosis and treatment, but AI needs a lot of training. AI also helps in surgery by improving the way doctors treat patients.

Swedish perspective

The doctors said that digitalization provides more tools to deal with patients. Software makes communication more effective during the Corona pandemic, which involves multiple applications (apps) through which doctors and therapists can exchange information and prescribe medicine. Digital tools also enable better access to healthcare for individuals living in remote areas or isolation. Moreover, digitalization benefits other issues; for example, it helps doctors know more about a patient's situation, ranging from X-rays to medicine being taken, all of which is stored in a computer data system. Thus, it is easier for doctors to keep track of patients without losing anything. Additionally, doctors described how digitalization can help patients when used in a sensible way. Such can improve healthcare practices in part because Sweden is a large country and, as such, many inhabitants live far from their clinic. One doctor said: *"Traditional pathologists have used the microscope for more*

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than a hundred years, but now we can scan images on the computer, [which] helps in clinical work." Doctors also said that clinical practices have become more digitalized, so we can expect to use more computer applications and AI to help with diagnosis in the future.

Theme 2: Interaction with digital healthcare technologies

Taiwanese perspective

The doctors said they use digital technology to obtain information about new drugs, other new technologies or injections, and even clinical trial data from the academic world. *"When we graduated, some of the technologies did not exist. [Now, I am] learning new knowledge, so I can take my new knowledge and help my patients. It's very easy, [except my] experience using AI [is] not [as] sure." "We can accept AI, such as eyescope, [for] use [in] diagnostics, and [such is] approved by the US-FDA. This kind of AI can be used in a remote area without an ophthalmologist. Since Taiwanese regulations don't update fast, it limits use of AI to remote areas. However, in the USA, they are treating patients online, but in Taiwan, it's face-to-face."* Another doctor said it is an assisting tool and good for doctors to have advanced technology. However, regarding AI, such may or may not replace doctors but is interesting, nevertheless. *"It's like a black box. You don't know [what] it comes up with someday."* The doctors added that X-ray, CT (computerized tomography), and ultrasound are playing an evolving role in breast cancer diagnosis. Moreover, some patients accept the use of new technology, whereas others reject it, such as many elderly patients.

Swedish perspective

A Swedish doctor said: *"I think for some patients, it works very well, [...] especially younger patients who are more digitally savvy. I think they are very content with having digital options for healthcare, like booking an appointment online [and] maybe having a video chat with the doctor through an app. I think for some patients, younger patients especially, it probably works very well, but it doesn't replace real human interaction, especially for the examination. I mean, we can't do any examination of the patient through a digital app, so it doesn't really replace the patient's examination and the interaction like in a clinic or emergency room. And I think it's more difficult probably for older patients."* They said that it is good to have new technologies, because patients don't need to carry files, and all information is stored on the computer. There is a general practitioner healthcare app, where a patient can meet with a doctor easily, which increases availability to meet doctors. Internal medicine specialists can perform a cardiac ultrasound using digital healthcare. In northern Sweden, where a small population inhabits a large area, a few doctors consider it useful but think digital healthcare technologies should be used in a sensible way rather than just to save money.

Theme 3: Digital dilemmas

Taiwanese perspective

The greatest frustration mentioned regards aspects of patient compliance. A treatment's effectiveness is not always easy to see in the real world; many barriers are connected with the patients themselves: their level of trust in general and whether they take their drugs properly, due to time, memory, or fear of adverse side-effects. Regarding new technology and drugs, the doctors spent more time describing why they personally want to use them, what possible adverse side-effects could be, and why they would attempt to persuade patients to adopt these things. They also mentioned that patients in Taiwan often want doctors to provide the newest technology, but popular medical news is not as advanced in their society. They said patients know of new technology, but accessible information can be sparse. Taiwanese often use Facebook, but most knowledge provided there is superficial or commercial, such as a dentist posting a picture of a patient's mouth on the website to display technique. The privacy of the patient should be preserved, however, so such is not good practice. The doctors also noted that there is a defensive strategy in place. Sometimes, medical doctors want to protect themselves and request many tests, because there are too many patients, especially in the clinics. Thus, medical doctors have limited time to diagnose and explain information, as healthcare fees are inexpensive in Taiwan.

Swedish perspective

Doctors mentioned that due to long waiting times and few specialists at the hospital, many doctors need to perform extra administrative work. Swedish doctors see more patients than their counterparts in certain other European countries. In addition to administrative work, they also need to attend courses about how to become leaders. *"I think the Swedish doctor meets [twice] as [many] patients as the German doctor, or even more."* They also said that due to the current pandemic (SARS-COV-2), doctors need to work longer hours because some of their colleagues became sick, and that there is more pressure on the healthcare system in general.

Theme 4: The future of digital culture

Taiwanese perspective

A doctor said that in the next ten years, the National Health Insurance (NHI) will not be changed, because it is important to the Taiwanese from a political perspective, and the government will maintain promises to run the NHI. New technologies will still be acquired, but patient-doctor relationships may not change much. The NHI may be open to AI, but more of this kind of medicine is not possible. Another doctor said that in the next 10 years, technology

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will rule, but health insurance will become worse because fewer people will have access to the NHI due to rising costs. This doctor also mentioned that due to technological evolution, doctors will have more weapons and skills to help treat and communicate with patients. Information on the internet will also expand rapidly. Multiple doctors said that everyone would enjoy advanced medication; patients would easily get CT and MRI; and that medical treatment may develop two extremes: the costs of NHI may rise due to more advanced medical services being rendered. Thus, NHI fees will increase, and medical centers will receive more advanced technology. As the budget increases, field expenditures will increase, and quality of care will improve. If the political situation is stable, and the NHI does not face bankruptcy, people will go to the hospital in a natural order. One doctor said that certain laws need to be improved. Taiwanese law is not progressing well if the system only follows what the USA and Japan have developed. Instead, Taiwan should develop its own system and cooperate more with Singapore. Another participant said that after ten years, there will be widespread AI, many statistical models, and doctors will want AI to contribute in a correct way.

Swedish perspective

Swedish doctors mentioned that there will be more digital development, which will be like normal interaction with a patient, but that digital interaction cannot fully replace doctors or the need to meet in person. Sweden has many geographically isolated rural areas, so digitalization will improve the situation for patients living in small towns by providing access to specialists in various fields like in big cities. Moreover, doctors said that it is hard to predict technological trends, as everything in medicine is evolving. It is not likely that robots are going to fully replace humans or perform surgery without supervision. The pandemic is certainly affecting the system and will likely result in significant change. Swedish general medical practices will be handled over Skype, and laboratory personnel will utilize AI more to help with diagnosis.

DISCUSSION

Mead stated that societies continuously undergo a process of change, and this process brings about new solutions for old problems but also creates novel problems. Symbolic meanings are mainly shared inside the culture by principal actors [18]. Within the confines of this study, medical doctors respond to technologies differently, making sense of their context and expectations according to the framework of symbolic interactionism. Interestingly, certain symbolic meanings of digital healthcare technologies are consistent in both cultures examined, such as how medical doctors from Taiwan and Sweden the technologies as providing them with more "weapons" or "tools." These terms are linked to concepts of efficiency and changes in the organization. However, there is also variation in the interpretation of the different symbolic realities based on their routine interaction or specialty in medicine, which supports the employment of symbolic interactionism. Blumer stated that industrial change is inevitable and is a contributing factor that also triggers societal change [19]. Industrialization is a diverse process and is not necessarily concerned with social change [20]. Therefore, technological development appears differently across various cultures, institutions, and circumstances. The symbolism of digital healthcare technologies prominently shapes the clinical environment. The acquisition of said technologies is often perceived as favorable, allowing doctors to actively engage in clinical settings with novel knowledge and combat disease with extraordinary tools. The fact that AI may replace aspects of their jobs in the future is worrisome, however. Mead stated that frustration occurs when a clash of interests takes place. This may be due to an error in perception of law or meaning from the perspective of the actors. This sense of narrow self-sacrifice leads to larger self-development which advances the interests of others [18]. In this study, doctors discussed problems that focused on the understanding of their meaningful experiences with patients and digital healthcare technologies. They experienced various kinds of frustration working in the current system, especially obtaining the trust of patients by providing them with the pros and cons of the new technologies, which in turn demands a great deal of time, often because of a patient's ignorance regarding the complexity of regulatory issues. Mead stated that our mind can predict possible alternative futures in reference to an object, and the response intentionally selects from various environmental issues, predicting the solution as the most satisfactory to an individual. The future cannot be predicted precisely, but it is relevant to the past and can be wisely controlled [18]. In this study, doctors predicted changes to healthcare may depend on the political situation, legal regulation, and other influences on the medical practice, in addition to the idea that more technologies would be available and adopted by the healthcare system. Technological advancement may require more funding, but the addition of new technologies should provide better facilities for patients as well as easier access to medical consultation and improved diagnosis. In the next ten years, machines will not likely replace medical doctors outright, but the involvement of AI should increase. Doctors from both countries reflected on their diverse views regarding digital healthcare technologies, which is not surprising, because they make sense of the technology in terms of their self-image and context. They shared some

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common meaning regarding the benefits of digital healthcare technologies in terms of assisting their work, providing more weapons to combat diseases, and improving communication with patients. Taiwanese doctors emphasized the NHI and the cost of medical services, whereas Swedish doctors were not as worried about monetary issues. This difference in perspectives is likely due to the support of the local social environment.

CONCLUSIONS

This empirical study explores the perspectives of eight Taiwanese and Swedish medical doctors regarding digital healthcare technologies during the SARS-COV-2 pandemic and considers the meanings of digital healthcare technologies in a communication context. Furthermore, the doctors communicated their perceived problems and cultural limitations within their healthcare system, while also suggesting possible future developments. To the best of the author's knowledge, this is the first study to explore the perspectives of Taiwanese and Swedish medical doctors towards digital healthcare technologies using symbolic interactionism. The main limitation of this study is its small sample size. Future investigations may need to extend cross-cultural collaboration in order to better understand the relationships between digital healthcare technologies and their various environments and institutional changes.

Conflicts of Interest

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Original Article

Effect of Dietary Fiber Enrichment on Physicochemical Attributes of Buffalo Milk Yoghurt

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ABSTRACT

Yogurt has a higher consumer acceptance due to claimed health benefits and sensory characteristics. It provides 40% calcium and 30-45% phosphorus of an adult's requirements in a day, as well as the vital amino acids proline and glycine. It is an excellent source of protein, carbohydrates, calcium and phosphorus, vitamin A, thiamine, riboflavin, niacin, folate, and cobalamin, but low in fiber. Yogurt's health benefits might be enhanced by adding a source of dietary fiber to it. **Objective:** To investigate the impact of fiber addition on physicochemical and nutritional attributes of buffalo milk yogurt during storage. **Method:** Overall Six samples were prepared, one for control, four by adding 10% and 20% puree for each carrot and turnip in 200 mL buffalo milk yoghurt along with one composite sample of carrot and turnip. All six samples were analyzed for moisture, pH, acidity, ash, and protein after 07 and 14 days of ripening. **Results:** A significant decrease in pH was observed during storage of yoghurt. Acidity of yoghurt rise significantly with storage. Lowest acidity level was observed in control sample 0.83. **Conclusion:** Addition of Turnip and carrot puree improved therapeutic potential of yoghurt significantly by modifying its dietary fiber contents.

INTRODUCTION

Fermented foods are integral part of diet all over the world. Yogurt is prepared by culturing the milk with lactic acid bacteria like *Lactobacillus bulgaricus,* and *Streptococcus thermophilus* in controlled conditions. Health claims and sensory attributes appeal to increase consumer acceptability and market of yoghurt [1]. It improves the gastrointestinal digestion and immune system. Yogurt is enriched with proteins, carbohydrate, minerals (calcium and phosphorus), and vitamins (vitamin A, thiamine, riboflavin, niacin, folate, and cobalamin) [2]. Milk is fermented to increase its shelf life and to preserve its nutrients. Milk fermentation increases the nutritional value and enhances bioavailability of nutrients. A variety of products are obtained through milk fermentation which are available in the market [3]. Multiple lactic starter bacteria are used for variety of fermented dairy products. Yogurt protein and its peptides have many physiological impacts as well as nutritional value. The physical texture of yogurt

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can be solid, semi solid or fluid [4]. Yogurt containing solid texture is known as set yogurt while yogurt containing fluid or semi-solid texture is described as stirred yogurt. Set and stirred yogurt texture depends on the production methods and on the physical appearance of the curd [5]. Flavor and texture of food products might be improved by introducing fruits into products. These are considered a good source of bioactive peptides (antioxidant, anti-hypertensive and anti-microbial), vitamins, minerals (Calcium, Magnesium, Phosphorus, Iron and Zinc), organic acids and dietary fiber with low calories. Dietary fiber is classified into water soluble and insoluble compounds. In food products, water insoluble fibers are generally used [6]. During processing, fiber interacts with other dietary components. These interactions may result in changes in nutritional bioavailability, texture, or taste of the product. Carrots are utilized in human cuisine and are high in beta carotene, vitamin C, and tocopherols. It fights cancer and other diet-related human disorders by preventing vitamin A deficiency [7]. Carrots are high in iron and vitamins A and C, but low in protein and fat. Turnip is a root vegetable of the brassica family. It is often utilized in many nations for its leaves, roots, and flower buds [8]. Carrot and Turnip contains phytochemicals and organic acids such as phenolic and malic acids exhibiting antioxidant capacity and some aromatic compounds which increase the immunity of body. It also helps to reduce the constipation, heart burn, gas, and bulging issues [9]. Since vegetables like carrots and turnips are high in dietary fiber and yoghurt is low in this aspect, introducing these vegetables to yoghurt boosts its texture, structure, and nutritional value. The aim of present study was to produce yogurt with the addition of carrot and turnip to evaluate the effect of these selected vegetables on physicochemical characteristics of fermented milk products.

METHODS

The study was aimed to evaluate the physicochemical properties of dietary fiber enriched (carrot and turnip) buffalo milk yogurt at the interval of 0,7 and 14 days of storage at 4°C.

Procurement of milk and other raw materials

Healthy and good quality carrots and turnips were purchased from local market of Sargodha. Buffalo milk was purchased from Hafiz dairy farm of Sargodha.

Preparation of carrot and turnip puree

Fresh carrots and turnips were washed, peeled, and mashed. The homogenized vegetables were pasteurized at 90℃ for 15 mins. The vegetable puree was cooled and refrigerated at 4℃ for further uses.

Manufacturing of yoghurt

Standardized buffalo milk was pasteurized and cooled to 45℃. After this, all milk samples were inoculated with 3% starter culture of *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. The carrot and turnip purees were added into five samples except control according. The fermentation process was carried out at 40°C, until a pH of 4.6 was obtained. Subsequently, all the samples were stored at 4°C for the analysis.

Treatments	Fiber (%)	Milk (mL)
T0	Nil	200
T1(CP)	10	200
T2(TP)	10	200
T3(CP)	20	200
T4(TP)	20	200
T5(CP+TP)	10 :10	200

Table 1: Turnip and carrot puree concentration
CP = Carrot puree, TP= Turnip puree, T0= Control

Proximate analysis of vegetable purees

Vegetable purees of carrot and turnip were analyzed for moisture, ash, total soluble solids, pH and titratable acidity according to AOAC method (1991)[10].

Functional analysis fiber enriched buffalo yoghurt

Moisture, pH, acidity, and ash of fiber enriched buffalo milk yoghurt was carried out at 0, 7 and 14 days of storage at 4°C following the AOAC method (1991)[10].

Statistical analysis

The data on various parameters were analyzed by using SPSS-20 (software) mean, standard deviation, ranges, correlation, and percentages.

RESULTS

The purpose of this research was to find the effect of dietary fiber on physico-chemical attributes of buffalo milk yogurt. Manufacturing of yogurt was done by using starter culture and addition of carrot and turnip puree. Purees and starter culture was added after the process of pasteurization at inoculation temperature and subjected to inoculation at 45℃. After 6 hours of incubation yogurt were stored in refrigerator temperature at4℃. Physico-chemical and sensory attributes of yogurt was analyzed at 0, 7th and 14th day of storage. Carrot and turnip puree was analyzed for moisture, pH, total solids, titratable acidity and ash contents. The results indicates that carrot puree contains higher moisture contents (86%) as compared to turnip puree (52%). Carrot puree exhibited higher titratable acidity (0.243) and lower pH (4.55) relative to turnip titratable acidity (0.01) and pH (6.09). Higher Ash contents were observed in carrot puree (1.1%) as compared to turnip (0.9%). Fresh buffalo milk from healthy animal was standardized to 3.5% fat for yoghurt preparation. Pasteurized milk was used for the purpose. pH, SNF and protein of buffalo milk was recorded 6.6, 9 and 3.5% respectively. The milk analysis indicates 86.5% moisture,

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3.5% fat, 9% SNF and 0.17% acidity in milk sample. The yogurt was stored at 4℃ for 14 days and analyzed at 0,7,14 days of storage for physico-chemical composition. After, yogurt manufacturing, following analyses were performed. The primary determining metric in yoghurt quality is pH. Starter cultures release lactic acid, which is the primary reason for the decline in pH. The pH of yoghurt is reduced throughout the production process owing to the conversion of lactose into lactic acid [11]. The results showed that effect of days during storage and treatment was significant while the effect of interactions treatment and days were found to be non-significant on pH value of yogurt. The results indicate that pH was decreased with the addition of carrot and turnip puree as presented in table 2. The data regarding the pH showed that maximum pH was observed in control treatment with mean value 4.60. The minimum pH was seen in T4 treatment (20% turnip puree) with mean value of 4.38. The effect of storage period on pH of yogurt indicated that pH was decreased with increase in storage. pH of the control yogurt was 4.60 which deceases from 4.49 to 4.39 during 7 and 14 days of storage. The results were highly significant with the aspects of decreasing pH during storage. pH values were decreased by increasing the concentration of fiber from carrot and turnip puree in yogurt (Table 2).

Samples	0 day	7th day	14th day	Mean
T0	4.60±0.11	4.44±0.10	4.35±0.11	4.55
T1	4.45±0.10	4.25±0.11	4.23±0.11	4.45
T2	4.44±0.10	4.23±0.10	4.21±0.11	4.44
T3	4.35±0.10	4.30±0.10	4.18±0.11	4.40
T4	4.34±0.12	4.19±0.10	4.17±0.12	4.38
T5	4.39±0.10	4.24±0.11	4.23±0.11	4.42
Mean	4.49	4.44	4.39	

Table 2: Effect of treatment and storage days on pH content of yogurt

Moisture content had a significant effect on quality of yogurt enriched by carrot and turnip puree. The effect of the treatment was significant, and storage had non-significant effect on moisture content of yogurt. Results showed that the combine effect of treatment and storage have non-significant impact on moisture content of yogurt. The result of mean indicates that moisture content decrease with the addition of carrot and turnip puree. The maximum moisture content was observed in control sample having mean value 83%. The minimum moisture content was observed in T4 (20% turnip puree) sample having mean value of 79.33%. The effect of storage period on the moisture contents of yogurt demonstrated that the moisture content was decreased with the increase of time. The moisture content was decreased from 83% to 79.81% during a storage period of 14 days. The results obtained from statistical analysis for acidity of yogurt with the enrichment of carrot and turnip showed that treatment had significant effect and storage days also effect significantly on acidity of yogurt. However, the effect of treatment and storage had non-significant impact for acidity of yogurt. The results from mean value of the acidity of the yogurt are given in the table 3. The effect of carrot and turnip added in yogurt showed that highest acidity was observed in T3 treatment (20% carrot puree) with mean value 1.20%. The lowest acidity was observed in control yogurt with mean value 0.88% Moreover, results indicate that acidity was increased, and results are significant as shown in the table 3. The effect of storage period on acidity of yogurt indicated that the acidity was increased from 1.02% to 1.03% during storage period of 14 days. Acidity slightly increases from 0 day to 14 days. While mean values indicate that acidity increased in yogurt from 0.83% to1.17 %. The minimum change was observed in acidity of control yogurt with mean value of 0.88%. But there is no significant increase in acidity of yogurt (Table 3).

Yogurt Samples	0 day	7th day	14th day	Mean
T0	0.83±0.1	0.88±0.1	0.94±0.1	0.88
T1	1±0.1	1.05±0.08	1.11±0.1	1.05
T2	0.99±0.1	1.04±0.1	1.10±0.1	1.04
T3	1.15±0.07	1.20±0.1	1.25±0.1	1.20
T4	1.10±0.1	1.15±0.1	1.21±0.09	1.15
T5	1.05±0.1	1.11±0.1	1.17±0.1	1.11
Mean	1.02	1.07	1.13	

Table 3: Effect of treatment and storage days on acidity content of yogurt

The statistical analysis for Ash indicates that the yogurt enriched with carrot and turnip purees had significant effect on treatment. The mean value for the ash content in yogurt with carrot and turnip puree was given in the table 4.

Yogurt Samples	0 day	7th day	14th day	Mean
T0	0.78±0.05	0.78±0.04	0.79±0.04	0.78
T1	2.35±0.04	2.35±0.03	2.36±0.04	2.35
T2	3.78±0.04	3.79±0.04	3.78±0.04	3.78
T3	2.15±0.04	2.16±0.04	2.15±0.04	2.15
T4	3.58±0.30	3.59±0.05	3.58±0.04	3.58
T5	2.86±0.03	2.85±0.04	2.86±0.04	2.86
Mean	2.61	2.6	2.61	

Table 4: Effect of treatment and storage days on Ash contents of yogurt

The effect of these addition showed that the maximum ash content was detected in T2 treatment (20% carrot puree) with mean value of 3.78%. The minimum ash content was detected in T0 treatment with the mean value of 0.78%. The detail of result showed that the ash content was significantly increase by the addition of carrot and turnip puree. During a storage period there was non-significant change in mean values of ash content of yogurt. The overall mean value at 0 and 14 days of storage was 2.61%. However,

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in treatment maximum mean value was observed in T2 treatment with mean value of 3.78% (Figure 1).

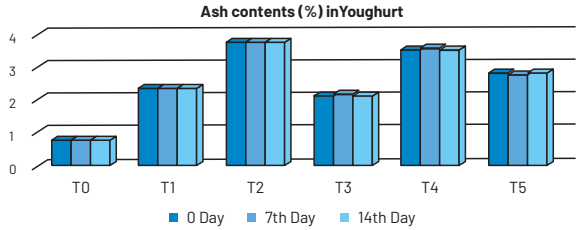

Figure 1: Effect of Different Treatments and storage on Ash Content of Yogurt

DISCUSSION

The most essential aspect in determining the quality of yoghurt is its pH. The starting culture stimulates lactic acid synthesis. The conversion of lactic acid by lactose, already present in milk, is the primary reason of pH reductions in yoghurt. The current research's findings for pH fall with storage are consistent with Yildiz's and Ozcan work who studied the effect of pH in skim milk yogurt. He noted the decrease in pH was during storages [8]. Leclercq-Perlat *et al.*, worked on the effect of the pH of aloe Vera fortified yogurt at refrigeration storage. The same decline in pH was recorded during storage [12]. In food stuff, water is present in free or bound forms. Water is bound in milk protein and therefore not easily accessible for chemical or biological processes, while it is held loosely in fat by attraction forces [13]. Within a yoghurt curd, free moisture transports a solute. During yoghurt storage, free water is available to exchange or release additional bound water for reactions [14]. The moisture content of buffalo milk yoghurt decreased somewhat but not significantly during storage in all treatments. Moisture variations have an impact on the shelf life and textural qualities of yoghurt. The moisture content results are consistent with the findings of Sharma *et al.*, who observed a reduction in moisture content along with storge of yoghurt [15]. The acidity of yoghurt indicates the formation of lactic acid by lactic acid bacteria. Lactic acid production is affected by microbial load in the form of starter culture as well as the product's manufacturing conditions like pH, acidity, processing technology, heat treatment time, temperature combinations and storage time and temperature. The development of acid taste in yoghurt is caused by the production of lactic acid. Acidity is vital in the formation of the structure of yoghurt; as acidity grows, acid taste and yoghurt structure decline [16]. Lactic acid formation in yoghurt represents the acidity value; as acidity increases, the quality of yoghurt in Syneresis deteriorates and the texture of the yoghurt alters. Current study indicates the decrease in pH and increase in acidity along with storage period. They evaluated the influence of acidity in flavored yoghurt during storage. Jayamanne and Adams observed the similar results [17]. Quelal-Vásconez *et al.*, reported that acidity increased due to growth of lactic acid bacteria during storage as they observed similar results in yogurt prepared from different vegetables include carrot, pumpkin and green pea [18]. As it is established that a deficiency of fiber in the diet may induce a variety of nutrition-related disorders, the European Food Safety Authority (EFSA) has been obliged to prescribe a daily fiber intake of 25 g on average [19]. According to several research, the rheological characteristics of yoghurt are changed differently depending on the kind of fiber source. Fibers' roles in boosting water holding capacity, stabilizing high fat yoghurt, enhancing viscosity characteristics, and gel forming ability enable to produce fiber-enriched yoghurt with enhanced texture and decreased syneresis. When compared to the control full-fat yoghurt, the addition of inulin to skimmed yoghurt led to the production of yoghurt with comparable textural features [20].

CONCLUSION

Manufacturers are keen on employing natural substances in the production of dairy products. Taking this into consideration, one of the purposes of this research was to establish the kind and number of fibers that may be suggested for the industrial manufacturing of yoghurt to enhance the final product's quality. It was concluded that addition of fiber improved the nutritional profile, ash contents and overall acceptability of buffalo milk yoghurt.

Conflicts of Interest

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Original Article

Exploring the Metabolic Syndrome Trend in Young Adults in COVID-19 Era

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ABSTRACT

COVID-19 pandemic imposed sudden changes in lifestyle with consequent altered metabolic status. Metabolic Syndrome is described as an altered metabolic profile of insulin resistance, dyslipidemia, hypertension, and central obesity which raises type 2 Diabetes Mellitus and cardiovascular disease danger at an early age. **Objective:** To analyze COVID-19 era status of obesity, hypertension, impaired glucose tolerance, dyslipidemia and metabolic syndrome in young adults. **Methods:** This was a cross-sectional study. 245 university students of either gender with ages 19–25 years were included. The lipid profile, fasting blood sugar and serum insulin was performed by kit method. The insulin resistance was determined by calculating the ratio of fasting glucose to insulin. SPSS version number 24.0 was used to analyze the data. **Results:** Metabolic syndrome's prevalence in overweight and obese subjects was found to be 36%. The most prevalent risk factor of Metabolic syndrome was raised blood pressure (60%) followed by insulin resistance (57%) and dyslipidemia (40%). The positive coefficient correlations were found for all Metabolic syndrome risk factors in general except HDL. The multivariate regression analysis evidenced that the BMI and WHR were the significant predictors of Metabolic syndrome risk factors. **Conclusion:** The COVID-19 restrictions consequences call for an urgency to effectively address the metabolic syndrome and related problems, especially among young individuals.

INTRODUCTION

The metabolic disorders have been reported to account for death in a greater than half of the population suffering from COVID-19 [1]. Metabolic syndrome (MetS) is associated with obesity, deranged lipid metabolism, elevated blood pressure, hyperglycemia and insulin resistance. A study reported a greater than 35% increase in MetS in US adult population during covid era [2]. Metabolic syndrome is more prevalent in adults as compared to young adults. In the US, in adults of age 18 years and above, metabolic syndrome prevalence was found to rise from 25.3% to 34.2% during the year 1999 to 2012. This metabolic syndrome prevalence almost doubled in the United States as declared in NHANES data [3]. The criteria of the International Diabetes Federation for Metabolic Syndrome were fulfilled by 6.1% of the undergraduate students in urban areas of Pakistan [4]. Obesity and overweight among young adults in developing countries are alarmingly high ranging from 2.3 to 12 %, and 28.8 % respectively [5]. World obesity foundation has published a report on childhood obesity that ranked Pakistan at position number 9 and predicted that by the end of 2030, more than one million school-aged children and youth will suffer from obesity. Obesity has more severe adverse effects on the younger population than the older ones [6]. Youth aged between 15 and 33 years contributes around 63% of the population of Pakistan [7]. The implications of COVID-19 constraints

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might step up the pre-existing prevalence of overweight or obesity in young adults. The pathologies associated with metabolic syndrome are correlated with obesity and high-calorie intake. The risk of developing metabolic syndrome is already on the rise in university students as its components are being reported at an early age [8]. The COVID-19 lockdown has negatively affected physical activity and diet quality, and a greater frequency of overeating specifically among university students**.** This could further predispose university students to obesity and other metabolic risk factors [9]. Few basic lifestyle changes and an early diagnosis and treatment are key to stop the symptoms from progressing in metabolic syndrome. These interventions will decrease the global load of type II diabetes, cardiovascular diseases and mortality linked with MetS [10]. There is a lack of data assessing the burden of MetS in general as well as in the overweight and obese young adult individuals in Pakistan. There is an urgent need to update data and information on the frequency and prevalence of metabolic disorder related to health impacts of COVID-19 and to assess the post-pandemic MetS among young adults as they remain a scarcely studied group in Pakistan. The study objectives are to evaluate the metabolic syndrome, its components, frequency and association with BMI in young adults (19-25 years).

METHODS

This study was conducted at Dow University of Health Sciences after approval from IRB-2364/DUHS/Approval/2022/739. It was a cross-sectional study. Sample size of 245 was calculated by Open Epi software for public health, (version 3.01). The following assumptions were made while calculating the sample size. MetS prevalence of 6.1% among young adults with 3% margin of error and 95% confidence level [11]. The students of either gender of ages between 19 to 25 years with BMI >23 kg/m2 as per the Asian criteria consented for the study were included through non-probability consecutive sampling [12]. A structured questionnaire was administered to extract the demographic details of the participants including age, gender, socioeconomic and family history. The physical measurements were taken and recorded by a trained nurse. The height was recorded on Seca Rod 220 stadiometer in centimeters at the exact point to the nearest mm. The weight was measured by a TANITA weighing scale with one foot of the participant on each side of the scale. The waist was measured by Gulick tape measure at the end of exhalation over light clothing; with relaxed arms at both sides; at the top of the iliac crest (hip bone) and midpoint between the lower margin of the last palpable rib. The maximum circumference over the buttocks was taken to measure the hip circumference. Blood pressure was recorded using an automated blood pressure monitor Benemed (Hong Kong) Industry Co., Limited Model NO.: BP-05). While measuring B.P, it was made sure that cuffs level was same as the level of heart. The systolic and diastolic blood pressure readings were noted after switching it on. The next day participants were called after a minimum 12-h fast, 5 cc blood samples were drawn by a phlebotomist after taking all aseptic measures. The blood samples were collected in the gel-barrier tube and transported for biochemical analysis within 4 hours. The samples were centrifuged. An enzymatic colorimetric (GOD-PAP) method was used to determine the serum glucose levels. The standard enzymatic colorimetric method determined the serum triglycerides, serum LDL-cholesterol, serum HDL-cholesterol, and serum total cholesterol. The serum insulin was evaluated by using ELISA according to the given directions by (R & D Systems, Inc., USA). Insulin sensitivity was computed as a glucose-to-insulin ratio. New International Diabetes Federation criteria were used to define MetS in this study [13]. SPSS version 24.0 (by IBM Corp, Armonk, NY) was used to assess the data. The quantitative variables were evaluated for normality and reported as mean ± SD. One-factor ANOVA and the Bonferroni post hoc test were used for comparing means of continuous variables by categories of BMI according to Asian criteria. The Pearson correlation coefficients used between BMI and WHR for each metabolic component were calculated. The multivariate linear regression analyses were performed to find out the influence of BMI and WHR on each metabolic component in all participants.

RESULTS

The mean values of physical, clinical, and biochemical variables of young adults are presented in Table 1. The BMI and waist-hip ratio was 28.15 kg/m2 and 0.84 respectively. The systolic BP was 120.4 mmHg and diastolic BP was 81.3 mmHg. The serum concentrations of fasting glucose (FBG), insulin, cholesterol and triacylglycerol (TGs) were 89.3 g/dL, 21.70 mU/L, 174.6 mg/dL and 80.8 mg/dL respectively. The LDL and HDL level was 98.43 mg/dL and 45.05 mg/dL.

Variables	Mean ± SD
Physical variables	
Height (meters)	1.61 ± 0.14
Weight (kg)	75.36 ± 22.14
BMI (kg/m2)	28.15 ± 4.94
Hip (cm)	100.01 ± 12.18
Waist (cm)	84.95 ± 12.32
Waist hip ratio	0.84 ± 0.06

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Clinical variables	
Systolic blood pressure (mmHg)	120.42 ± 9.68
Diastolic blood pressure (mmHg)	81.36 ± 11.14
Biochemical variables	
Fasting blood glucose (mg/dL)	89.31 ± 2.52
Triacylglycerol (mg/dL)	80.79 ± 23.78
LDL (mg/dL)	98.43 ± 9.13
HDL (mg/dL)	45.05 ± 9.24
Total cholesterol (mg/dL)	174.68 ± 37.73
Insulin (mU/L)	21.70 ± 13.13

Table 1: Descriptive analysis of physical, clinical and biochemical variables of young adults (n=245)

Table 2 presents the mean BMI of overweight patients was higher than the participants with normal weight (p≤0.05). The obese subjects reported higher BMI than the normal as well as overweight subjects (p≤0.05). However, the waist-hip ratio was only notably high in obese than the normal weight subjects. The overweight subjects had higher average systolic and diastolic blood pressure when compared to normal (p≤0.05) while the obese subjects showed higher values than normal and overweight subjects as well (p≤0.05) The serum FBG and insulin concentrations were increased in the overweight (p≤0.05) but the obese subjects showed higher concentrations than the overweight in comparison to normal-weight subjects (p≤0.001). Accordingly, the serum total cholesterol, LDL, and HDL concentrations were raised in the overweight and obese than in the normal weight subjects (p≤0.05). The Serum TGs conc was more in the overweight than the normal (p≤0.05) while in the obese it was higher than the overweight subjects as well (p≤0.05).

Variables	Normal weight (BMI 18.5-22.9 kg/m2) n=85	Overweight (BMI 23-24.9 kg/m2) n=80	Pre-obese/Obese (BMI≥25 kg/m2) n=80
Physical variables			
Height (meters)	1.55 ± 0.02	1.60 ± 0.02	1.67$^{**¥}$ ± 0.02
Weight (kg)	57.5 ± 2.1	72.9* ± 0.02	95.6* ± 3.5
BMI (kg/m2)	22.98 ± 0.28	28.1** ± 0.22	33.43$^{£}$ ± 0.61
Waist hip ratio	0.8 ± 0.009	0.81 ± 0.008	0.9* ± 0.006
Clinical variables			
Systolic blood pressure (mm of Hg)	114.0 ± 1.7	122.0**§ ± 1.18	125$^{**¥}$ ± 1.35
Diastolic blood pressure (mm of Hg)	77.5 ± 1.6	2.8* ± 1.2	85.0§ ± 1.1
Biochemical variables			
Fasting blood glucose (mg/dL)	87.94 ± 0.44	89.22* ± 0.39	90.77$^{**¥}$ ± 0.29
Triacylglycerol (mg/dL)	48.14 ± 0.60	94.62** ± 0.97	99.60£ ± 0.85
LDL (mg/dL)	88.94 ± 0.40	98.48** ± 0.40	100.88** ± 0.48
HDL (mg/dL)	56.31 ± 1.00	40.00** ± 0.23	198.74** ± 3.03
Total cholesterol (mg/dL)	128.82 ± 3.84	196.48** ± 2.76	198.74** ± 3.03
Insulin (mU/L)	10.07 ± 0.13	15.76** ± 0.39	39.28£ ± 0.89

Table 2: Comparison of physical, clinical and biochemical variables of young adults by BMI category (n245)
Values are given in mean ± S.E.M; *p<0.05; ** p<0.001 when compared with normal weight subjects; $^{¥}$p<0.05 when compared with overweight subjects; §p<0.05, $^{£}$ p<0.001 when compared with overweight and normal weight subjects

Correlations between BMI and waist-to-hip ratio & MetS risk factors in young adults are shown in Table 3. Notable (except HDL) correlations were found in all MetS risk factors in general. Significant and positive correlations for serum FBG, TGs, and insulin with BMI and WHR were observed in obese subjects in comparison to normal-weight subjects. The serum FBG and TGs showed higher correlation coefficients with WHR than BMI in overweight/obese subjects.

Metabolic syndrome risk factors		Pearson's correlation (r)		
		All subjects (n245)	Normal weight (n80)	Overweight/ pre-obese/Obese (n160)
Systolic blood pressure (mmHg)	BMI(kg/m2)	0.46**	0.31	0.11
	WHR	0.18	-0.12	0.11
Diastolic blood pressure (mmHg)	BMI(kg/m2)	0.25**	-0.09	0.20
	WHR	0.34**	0.36*	0.26*
Fasting blood glucose (mg/dL)	BMI(kg/m2)	0.42**	0.08	0.26*
	WHR	0.39**	0.21	0.36**
Triacylglycerol (mg/dL)	BMI(kg/m2)	0.77**	0.21	0.34*
	WHR	0.37**	-0.16	0.42**
HDL (mg/dL)	BMI(kg/m2)	-0.67**	-0.002	-0.23
	WHR	-0.29**	0.03	-0.07
Insulin (mU/L)	BMI(kg/m2)	0.80**	0.02	0.67**
	WHR	0.57**	-0.02	0.60**

Table 3: Correlations between BMI, waist hip ratio (WHR) and metabolic syndrome risk factors in young adults (n245)
*p<0.05; ** p<0.001; WHR= Waist hip ratio

Figure 1 shows a 36% metabolic syndrome (MetS) prevalence in the overweight and obese subjects. The most marked risk factor of MetS was raised blood pressure (60%) followed by insulin resistance (57%) and dyslipidemia (40%).

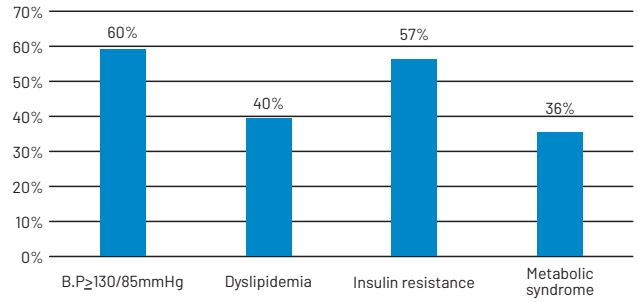

Figure 1: Prevalence of metabolic syndrome and its risk factors in overweight/obese young adults

Multivariate regression analysis showed that the BMI and WHR were the significant predictors of MetS risk factors (Table 4). The main effect model including BMI and WHR explained a high percentage of the variability of insulin 67.9%; TGs 59.3%; HDL 45.2 %; followed by FBG 22.2 %; systolic BP 21.7 % and diastolic BP 12.6 %. In this model, BMI

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was associated with systolic BP and WHR with diastolic BP ($p<0.001$), while serum insulin and FBG were associated with BMI and WHR ($p<0.05$). In addition, BMI was positively linked with TGs ($p<0.001$), and inversely linked with HDL ($p<0.001$).

Independent variable	Metabolic syndrome risk factors					
	Systolic BP (mmHg) β (95% CI)	Diastolic BP (mmHg) β (95% CI)	Fasting blood glucose (mg/dL) β (95% CI)	Triacylglycerol (mg/dL) β (95% CI)	HDL (mg/dL) β (95% CI)	Insulin (mU/L) β (95% CI)
Intercept	101.9** (78.20-125.65)	29.75* (0.90-58.59)	76.25** (70.08-82.42)	-22.20 (-64.23-19.82)	75.27** (56.32-94.22)	-71.35** (-91.97-50.74)
BMI (kg/m2)	0.97** (0.57-1.36)	0.25 (-0.22-0.73)	0.15** (0.05-0.25)	3.71** (3.02-4.40)	-1.30** (-1.61--0.98)	1.82** (1.48-2.16)
Waist hip ratio	-10.43 (-42.6-21.80)	52.89** (13.62-92.01)	10.47* (2.08-18.86)	-1.81 (-58.93-55.30)	7.59 (-18.16-33.34)	49.54** (21.52-77.55)
Adjusted R2	0.217	0.126	0.222	0.593	0.452	0.679

Table 4: Association of BMI, Waist hip ratio and metabolic syndrome risk factors in multivariate analysis in young adults (n245)

*p<0.05; ** p<0.001; All values are expressed as regression coefficient β(95% confidence interval)

DISCUSSION

The metabolic syndrome frequency in the present cross-sectional study conducted in young adults in the COVID-19 era is 36%. The most frequent MetS component is blood pressure ≥130/85 mmHg being 60% followed by 57% insulin resistance and 40% dyslipidemia. The metabolic syndrome components are found to be notably high in obese/overweight participants when compared to normal-weight subjects. This study shows BMI and WHR are significantly correlated with each MetS component in all young adults but the correlations are changed in overweight/obese participants for plasma concentrations of fasting blood sugar, triglycerides, and insulin. The plasma FBS, TGs, and insulin levels were better correlated with BMI and WHR in overweight or obese whereas this correlation was not present in normal-weight students. These results suggest that the risk of metabolic syndrome increases with increasing BMI in young adults which was in agreement with Liu *et al.*, 2021 in a study conducted on young adults in China [14]. The COVID-19 pandemic restrictions have further reduced physical activity and overeating in young adults with pre-existing overweight and obesity [15]. In addition, a stronger correlation between WHR and the MetS components was observed than BMI which was in line with many studies [16,17]. High visceral adipose tissue in obese young adults lowers insulin sensitivity than in those with lower amount [18]. Therefore, waist circumference is an independent predictor of blood pressure, lipid levels and insulin resistance. The multivariate regression analysis of the present study shows that the BMI and WHR were positively associated with increased blood pressure, insulin levels, and hyperglycemia. The researchers at Johns Hopkins documented that obesity in young adults might increase the COVID-19 complications in this age group [19]. The metabolic dysfunction and obesity are characterized by upregulation of IL-6 and TNF-alpha that led to a pro-inflammatory state resulting in insulin signaling dysfunction and may progress to insulin resistance. The SARS-CoV-2 infection further deteriorates insulin resistance which can lead to new-onset diabetes thus adding to the burden [20]. Furthermore, BMI is also associated with increased levels of fasting triglycerides and reduced HDL in the present study. Azizi *et al.*, study have linked the modified plasma fasting TGs and HDL and reduced physical activity in overweight and obese [21]. The COVID-19 restrictions have severely reduced physical activity for all age groups which tends to accelerate BMI gain [22, 23].

CONCLUSIONS

COVID-19 restrictions consequences call for an urgency to combat the problem and complications of metabolic syndrome, especially in young adults. Alleviation strategies may utilize ways to promote physical activity in young adults along with healthy dietary habits and interventions to modify those with Metabolic Syndrome. The reason is even before the onset of a pandemic of COVID-19, the metabolic syndrome and its components were common worldwide, especially among under-resourced and disorganized healthcare systems.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Factors Influencing the Outcome of Severe Pneumonia among Children Having Age from 2 Months to 5 Years in a Tertiary Healthcare Hospital

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ABSTRACT

One of the leading causes of high rate of morbidity and mortality among pediatrics under the age of five years is pneumonia. A report of WHO published in 2013 stated that pneumonia is accountable for about one hundred and twenty million patients each year and the most vulnerable are developing countries. **Objective:** To find out the rate of occurrence of different factors and pneumonia's outcome among children having age from two months to five years in tertiary healthcare hospital. **Methods:** It was carried out at ICU of Pediatric Department of Ziauddin Hospital Karachi, from June 2021 to December 2021. It included 145 patients under the inclusion standard. **Results:** Average weight, height, age and duration of hospitalization in this research work was 7.72 ± 3.87 kilograms, 68.23 ± 15.28 centimeters, 8.72 ± 4.24 years and 8.72 ± 4.24 days. Total were 63.40% (n: 92) male and 36.60% (n: 53) female patients. out of total 145 patients, 27.60, 73.10, 29.70, 38.60, 35.20, 40.0 and 7.60% patients had mechanical ventilation's requirement, delayed hospitalization, URTI history in family, mostly suffered children suffered from pneumonia in less than 2.5yrs of age. And regarding outcome, prolonged hospital stay, mechanical ventilation and mortality has significant association with younger age. **Conclusions:** It was concluded that association can cause the improvement in the management strategies and possibility of the survival for the children suffering from pneumonia. So, there is need of close monitoring of all the patients with consistent follow up visits.

INTRODUCTION

In the whole world, one of the leading causes of high rate of morbidity as well as mortality among pediatrics under the age of five years is pneumonia [1]. Microbes including fungi, bacteria and viruses can be the cause of this infection which involves the lung alveoli. It is the major causative factor of death and long hospitalization [2]. A global report of WHO published in 2013 stated that pneumonia is accountable for about one hundred and twenty million patients each year, among these patients there is progress towards severe pneumonia in fourteen million (12.0%) patients and the most vulnerability is in the countries which are under development stage (95.0%) [3]. In accordance with the guidelines of WHO, there is requirement of hospitalization for supportive therapy like, nutritional management, oxygen therapy, suctioning and vigilant monitoring for the successful controlling of pediatric pneumonia [4]. There is an estimation that ten million patients of pediatric pneumonia are appearing every year and it is also a pertinent cause of mortality of under five-year patients in our country, Pakistan. pneumonia is responsible for higher than 920000 mortalities of children under five years and our country Pakistan is among top 5 countries which are accountable for ninety nine percent pediatric patients [5]. Literature shows that certain factors have associated with poor outcome of severe pneumonia in children, such as immunization status; of about 47.66 % children were found to have partially immunized or unimmunized, 43 % were found malnourished, while positive family history of upper respiratory infection (URTI) was found in 48.6% children

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and 11.2 % had preceding history of pneumonia [6]. A vital role is played by these factors in influencing the outcome of severe pneumonia among children. Moreover, research conducted previously have assessed the outcomes associated with above mentioned factors that demonstrate that, 51% of children hospitalized for greater than five days, there was need of mechanical ventilation for 20.50% patients and 10.50% patient could not survive and met their final destination [7]. Pneumonia is a lung-affecting inflammatory disease. It is characterized by fluid accumulation in the alveoli, which impedes regular breathing. Pneumonia is primarily but not exclusively caused by bacteria, viruses, and fungus. Streptococcus pneumoniae is the leading cause of bacterial pneumonia in children, whereas Hemophilus influenzae type b (Hib) is the second most cause. In children, respiratory syncytial virus is the leading cause of viral pneumonia, while *Pneumocystis jirovecii* is the leading cause of fungus pneumonia. Globally, pneumonia is the leading cause of child mortality, particularly among children under the age of five. UNICEF reported in 2015 that one in six children died of pneumonia before the age of ten, primarily in the poorest regions of low- and middle-income nations. From 77% in 2000 to 82% in 2015, the number of deaths in these regions has risen steadily. Since 2000, this astonishing number of pneumonia-related deaths has been centered primarily in the Democratic Republic of the Congo, India, Nigeria, and Pakistan [5]. To reduce childhood pneumonia-related mortality, however, a greater understanding of the risk factors impacting pneumonia severity is required. Studies from low- and middle-income countries (LMICs) have sought to determine the risk factors for severe pneumonia, however few studies in Pakistan have identified these variables. Therefore, additional national clinical trials are required for the investigation of factors influencing the outcome of severe pneumonia among children.

METHODS

This is a descriptive research work. This research work was carried out at ICU of Pediatric Department of Ziauddin hospital located in Karachi, Pakistan. This study covers adoration of complete 6 months from June 2021 to December 2021. The calculation of the sample size was carried out fulfilling the requirements of WHO calculator for sample size and one hundred and forty samples were recruited. All children aged 2 months to 5 years, who got admission in ICU suffering from severe pneumonia were recruited and the exclusion criteria were the Children with any respiratory infection such as reactive airway disease and bronchiolitis that does not fulfill the criteria of severe pneumonia due to entirely different etiology thus could provide false positive results. Children with any congenital lung pathology like cystic fibrosis or with recurrent chest infection in patients with cerebral palsy, due to chronic etiology and poor immune system, depicting results that would not the actual presentation of severe pneumonia. Any preceding history of trauma associated with pneumonia due to entirely different etiology. We took the approval of ethical committee of the hospital to conduct this research study. We also took the consent of administration of health care facility before the start of this study. We obtained the written consent from the wards or parents of all included patients after explaining them the purpose of this research work. We also maintained the confidentiality of the included patients. We obtained the detailed history and performed the clinical examination of all the patients suffering from severe pneumonia. After getting the consent of wards, we drew five cc samples for CBC (Complete Blood Count), culture of blood for examining the organism's development and X ray of chest was done for determination of pneumonic infiltrates. Senior consultant checked all the obtained results before entering them in well-organized performa. We started the procedure of data analysis when we achieved the data about the required samples. We used the SPSS version 22.0 for statistical analysis of the collected information. We presented the quantitative variables in average and SDs including hospitalization duration, height and weight. We presented the qualitative data in frequencies and percentages as status of residence, sex, status of parent's education, monthly income of the family, modifiable risk factors as incomplete process of immunization, malnourishment, past pneumonia history, URTI history in family and outcomes of severe pneumonia. We applied the Chi square test by obtaining the p values of ≤ 0.050 as significant statistically.

RESULTS

145 patients were admitted in Pediatric Department of Ziauddin Hospital located in Karachi and fulfilled the inclusion criteria, were the recruits of this research work. Among these patients lowest age of the patient was one year, and highest age of the patient was five years. The average age of the included patients was 4.14 ± 2.49 years. Whereas, mean length of hospital stay, height and weight in this research work was 8.72 ± 4.24 days, 68.23 ± 15.28 cm and 7.72 ± 3.87 kg respectively. As shown in table 1.

Variable	Mean ± SD	Min-Max
Age (Years)	4.14 ± 2.49	1-5
Length of Hospital Stay (Hours)	8.72 ± 4.24	02-11
Height (Cm)	68.23 ± 15.28	51-99
Weight (Kg)	7.72 ± 3.87	2-11

Table 1: Descriptive Statistics (N=145)

Out of 145 patients, 56 (38.6%) and 89 (61.4%) had and had not incomplete immunization. As shown in figure 1. Out of 145 patients, 58 (40%) and 87 (60%) had and did not have

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malnourishment. As shown in figure 2.

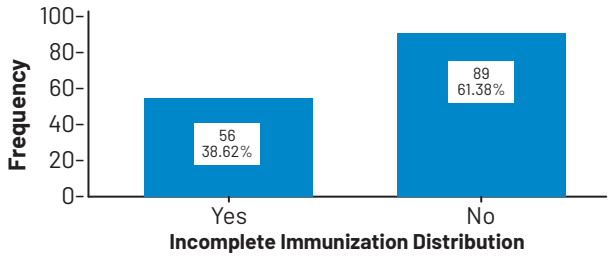

Figure 1: Incomplete Immunization

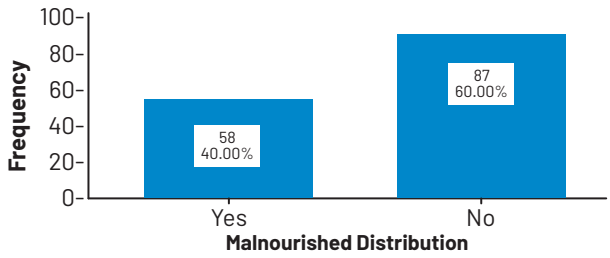

Figure 2: Malnourished Distribution

Out of 145 patients, 51 (35.2%) and 94 (64.8%) had and did not have previous history of pneumonia. As shown in figure 3. Out of 145 patients, 43 (29.7%) and 102 (70.3%) had and did not have family history of URTI. Out of 145 patients, 106 (73.1%) and 39 (26.9%) had and did not have prolonged hospital stay. Age stratification regarding not complete immunization displayed that 35.80% (n: 39) and 47.20% (n: 17) patients of age groups ≤ 2.50 years & more than 2.50 years were present with incomplete or partial immunization correspondingly. While 64.20% (n: 70) and 52.80% (n: 19) patients of age groups ≤ 2.50 years & more than 2.50 years of age were present with complete immunization correspondingly. As shown in figure 4.

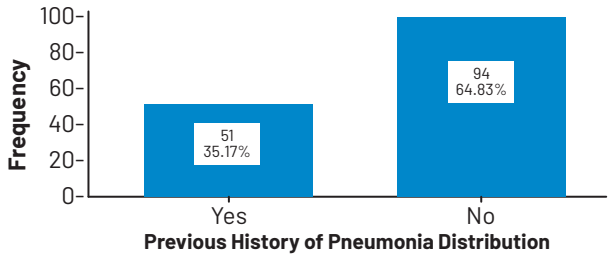

Figure 3: Previous History of Pneumonia

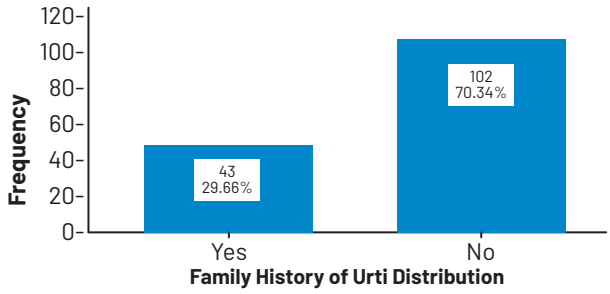

Figure 3: Family History of Urti Distribution n=145

Gender stratification regarding not complete immunization displayed that 37.0% (n: 34) and 63.0% (n: 58) patients of male groups were present with and without incomplete process of immunization correspondingly. While 41.50% (n: 22) and 58.50% (n: 31) patients of female group were present with and without incomplete process of immunization correspondingly. Table 2 is representing this data with p value of 0.220.

Age (Years)	Incomplete Immunization		Total
	Yes	No	
≤ 2.5	39 (35.8%)	70 (64.2%)	109 (100%)
> 2.5	17 (47.2%)	197 (52.8%)	36 (100%)
Total	56 (38.6%)	89 (61.4%)	145 (100%)
p-value	0.22		

Table 2: Incomplete Immunization According to Age (n=145)

Residence status stratification regarding no complete immunization displayed that 37.30% (n: 47) and 62.70% (n: 79) who were present with having urban residence with and without incomplete process of immunization. While 47.40% (n: 9) and 52.60% (n: 10) patients present with having rural residence were with and without incomplete process of immunization correspondingly. Table 3 is representing the 0.580 as p value.

Gender	Incomplete Immunization		Total
	Yes	No	
Male	34 (37%)	58 (63%)	92 (100%)
Female	22 (41.5%)	31 (58.5%)	53 (100%)
Total	56 (38.6%)	89 (61.4%)	145 (100%)
p-value	0.58		

Table 3: Incomplete Immunization according to Gender (n=145)

Stratification for family monthly income status with respect to incomplete immunization showed 46 (41.8%) and 10 (28.6%) had incomplete immunization in patients who belonged to monthly income of ≤ 75000 and > 75000 respectively. Whereas, 10 (28.6%) and 25 (71.4%) did not have incomplete immunization in patients who belonged to monthly income of ≤ 75000 and > 75000 respectively. Table 4 is representing the 0.400 as its p value.

Residence Status	Incomplete Immunization		Total
	Yes	No	
Urban	47 (37.3%)	79 (62.7%)	126 (100%)
Rural	09 (47.4%)	10 (52.6%)	19 (100%)
Total	56 (38.6%)	89 (61.4%)	145 (100%)
p-value	0.40		

Table 4: Incomplete Immunization According to Residence Status (n=145)

DISCUSSION

There is serious effect of pneumonia on lungs due to infection [8]. There is diagnosis of severe pneumonia when there is cough onset or difficult breathing among children in combination with the dangerous signs as incapability to drink, central cyanosis, nausea, unconsciousness, head nodding, grunting and convulsions. Single main infection

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which is cause of high rate of mortality in whole world is severe pneumonia [9, 10]. Regardless the reality that there is impact of this disease on children in whole world, there is more risk of this complication in the countries which are poor or under development [11]. Children under the age of two years are the main victim of this complication [12]. It is the main cause of hospitalization of children in the countries with less resources. The duration of hospitalization is much greater in the countries which are developed as compared to the countries which are developing [13]. Mean age, length of hospital stay, height and weight in our study was 8.72 ± 4.24 years, 8.72 ± 4.24 days, 68.23 ± 15.28 cm and 7.72 ± 3.87 kg. 92 (63.4%) and 53 (36.6%) were male and female. Out of 145 patients, 38.6%, 40%, 35.2%, 29.7%, 73.1%, 27.6% and 7.6% had incomplete immunization, malnourishment, previous history of pneumonia, family history of URTI, prolonged hospital stays, need for mechanical ventilation and mortality [14]. Of a study on two hundred children, 56.50% (n: 113) patients required antibiotic change, 51.0% (n: 102) got stay of more than five days, 20.50% (n: 41) patients were having need of mechanical ventilation and 10.50% (n: 21) children died. In Cecil *et al.,* analysis of multivariate nature, absence of exclusive feeding through breasts [RR (95.0%=CI) 2.630 (2.160-2.860)], over-crowding [RR (95.0%=CI) 1.940 (1.350-2.380)] and an anomalous X ray of chest [RR (95.0%=CI) 2.290 (1.220-3.440)] were having association with the requirement of antibiotic change [15]. Absence of the exclusive feeding through breasts [RR (95.0% = CI) 2.560 (2.00-2.930)], over-crowding [RR (95.0% = CI) 2.590 (1.780-3.230)] and an anomalous X ray of chest [RR (95.0%=CI) 2.990 (1.650-4.380)] were detected as the elements for long stay at hospital [16]. Nodding of head [RR (95.0%=CI) 8.340 (2.710-12.770)], changed sensorium [RR (95.0% = CI) 5.440 (1.340-17.560)], abnormal count of leukocyte [RR (95.0%=CI) 5.850 (1.360-17.140)] and pallor [RR (95.0% = CI) 10.880 (2.950-20.400)] were having close association with the mortality of the patients. Nodding of head (RR (95.0% = CI) 4.730 (1.500-6.360)] and cyanosis (RR (95.0% = CI) 5.060 (1.800-11.340)] were identified as the elements for requirement of mechanical ventilation. In confirmed pneumonia by radiography, factors of determination for antibiotic change were absence of exclusive feeding through breasts [RR (95.0%=CI) 2.050 (1.690-2.200)] and low weight at the time of birth [RR (95.0%=CI) 1.590 (1.100-1.890)] [17]. For long stay in the hospital, identified factors were education of the mothers lower than graduation RR (95.0% CI) 1.50 (1.190-1.70)], absence of exclusive feeding through breast [RR (95.0% = CI) 1.770 (1.190-2.090)] and saturation of O_2 < 90.0% at presentations [RR (95.0% = CI) 2.060 (1.420-2.420)] [18]. Determining factors indicating mechanical ventilation were education of mothers lower than graduation [RR (95.0% = CI) 3.60 (1.150-6.300)] and cyanosis at the time of presentation [RR (95.0% = CI) 10.90 (1.560-18.90)]. While determining the mortality, single determinant factor was pallor [RR (95.0% = CI) 10.540 (1.800-21.790)]. Kalra *et al.,* examining other two hundred and seventy patients, sixty four percent (95.0% CI 57.90-69.40) were present with severe pneumonia [19]. The logistic regression identified the following risk factors; premature birth (Adjusted OR=7.5; 95.0%CI 2.220-25.310; p=0.0010); measles history (Adjusted OR=6.350; 95.0%CI 1.730-23.300; P=0.0050); inadequate vaccination (Adjusted OR=2.660; 95.0%CI 1.090-6.480; p= 0.0310); CHD (Congenital Heart Disease) (Adjusted OR=9.210; 95.0% CI 2.290-36.990; p= 0.0020); treatment tried at home (Adjusted OR=3.840; 95.0%CI 1.420-10.390; p= 0.0080); living in mud houses (Adjusted OR=3.890; 95.0%CI 1.510-10.010; p= 0.0270); over-crowding (Adjusted OR=4.500; 95.0%CI 1.750-11.510; p= 0.0020); poor condition of ventilation (Adjusted OR=16.370; 95.0%CI 4.670-57.380; P< 0.0010); and practice of open defecation (Adjusted OR=16.920; 95.0%CI 4.950-57.850; p< 0.0010). Acknowledgement about these linked factors is necessary to decrease the high rate of mortality because of the severe pneumonia [20]. Important risk factors are lack in breast feeding, incomplete immunizations process and pollution in region of living area and low weight at the time of birth, age, gender, nutritional status, mother's educational status are not the vital risks factors for severe pneumonia. One other study on 689 pediatrics, 8% (n: 55) patients were in need of intensive care and 4% (n: 28) patients died. Total 72.80% (n: 502) patients were present with having good prognosis and 27.20% (n: 187) patients were with adverse prognosis. Prematurity's history [OR(Odd Ratios) 2.5, 95.0% CI (Confidence Interval) 1.240-5.040], fever (OR=2.250, 95.0% CI 1.320-3.830), smokers residence (OR=1.790, 95.0% CI 1.180-2.720), abnormal consciousness (OR=10.960, 95.0% CI 2.880-41.730), cyanosis (OR=2.090, 95.0% CI 1.050-4.150), pallor (OR=2.270, 95.0% CI 1.340-3.840) and present with bronchi on the auscultation (OR=2.450, 95.0% CI 1.580-3.790) were the risk factors with full independency for poor outcome. Among children with significant co-morbidities, the length of hospitalization may influence the underlying medical or social difficulties, not the severity of the respiratory infection. Significant associations exist between prolonged hospitalization and preterm birth, stunting, underweight-for-age, and high CRP levels. The causality to these connected factors was linked to the length of hospitalization that caused severe respiratory infection, but also by other associated illnesses, nutritional rehabilitation, or addressing social problems or eating patterns. Previously, we demonstrated that HEU children

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have a higher incidence of pneumonia in the first six months of life in this analysis; we demonstrate that they do not have a higher risk of catastrophic outcomes but do have a higher risk of protracted hospitalization [21]

CONCLUSIONS

This research study identified different risk factors of modifiable risk factors responsible for severe pneumonia particularly inadequate immunization and malnourishment. Skilled pediatricians and workers of health care field should have well awareness about the risk factors associated with severe pneumonia when treating the patients suffering from this complication. The controlling of these risk factors which have modifiable nature may decrease the high rate of mortality because of this complication.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Frequency of Anxiety and Depression among Medical Imaging Technologists in Public Hospitals of Lahore

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ABSTRACT

A good psychological health is the base of wellness. Various factors have been identified that can predispose the medical students, nurses, physicians, radiographers, and other health care professionals to depression and anxiety. **Objectives:** To assess the frequency of anxiety and depression in Medical Imaging Technologists working in public hospitals of Lahore. **Methods:** A descriptive cross-sectional study was performed on 150 Medical Imaging Technologists. The sample size was collected by formula and simple random sampling technique was used. Collection of data was done by; a self-administered questionnaire to get demographic data and Hospital Anxiety and Depression (HADS) to assess depression and anxiety in Medical Imaging Technologists. Data analysis was done by using average, standard deviation, percentage, and Chi-square. **Results:** The average age of Medical Imaging Technologists was 30.49 ± 5.314 years. Among 150 participants, 95 (63.3%) were female and 55 (36.7%) were male. 54 (36%) were normal, 43 (28.7%) were borderline abnormal and 53 (35.3%) were abnormally depressed on HADS, and 97 (64.7%) were normal, 37 (24.7%) were borderline abnormal, and 16 (10.7%) were abnormally anxious on HADS. Gender, age, and marital-status were not found to be associated with depression and anxiety. Job-satisfaction, education, modalities, and physical exercise were found to be associated with depression and education and sleeping hours were found to be associated with anxiety. **Conclusions:** Anxiety and depression were common to find in the medical imaging technologists. Job-satisfaction, education, modalities, and physical exercise were associated with depression whereas education and sleeping hours were found to be associated with anxiety.

INTRODUCTION

A good psychological health is the base of wellness. According to comprehensive definition of health by World Health Organization (WHO), health is not only the absence of disease it is a state of complete physical, mental, and social well-being [1]. Around the globe, number of diseases is caused by depression. Pakistan is the 6th most populated country with an approximate population of twenty million people. According to 1999 report of UN, depression was predicted to be 2nd most common disease in both males and female individuals by the year 2020. It is approximated that 10-44% of the individuals residing in developing countries are living with psychological disorders and near to 50.8 million are suffering from depression [2]. Depression is a psychological disorder in which a person presents with low mood and low energy that affects the thinking, emotions, behavior and sense of well-being of that individual [3]. This psychological disorder is characterized by insomnia, anorexia, tiredness, irritability, less focus, difficulty in decision making and even suicidal ideation [4]. Anxiety is a brain disorder that affects

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functioning, cognition and behavior of an individual. According to Epstein anxiety, originate from the understanding of threat; threats to future happiness, threats to self-respect and threats to the decision-making ability of an individual [5]. A number of researches has been conducted in different western countries, as well as in other parts of the world that has presented increased rate of brain disorders i.e., depression and anxiety in medical students [6]. Health Care Workers (HCW) is another population that face psychological morbidities due to different causes of stress i.e. work load, work-setting changes relative to daily work and family obligations [7]. Other stressors that also affect mental health of HCWs and predispose them to depression and anxiety are defense mechanism of an individual and the presence of work related burnout [8]. The individuals who are suffering from Post-Traumatic Stress Disorder (PTSD) are highly vulnerable to develop suicidal thoughts and successful suicide. Health care-workers belong to a risky profession that can predispose them to develop PTSD [9]. A number of researches has been conducted to evaluate the causes of stress among different health care professionals, specifically nursing but literature is short about the evaluation of the risk factors that cause the appearance of stress among radiographers [10]. Health services require a contribution of diagnostic services. X-ray, Computed Tomography (CT-scan), Magnetic Resonance Imaging (MRI), and Ultrasound are the modalities that are used by the radiographers to image body parts and organs for finding out the disease. Accident, emergency, outpatients, operation theatre and wards are the departments where diagnostic radiographers provide the services. Whereas the therapeutic radiographers are those who work in collaboration with doctors, nurses and physicists. As radiographers and their services are an important asset to health care department it is important to assess the stressors that can affect their mental health [11]. Physical, emotional, psychosocial stressful events, and danger of ionizing radiation's harms can affect the happiness, focus, reasoning, decision-making ability and energy of the individuals working as radiographers and eventually develop the psychological instability in them [12]. Along with other health care professionals, radiographers are also expose to multiple stressors. Burden of evaluating the sufferers, increased exposure to patients affected from several infectious diseases, increased work intensity in emergency, high workload, lack of proper staff members, insufficient resources, lack of empathy from administration and senior colleagues consequently predispose the radiographers to develop depression and anxiety. Such mental instability of the radiographers can affect the health services provided by radiographers as well as lead to their less productivity with higher chances of medical errors [13]. During the time of SARS-CoV-2 infection, it was imperative to ensure the safety of health care workers who were working on the frontlines and various policies were implemented to ensure the safety of health care professionals but still many felt to be at risk to develop the infection. Diagnostic radiographers experienced the same scenario. Researches from around the globe and from the African region presented multiple challenges related to change in flow of work, working environment, strategies, infection control practices, and personal care. All these challenges increase the number of stressors experienced by the radiographers. Along with the presence of aforementioned stressors, the conscious effort to prevent from infection and limited resources made the working environment more stressful for the radiographers. This effect of adapted environment increased the occupational stress, depression and other brain diseases among radiographers [14]. Depression and anxiety have been extensively studied for the populations of medical students, doctors, and nurses. It is important to evaluate the rate of depression and anxiety among the medical imaging technologists working in Public Sector Hospitals. Therefore, the proper policies should be developed to make sure the safety as well as stable brain health status of medical imaging technologists. The objective of this research was to assess the frequency of anxiety and depression in medical imaging technologists working in public hospitals of Lahore.

METHODS

It was a descriptive cross-sectional study. Data were acquired from two public hospitals of Lahore, Lahore General Hospital, and Children Hospital Lahore. The study was completed in a time period of 9 months. Total 150 participants were taken and sample size was calculated by using frequency of anxiety and depression among medical imaging technologists in public hospitals of Lahore through given formula:

$$n = \frac{Z^2_1 - ak}{d^2} p(1-p)$$

Level of significance (α) = 95%, prevalence of depression among technologists (p) = 52%, precision level (d) = 0.08, Z2 = 3.84, sample size (n) = 150. The sampling technique was Simple Random Sampling. Imaging Technologists working at any of public hospitals of Lahore with age 25 and more than 25 years and Imaging Technologists with at least B.SC (Hons) MLT degree, who gave their consent to participate in the study were included in the study, whereas, Imaging Technologists having less than one-year professional experience, individuals with any pre-existing psychological illness, death in family six months before, and

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Technologists working in DHQ Hospitals were all excluded. A simple demographic sheet was used to collect demographic information, whereas to determine prevalence of depression and anxiety self-reported Hospital Anxiety and Depression Scale (HADS) was used. HADS most commonly used tool to measure the prevalence of psychological disorders in non-psychiatric patients. This standardized scale consists of 14 components and rate each component on 4-point Likert scale ranging from 0-3. This scale consists of two sub-scales to evaluate depression and anxiety. Each sub-scale consists of 7-items. The overall score was the addition of all 14 items, and for depression and anxiety sub-scales, the total ranges from 0-21 that was the sum of the respective seven items. Based on scoring individuals were categorized into normal, borderline cases, and abnormal cases either of depression or anxiety or of both. Data were collected from Imaging Technologists who fulfilled inclusion criteria. For demographic data simple demographic sheet was used whereas to assess prevalence of depression and anxiety standardized self-reporting questionnaire, Hospital Anxiety and Depression scale (HADS) was used. The variables of demographic sheet were gender, age, modality, educational degree, marital status, sleeping status (hours), practice of physical exercise, weekly working hours, and job satisfaction. Data were evaluated and analyzed with the help of the Statistical Package for Social Science (SPSS) version 21.0. For the qualitative variables of demographic sheet i.e., gender, modality, educational degree, marital status, sleeping status (hours), practice of physical exercise, weekly working hours and job satisfaction; percentages were calculated, whereas for the quantitative variable of demographic sheet i.e., age; mean ± standard deviation was calculated. The included individuals categorized in normal, borderline and abnormal for depression and anxiety on the basis of score on HADS. To find out the association between variables of demographic sheet and psychological disorders i.e., depression and anxiety Chi-square test statistic was used. α-level of significance was set at 0.05 and confidence interval was 95%.

RESULTS

We collected the data from two different tertiary care hospitals; Children Hospital Lahore and Lahore General Hospital by using Hospital Anxiety Depression Scale (HADS) and demographic data sheet to collect demographics of the medical imaging technologists. Total 150 medical imaging technologists participated in our study with average age of 30.49 ± 5.314 years. Among 150 participants, 63.3% were female and 36.7% were male. Majority of medical imaging technologists 81 (54%) had done Bachelors and 41 (27.3%) were using the MRI. In our research, (63%) participants were satisfied with their job. 43 (28.7%) participants were borderline abnormal, and 53 (35.3%) were abnormally depressed. 37 (24.7%) were borderline abnormal, and 16 (10.7%) were abnormally anxious. Gender, age and marital status were not found to be associated with depression and anxiety whereas education and sleeping hours were found to be associated with anxiety and job satisfaction, education, modalities and physical exercise were found to be associated with depression. According to table 1, 150 Medical Imaging Technologists participated. Among them 95 (63.3%) were female and 55 (36.7%) were male. Out of 150 Medical Imaging Technologists, 83 (55.3%) were in the age range of 25-29 years, 41 (27.3%) were in the age range of 30-34 years, 16 (10.7%) were in the age range of 35-39, and 10 (6.7%) were in the age range of more than 40 years. The education level of medical imaging technologist in this study was 81 (54%) had done Bachelors, 43 (28.7%) Master's degree, and 26 (17.3%) had M.Phil. 27(18%) Medical Imaging Technologists were using the CT-scan, 41 (27.3%) were using the MRI, 37 (24.7%) were using the ultrasound, 30 (20%) were using the X-rays, 8 (5.3%) were using the angiography, and 7 (4.7%) were using the echocardiography. According to marital status, 67 (44.7%) Medical Imaging Technologists were single and 83 (55.3%) were married. 100 (66.7%) Medical Imaging Technologists were practicing the physical exercise whereas 50 (33.3%) were not practicing physical exercise. 95 (63.3%) Medical Imaging Technologists were satisfied with their job, 48 (32.0%) were not satisfied with their job and 07 (4.7%) did not answer this question. 63 (42%) were working for 35-44 hours/week, 70 (46.7%) were working for 45 - 49 hours/week, and 17 (11.3%) were working for more than 50 hours/week. According to depression level, 54 (36%) medical imaging technologists were normal, 43 (28.7%) were borderline abnormal and 53 (35.3%) were abnormal. To find anxiety among technologists, 97 (64.7%) were normal, 37 (24.7%) were borderline abnormal and 16 (10.7%) were abnormal (Table 1).

Variables	Frequency (%)	Variables	Frequency (%)
Female	95 (63.3%)	Less than 8	31 (20.7%)
Male	55 (36.7%)	6 to 8 hours	116 (77.3)
Age		More than 8	3 (2.0)
25 - 29	83 (55.3%)	**Physical Exercise**	
30 - 34	41 (27.3%)	Yes	100 (66.7%)
35 - 39	16 (10.7%)	No	50 (33.3%)
More than 40	10 (6.7%)	**Weekly Working Hours**	
Education		35 - 44	63 (42.0%)
Bachelor	81 (54.0%)	45 - 49	70 (46.7%)
Master	43 (28.7%)	More than 50	17 (11.3%)
M.Phil.	26 (17.3%)	**Job Satisfaction**	

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Modalities		Yes	95 (63.3%)
CT Scan	27(18.0%)	No	48 (32.2%)
MRI	41 (27.3%)	I do not answer	7 (4.7%)
Ultrasound	37 (24.7%)	**Depression**	
X-rays	30 (20.0%)	Normal	54 (36.0%)
Angiography	8 (5.3%)	Borderline abnormal	43 (28.7%)
Echocardiography	7 (4.7%)	Abnormal	53 (35.3%)
Marital Status		**Anxiety**	
Single	67(44.7%)	Normal	97 (64.7%)
Married	83 (55.3%)	Borderline abnormal	37 (24.7%)
Sleeping Hours		Abnormal	16 (10.7%)

Table1: Distribution of participants in accordance with the Socio-demographic characteristics

To determine the association between, gender, age, modalities, marital status, education, sleeping hours, physical exercise, weekly working hours and job satisfaction with depression and anxiety in medical imaging technologists, Chi-square test- statistic was performed shown in table 2.

Variables	Depression	Anxiety
	Person Chi square (p-value)	Person Chi square (p-value)
Job Satisfaction	14.875 (0.005)	7.791 (0.100)
Age	5.666 (0.462)	7.697 (0.261)
Gender	0.515 (0.773)	2.909 (0.233)
Education	21.501 (0.000)	10.790 (0.029)
Modalities	25.176 (0.005)	9.184 (0.515)
Marital Status	3.830 (0.147)	0.316 (0.854)
Sleeping Hours	8.934 (0.063)	14.397 (0.006)
Physical Exercise	14.312 (0.001)	5.138 (0.077)
Weekly Working Hours	9.573 (0.048)	8.66 (0.070)

Table 2: Ordered Chi Square for factors associated with mild, moderate and severe depression and Anxiety

There was association between job satisfaction (p = 0.005), education (p = 0.000), modalities (p =0.005), and physical exercise (p = 0.001) with depression level among technologist. According to Chi-square test- statistic, gender (p = 0.773), age (p = 0.462), marital status (p = 0.147) and sleeping hour (p = 0.063) have no relationship with depression There was association found between sleeping hours (p = 0.006) and education (p = 0.029) with anxiety. Job satisfaction (p = 0.100), gender (p = 0.233), age (p = 0.261), modalities (p = 0.515), marital status (p = 0.854), physical exercise (p = 0.077) and weekly working hours (p = 0.070) have no association with anxiety (Table 3 and 4).

Job Satisfaction – Depression Cross Tabulation

Job Satisfaction	Depression			
	Normal	Borderline abnormal	Abnormal	Total
Yes	42	29	24	95
No	10	11	27	48
Don't answer	02	03	02	07
Total	54	43	53	150

Chi-Square Analysis for Job Satisfaction –Depression

	Value	DF	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.875	4	0.005
Likelihood Ratio	14.683	4	0.005
Linear-by-Linear Association	8.383	1	0.004
N of Valid Cases	150		

Education – Depression Cross Tabulation

Education	Depression			
	Normal	Borderline abnormal	Abnormal	Total
Bachelor	30	33	18	81
Master	17	08	18	43
M.Phil.	07	02	17	26
Total	54	43	53	150

Chi-Square Analysis for Education- Depression

	Value	DF	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.501[a]	4	0.000
Likelihood Ratio	22.174	4	0.000
Linear-by-Linear Association	7.506	1	0.006
N of Valid Cases	150		

Modalities – Depression Cross Tabulation

Modalities	Depression			
	Normal	Borderline abnormal	Abnormal	Total
CT-Scan	15	05	07	27
MRI	14	14	13	41
Ultrasound	16	10	11	37
X-Rays	05	06	19	30
Angiography	01	06	01	8
Echocardiography	03	02	02	7
Total	54	43	53	150

Chi-Square Analysis for Modalities – Depression

	Value	DF	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.176[a]	10	0.005
Likelihood Ratio	23.489	10	0.009
Linear-by-Linear Association	4.008		0.045
N of Valid Cases	150	1	

CT= Computed Tomography MRI= Magnetic Resonance Imaging DF= Degree of Freedom

Table 3: Chi-Square analysis for Depression and Anxiety with different variables

Physical Exercise – Depression Cross Tabulation

Physical Exercise	Depression			
	Normal	Borderline abnormal	Abnormal	Total
Yes	43	43	25	100
No	11	11	28	50
Total	54	54	53	150

Chi-Square Analysis for Physical Exercise – Depression

	Value	DF	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.312[a]	2	0.001
Likelihood Ratio	14.155	2	0.001
Linear-by-Linear Association	12.552	1	0.000
N of Valid Cases	150		

Education - Anxiety Cross tabulation

Education	Anxiety			
	Normal	Borderline abnormal	Abnormal	Total
Bachelor	44	24	13	81
Master	31	9	3	43
M.Phil.	22	4	0	26
Total	97	37	16	150

Chi-Square analysis for Education - Anxiety

	Value	DF	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.790[a]	4	0.029
Likelihood Ratio	13.370	4	0.010
Linear-by-Linear Association	10.616	1	0.001
N of Valid Cases	150		

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Sleeping hours- Anxiety Cross tabulation					Chi-Square analysis for Education- depression			
Sleeping Hours	Anxiety					Value	DF	Asymp. Sig. (2-sided)
	Normal	Borderline abnormal	Abnormal	Total				
					Pearson Chi-Square	14.397[a]	4	0.006
Less than 8	21	10	0	31	Likelihood Ratio	13.620	4	0.009
More than 8	1	0	2	3	Linear-by-Linear Association	3.539	1	0.060
More than 8	1	0	2	3				
Total	97	37	16	150	N of Valid Cases	150		

CT= Computed Tomography MRI= Magnetic Resonance Imaging DF= Degree of Freedom

Table 4: Chi-Square analysis for Depression and Anxiety with different variables

DISCUSSION

Anxiety and depression among medical imaging technologists has extensive effects on the technologists and society. Burden of evaluating the patients, increased exposure to patients affected from several infectious diseases, emergency increased work intensity, lack of proper staff members, insufficient resources, lack of empathy from administration and senior colleagues consequently predispose the radiographers to develop depression and anxiety. Medical students as well as the residents suffer from different psychological morbidities i.e. depression, anxiety and burnout [15]. Around the globe, anxiety is a frequent mental illness among medical students. The severity of problematic anxiety ranges from twenty-five to forty percent in undergraduate medical students and has a negative effect on grades and success of students [16]. Burnout is a mental morbidity that arises in the workplace of prolonged work-related stress. The classical characteristics of burnout are emotional disturbance, lack of interest towards sufferers or colleagues and feelings of personal lack of efficiency. The burnout not only affects the health of the physician, also effects negatively the quality of health care services. Depression, anxiety, substance abuse, and suicidal ideation are associated with burnout of physician. All these condition affects the efficiency of physician and provide the base of medical errors [17]. In this research, we used the HADS to assess the rate of depression and anxiety among medical imaging technologists. In a study conducted by Kebede *et al.*, data was also collected from two hundred and seventy-three medical students by using Hospital anxiety and depression scale (HADS) to evaluate anxiety and depression [18, 19]. In our study, there was no association (p=0.233) between gender and anxiety was found but, in a study, conducted by Kebede *et al.*, anxiety was significantly associated with gender [20]. In our study, there was no association (p=0.773) between gender and depression was found. In another study conducted by Alvi *et al.*, there was no significant association of depression with gender [21]. But a study conducted by Ahmadi *et al.*, reported a higher prevalence of depression in medical students as compared to general population and female students were found to have severe depression as compared to men [22]. Another study conducted Pappa *et al.*, on medical students' depression and anxiety was found to be associated with gender [23]. In our research, there was no association of marital status with depression and anxiety whereas job-satisfaction was associated depression. Whereas in a study conducted by van de Venter *et al.*, marital-status and lack of job satisfaction both were positively correlated with depression. The correlation of anxiety was found with marital status [17]. In our study, there was association (p = 0.000) between education and depression. And there was association (p = 0.029) of education with anxiety. In a study conducted by Sarhan *et al.*, education level was associated with the appearance of depressive symptoms [14]. In this study, out of one hundred and fifty (150) medical imaging technologists 31 (20.7%) were sleeping for less than 8 hours, 116 (77.3%) were sleeping for 6-8 hours, and 3 (2%) were sleeping for more than 8 hours. In our study, there was no association (p =0.063) between sleeping hour and depression. While there was association (p =0.006) between sleeping hours and anxiety. In a study conducted by Moutinho *et al.*, more than seventy percent of the doctors were found to have disturbed sleep, depression and anxiety during the SARS-CoV-2 infection [24]. In a study conducted by Brito *et al.*, older age, to be a nurse, and providing health care services in outer emergency medical team were found to be associated with quality of sleep [25, 26]. In our study, 54 (36%) medical imaging technologists were normal, 43 (28.7%) were borderline abnormal, and 53 (35.3%) were abnormal for depression; whereas 97 (64.7%) were normal, 37 (24.7%) were borderline abnormal, and 16 (10.7%) were abnormal for anxiety. We did not find association (p =0.462) between age and depression as well as between age and anxiety (p =0.261). We also found association (p =0.000) between education and depression; whereas association (p =0.029) between education and anxiety. In a study conducted by Ngasa *et al.*, 34.6% of medical students were suffering from mild depression, 26.4% from moderate, 3.4% from moderately severe, and 0.80% from severe depression [27]. In a study conducted by Shao *et al.*, the prevalence of depression was 57.5% and anxiety 30.8% in medical students. The individuals of older age were found to have severe depression and anxiety. In their study depression and anxiety was found in those individuals who were experiencing disturbed sleep [28].

CONCLUSIONS

Our study revealed a considerable frequency of depression and anxiety among medical imaging technologists.

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Depression was significantly associated with the factors of job satisfaction, education, type of modalities, and physical exercise. A considerable association of anxiety was found with factors of education and sleeping hours. In order to reduce depression and anxiety and improve the overall well-being of imaging technologists, it is recommended to perform regular psychological assessments of medical imaging technologists to screen out the individuals with risk factors.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Impact of Malocclusion on children studying in Government High Schools in Mardan

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ABSTRACT

The facial looks have an impact on self-esteem and emotional well-being, playing an important role in social interactions. Changing in these functions will therefore affect the standard of living of children. **Objective:** The purpose of the study was to evaluate the effect of malocclusion on psychological well-being on school going children using the OASIS aged between 13-17 years attending government high schools in Mardan District. **Methods:** This was a Descriptive Cross-Sectional Survey conducted at the government schools of Mardan. It was carried out within a period of six month from December, 2021 till May 2022 after consent from Institutional Review Board (IRB) of Bacha Khan Medical College, Mardan vide No. 39/2021/ERB. The sample was chosen using a random cluster sampling technique with probability related to size. The design effect was taken into account as the cluster sampling approach was applied, and a sample size of 850 was achieved. (600 boys and 250 girl participants were involved respectively from government high schools). **Results:** A total of 850 subjects were included in the study of which there were 600 (70%) males and 250 (30%) were females. The age range was 13-17 years with a mean age 15 years ±1.37 (S.D) years. **Conclusions:** Angle's malocclusion was established in 73.1% of the subjects. The least affected psychologically was normal occlusion with (100%) good psychological well-being followed by Angle's class I malocclusion having good psychological well-being (76.8%).

INTRODUCTION

Quality of life is a concept that includes several realms, such as the subjective recognition of physical, psychological, and social functions as well as a personal sense of well-being [1]. Oral health is pivotal for good quality of life because this may have an influence on nutrition, smile, speech and socialization of children. The facial looks have an impact on self-esteem and emotional well-being, playing an important role in social interactions [2]. Changing in these functions will therefore affect the standard of living of children [1]. Occlusion is defined as "the relationship of the maxillary and mandibular teeth as they are brought into functional contact" and "malocclusion is the state of any deviation from the normal or ideal occlusion", as defined in the Glossary of Orthodontic Terms. Malocclusion is one of the most common problems influencing the human oral cavity after tooth decay, gingivitis and dental fluorosis [3]. Malocclusion is considered a problem related to the maturation of mandibular and maxillary bones during childhood [4]. This type of abnormality can have functional, aesthetic or psycho-social impacts, with a negative effect on the daily life of those affected [5]. Malocclusion can be evaluated as a public health problem, given its high frequency and its capability for prevention and treatment [7]. Malocclusion

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can lead to functional problems, with adverse consequences for dental aesthetics and psycho-social aspects on the lives of children.[7]Children begin early to show their feelings about their dental appearance [8]. It is important to understand that even at an early age, the negative impact of malocclusion can contribute to the search for improved social and emotional aspects of children [9]. People who tolerate less from dental and facial problems are considered socially more efficient and better adjusted intellectually and psychologically [10]. The negative impacts associated with malocclusion can be mainly applicable for children who can develop the target of teasing, name calling and threatening targets. Estimating the negative effect caused by malocclusion supports to track down the requirements of individuals in a society and, therefore, more effectively directs public health steps and strategies for the anticipation and management of these occlusal conditions [11]. The diagnosis and early treatment of people with malocclusion is vital for public health as it has a direct impact on the cost of treatment as preventive and interpersonal orthodontic practices, even if applied in a limited way, can improve occlusion during pre-adolescence and adolescence [12]. Malocclusion managements are usually conceded out during adolescence, when the permanent dentition is erupting [13]. At this specific age, adolescence is also seen as the moment when the specific has started to feel that his / her presence is of great significance and that he / she has acquired the liberty to request or refuse orthodontic management self-sufficiently [14]. Therefore, it is reasonable to assume that among early childhood, constant but untreated malocclusions can have social and psychological effects on the individual's QoL [15]. The influence of oral ailments or complaints on oral health-related quality of life (OHRQOL) can be evaluated using quantitative estimation such as questionnaires. The purpose of the study was to evaluate the impact of malocclusion on psychological well-being on school going children using the OASIS aged between 13-17 years attending government high schools in Mardan District.

METHODS

This was a Descriptive Cross-Sectional Survey conducted at the government schools of Mardan. It was carried out within a period of six month from December, 2021 till May 2022 after consent from Institutional Review Board (IRB) of Bacha Khan Medical College, Mardan vide No. 39/2021/ERB. The sample was chosen using a random cluster sampling technique with probability related to size. The design effect was taken into account as the cluster sampling approach was applied, and a sample size of 850 was achieved. (600 boys and 250 girl participants were included respectively from government high schools). Students who were between 13 – 17 years old and with complete eruption of permanent 1st molar of one arch to permanent 1st molar of another arch were considered in the sample. While children with past history of jaw trauma or who were getting or had received orthodontic treatment including those with tooth Malformation/ tooth discoloration/presence of filling were excluded from the sample. Children with dental anxiety and learning disabilities were also excluded. Students were clinically examined at a school chair following WHO cross infection guidelines. Maxillary and mandibular 1st permanent molar to molar occlusal relationship was directly observed in the mouth of subject and recorded as Class I, Class II (Division I and Division II) and Class III on both sides respectively in the Data Collection sheet. Requirements for examination procedure included a school chair, head torch and disposable instruments. Subject's cheek was retracted and his/her upper 1st molar to lower 1st molar occlusion relation was recorded on both sides. The data collected was computed using the Statistical Package for Social Sciences (SPSS) software for windows (version 26.0). Descriptive statistics in the form of mean, frequencies and rates were computed for the age, gender of the children and malocclusion classes and psychological well-being. Chi square test was used to associate the effect on psychological well-being of malocclusion classes between two genders. p-value of < 0.05 was measured as statistically significant.

RESULTS

A total of 850 subjects were involved in the study of which there were 600 (70%) males and 250 (30%) were females. The age range was 13-17 years with a mean age 15 years ±1.37 (S.D) years. Table 1 shows the gender wise distribution with normal occlusion and malocclusion classes. Chi square test was applied to associate gender difference in malocclusion status of the school children. A highly statistically significant (p-value <0.01) difference was identified.

Malocclusion status	Gender		Total N (%)	p-value
	Male N (%)	Female N (%)		
Normal	188 (31.3%)	41 (16.4%)	229 (26.9%)	<0.01
Malocclusion	412 (68.7%)	209 (83.6%)	621 (73.1%)	
Total	600 (100%)	250 (100%)	850 (100%)	

Table 1: Gender wise distribution between Normal occlusion and Malocclusion

Normal occlusion was found in 229 (26.9%) students; while malocclusion was reported in (621) 73.1% students of the total sample size. A total of 412 (68.7%) male students and 209 (83.6%) female students were found to have any form of malocclusion while a total of 188 (31.3%) male students and 41 (16.4%) female students were having normal occlusion.

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Angle's class I malocclusion had the maximum frequency of 372 (43.8%) followed by normal occlusion 229 (26.9%), class II division 1 88(10.4%), class II division 2 59(6.9%), class III 64(7.5%), Class II subdivision 34 (4%) and Class III subdivision 4(0.5%) cases respectively. A total of 271 (45.1%) male students had class I malocclusion, 55 (9%) had class II division 1, 31(5%) had class II division 2, 29 (4.8%) had class III, 22 (3.6%) had Class II subdivision while 4 (0.7%) had class III subdivision respectively. Similarly, a total of 101 (40.4%) female students had class I malocclusion, 33 (13.2%) had class II division 1, 28 (11.2%) had class II division 2, 35 (14%) had class III, 12 (4.8%) had Class II subdivision respectively while no cases were reported of class III subdivision (Table 2). Highly statistically significant difference was recognized when chi square test was used to associate different Angle's malocclusion types in both genders (p-value <0.01). The overall psychological well-being of the students was good in 600 (70.5%), adequate in 177 (20.8%), and bad in 73 (8.6%), according to the data. The overall percentage of male students with high psychological well-being was 435 (72.5%), whereas the percentages of male students with adequate and bad psychological well-being were 116 (19.3%) and 49 (8.2%), respectively. While 165 (66%) of the female students reported having good psychological health, just 61 (24.4%) and 24 (9.6%) of the female students reported having adequate or poor psychological health. When the chi square test was used to assess psychological well-being between the sexes, a very statistically significant difference was discovered (p-value 0.01) (Table 2).

Malocclusion	Gender		Total N (%)	p-value
	Male N (%)	Female N (%)		
Normal Occlusion	188(31.33%)	41 (16.4%)	229 (27%)	< 0.01
Class I	271(45.2%)	101 (40.4%)	372 (43.7%)	
Class II (Div 1)	55 (9.16%)	33 (13.2%)	88 (10.3%)	
Class II (Div 2)	31 (5.16%)	28 (11.2%)	59 (7%)	
Class III	29 (4.83%)	35 (14%)	64 (7.5%)	
Class II Subdivision	22 (3.66%)	12 (4.8%)	34 (4%)	
Class III Subdivision	4 (0.66%)	0 (00%)	4 (0.5%)	
Total	600 (100%)	250 (100%)	850 (100%)	

Table 2: Gender wise distribution of Angle's Malocclusion among the subjects (N=850)

The overall psychological well-being of the students was good in 600 (70.5%), adequate in 177 (20.8%), and bad in 73 (8.6%), according to the data. The overall percentage of male students with high psychological well-being was 435 (72.5%), whereas the percentages of male students with adequate and bad psychological well-being were 116 (19.3%) and 49 (8.2%), respectively. While 165 (66%) of the female students reported having good psychological health, just 61 (24.4%) and 24 (9.6%) of the female students reported having adequate or bad mental health, respectively (Table 3).

Gender	OASIS Categories			Total N (%)
	Good N (%)	Satisfactory N (%)	Poor N (%)	
Male	435 (72.5%)	116 (19.33%)	49 (8.17%)	600 (100%)
Female	165 (66%)	61 (24.4%)	24 (9.6%)	250 (100%)
Total	600 (70.5%)	177 (20.9%)	73 (8.6%)	850 (100%)

Table 3: Gender-wise distribution of Oral Aesthetic Subjective Impact Scale (OASIS) in participants

DISCUSSION

In this study, out of 850 students had 73.1% of any form of malocclusion, which is in close proximity to the findings of Afzal *et al.*, who observed a frequency of malocclusion in 75% of sample size in Karachi (1880 subjects out of which 710 were males and 1170 were females) [16]. Similarly, Krishnamurthy *et al.*, who observed a prevalence of malocclusion in 71% of students (total sample size of 745 students) in the age group of 8-12 years school going children in Bangalore, India [9]. Gunatissa *et al.*, conducted a study on 802 schools going children in Galle district in Sri Lanka and found out a frequency of 69.5% which is in agreement of this study [17]. Borzabadi-Farahani *et al.*, conducted a study on Five hundred and two Iranian students (253 females and 249 males, aged 11–14 years) were examined and found out a frequency of 77.1% which is agreement to this study [18]. In a study by Asiry, the frequency of malocclusion was found to be 77.3% [19]. He carried out the study on randomly selected schools in Riyadh, Saudi Arabia with a sample size of 1825 Saudis (1007 males and 818 females) having an age group of 12-16 years. Contrary to the results of this study, Marimuthu *et al.*, (sample of 100 school children aged between 13-17 years), Bugaighis *et al.*, (sample size was 343 Lebanese school children aged between 12-17 years), Alhaija *et al.*, (samples of 1003 school going Jordanian subjects aged 13-15 years) reported a higher prevalence 93%, 95.6%, 92% respectively [20-22]. Similarly, studies by Arabiun *et al.*, (sample size was 1338 high school students; 621 boys and 717 girls, aged 14-18 years in Shiraz, Iran) and Mtaya *et al.*, (sample size of 253 pre-school children were examined in Tanzania) reported low frequency of malocclusion i.e., 23.70% and 32.50% respectively [23, 24].

CONCLUSIONS

Angle's malocclusion was found in 73.1% of the subjects. The least affected psychologically was normal occlusion with (100%) good psychological well-being followed by Angle's class I malocclusion having good psychological well-being (76.8%).

Conflicts of Interest

The authors declare no conflict of interest.

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Original Article

Perceptions of Infection Control Among Nurses Regarding Barriers: A Qualitative Study

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ABSTRACT

Infection in healthcare facilities is an alarming public health problem in most growing countries. Hospital infections are the most significant worldwide complication of healthcare delivery. **Objectives**: To acquire a deeper understanding of infection control nurses' perspectives on the barriers regarding the infection control practices at the tertiary care hospitals Lahore. **Methods:** A qualitative exploratory research approach was utilized. Data was collected from the infection control nurses. Semi-structured interviews were used to collect the data from the 10 study participants through purposive sampling technique. Each interview was transcribed. The data were manually analyzed before being processed by NVIVO. **Results:** A thematic analysis was conducted to determine the themes and sub themes through Braun and Clark's (2006) concept of thematic analysis. The researcher identified three major themes and few minor. The major themes were organization related barriers, health care workers related barriers and patients and family related barriers. Organization lack of facilities was among the top barriers to infection prevention and control. **Conclusions:** Most of the participants had good and enough information regarding the infection prevention and control programs, but it doesn't mean that these activities and implementations will be practiced in routine manners. Three major themes with different barriers were identified. Themes well explained regarding barriers in implementing infection control practices in both public and private hospitals.

INTRODUCTION

Nurses play an essential role in promoting patients' health and providing medical care and treatment. ICP practice, often known as IPC, is one basic responsibility of ICN at all health care settings. IPC practices are "scientific ideas and practical solutions to prevent infection-related harm to patients and health care personnel engaged in the delivery of health care" [1]. To limit HAIs in patients and nurses, it is vital to adhere to the IPC's principles and practices. Infection in healthcare facilities is an alarming public health problem in most growing countries. Hospital infections are the most significant worldwide complication of healthcare delivery. It complicates patient care and increases hospital stays [2]. Presently, the overall occurrence of hospital infection has been expanded in developing countries by 30%-50% and the burden of these infections surprisingly increases [3]. HCWs especially nurses, are at high risk of occupational hazards because they perform their clinical duties in hospitals [4]. The hospital infection prevalence rate is increased worldwide. It accounts about 12 million in the united states in 2021, and the prevalence is high in intensive care units as compared to other units [5]. In the Asia-Pacific region, it is reported that 25% of patients carry hospital infection during their stay in the hospital, which has been estimated to be 20 times higher in growing countries compared to developed countries [6]. In South Asia, the HAIs prevalence rate is higher at 15.5 % in meta-analysis studies [7]. In Pakistan, the HAI rate in the intensive care unit is 25% as compared with the general medicine department [8]. According to recent research, 84,000-204,000 patients get infections from CLABSI and

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around about 25000 die from this infection. 12–25% is a death incident rate of CLABSI. Another study shows that CAUTI account for about 40% which are 70% and 95% in intensive care units [9]. Additionally, of the patients who undergo surgery, 13% become infected with SSI [10]. SSI are the most common hospital infection [11]. SSI accounts for about 20% of all HAIs [12]. This could be related to poor IC practices or nurses may be unable to follow basic recommended measures due to barriers and challenges [13]. These are considered the major barriers to implementing infection prevention practices [14]. This study aimed to explore the perceptions of ICN on the main barriers to IC practices that hinder the effective implementation of IPC.

METHODS

The study was conducted in the infection control departments of different private and public tertiary Hospitals in Lahore. An exploratory qualitative study was used. The exploratory qualitative design is best fit in the study because it is flexible in nature [15]. This study aimed to explore the perceptions of infection control nurses regarding barriers of infection control practices. Purposive sampling was used to select the study participants [16].The anticipated sample size ranged from 10 to15. However, the definite sample size was 10 as data saturated. The data was collected between June and August, 2022. Interviews were conducted by the primary researcher in the Urdu language. Faces to face semi structured interviews were conducted. The interview questions were developed based on barriers in infection control practices. To enhance the quality of interviews, rigor was applied in terms of trustworthiness, credibility, and transferability. Conformability was checked by repeating the answer back to participants. Confidentiality of the data and interviews was assured in well manners. During the in-depth interviews, the following questions were asked:

1. What is infection and infection control practices? Please explain.
2. What is your point of view regarding the importance of infection prevention and control?
3. Tell me about the practices at your hospital?
4. What are the main barriers of infection prevention and control program at your hospital?
5. Your point of view regarding changes that need to improve infection control program

In addition to the interviews, demographic data including age, gender, qualification, years of experience and placement of job were collected by a self-administered questionnaire. The investigator was consensus-based conversation with enough informant feedback, which acts as a member check to provide more insights into the data and improve the study's validity. The trustworthiness of the data was checked by adopting several reflexive practices. Secondly, to guarantee impartiality and consistency in the study findings, the researcher designed an audit trail throughout the analysis phase and kept diaries and research memos within the software. Finally, to eliminate biased opinions or preconceptions, the researcher was conduct regular feedback sessions and meet with specialists who have an unbiased view of the current study, assuring the collection of valid data. After bringing several codes together, categories were created. Categories were labeled and describe the connection with them. Categories were converted into themes, then into Sub-themes and major themes. The text was analyzed thematically. Potential bias or personal motivation should be removed by providing a rationale for the decision. Audio-recorded data was transcribed into text files, and then imported to NVIVO Data analysis software was conducted with NVIVO version 12, and the contents was analyzing thematically. The elements of trustworthiness criteria were followed to ensure the rigor of the study. Trustworthiness means the capability of the investigator to convince the reader regarding the accuracy, applicability, consistency and neutrality of the study findings and interpretations. Credibility is the confidence in representation of the data [17]. Non-verbal gestures of the participants were noted in the field notes. Moreover, pilot testing of the interview guide was done on two clinical instructors to ensure the credibility of the interview questions. For the purpose of dependability and stability of the data, interviews were transcribed in Urdu then translated in the English language for a thorough understanding of readers. Additionally, transcripts were validated by repeatedly listening to the recorded interviews. Conformability refers to ensuring the objectivity and adequacy of information. Conformability was assured by writing reflections to avoid self-biases. Transferability refers to whether the findings of the study would be applicable to other settings [17].

RESULTS

A total 10 infection control nurses participated in this research. They were all skillful in their field of infection prevention and control program. The demographic characteristics were shown in table 1.

Gender	N(%)
Male	03 (30%)
Female	07 (70%)
Age	
28-34	03 (30%)
35-40	07 (70%)
Qualifications	
Post RN	03 (30%)
Generic BS	04 (40%)
NMSN	03 (30%)

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NMSN	03 (30%)
Teaching Experience	
2-6 years	07 (70%)
7-11 years	02 (20%)
≥ 11 years	01 (10%)
Clinical Experience	
2-6 years	07 (70%)
7-11 years	02 (20%)
≥11 years	01 (10%)

Table 1: Characteristics of the Participants

The participant's narratives were analyzed and placed into three main themes which were related to the research questions of the study. Mainly these categories were organizational, and HCW, patient/ family members' visitor barriers. Each theme has some sub themes as discussed below (figure 1 and figure 2). Description of the sub themes is provided in proceeding sections along with the relevant interview of the participants.

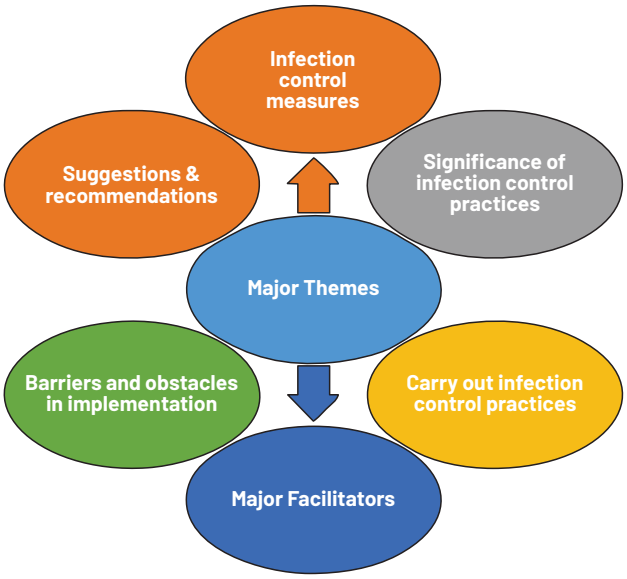

Figure 1: Major Themes of barriers

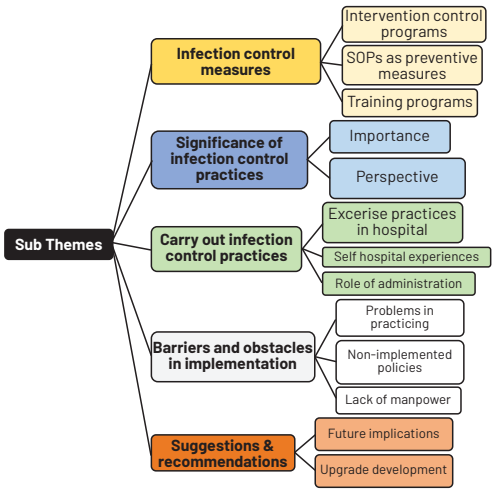

Figure 2: Sub themes of barriers

The participants identified various organizational factors as barriers to the IC practices. Some highlighted barriers are discussed below. The most of the ICN explain the shortage of resources in the departments as the leading barriers to IC practices. Some major facilities shortage addressed by the participants, such as lack of resources by the organization. Sometime participants faced the problems of un availability of PPEs. Some time they have all facilities but there was no manpower to use these facilities. An important issue was present, and an ICN observed it. "I have never observed a single patient wash their body in the ward for the past few days, though there is a pipeline installed", but there was no hot water for winter season" (ICN-02). As illustrated by one of the ICN, " if we have good and advance facilities it will enhance our infection control practices but if equipment is not good and advance then it is a barrier in maintaining standards of " (ICN-04). In interviews most of the participants addressed the budget problems. Sometime very short budget kept for ICP or sometime this area ignored. An ICN stated that "Budget should be fixed so that we may know the availability of things in the budget. Budget is not fixed in any hospital." (ICN-01). Another participant said;"If our material and resources are short, budget is short, and then we are unable to control spread of infections. Reasonable budget for infection prevention material should be maintained" (ICN-06). Over all the participants mentioned in their interviews that regular monitoring should be done on regular basis for the maintenance of equipment and materials. In CSSD all equipment and apparatus must go through under proper observation and standardized procedures. Maintenance problems were reflected by most participants. One of the study participants stated that; "If we talk about administration, if it is good so it can be positive sign for the nurses as well as patients. Unfortunately, the management and administration is not fully involved in the maintenance of infection preventive equipment and measures so it may be proved as a main barrier." (ICN-7). Majority claimed that PPEs are available but not implemented strictly and it also becomes a barrier to IC practices. As stated by one of the participant that; "Poor maintenance of infection control measure can be cause of transmission of infection. Some healthcare providers have no knowledge and awareness about hand hygiene and they don't wear PPEs" (ICN-9). Participant mentioned that turn over of nurses create many problems in all dimentions of work specially in IC practices. Skillful and experienced nurses leave their job due to lack of good oppurtumities . "We have a huge turnover of nurses in our hospital. We lose around one-third of our intensive care staff every six months to the west or the Middle East countries." (ICN-9). Participants told that it is difficult to

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trained new nurses in IC practices and activities because of many reasons like time consuming and they need more nurses to supervise them. Also stated by another ICN that; "As patient inflow is very high but staff is short like ICU nurses. New employees are not trained due to shortage of time. It is also a big barrier." (ICN-3). As one of the participants stated that; "If the HCW providers, especially nurses short in number, then we are unable to provide good IC practices. High work load make us to just finish our work in a way where we cannot follow measures of infection control and prevention". (ICN-10). The main health care workers related barriers are described as under. Experience: Most of the participants in the discussion noted that less experienced HCWs did not adhere to proper standard measures. Participants in certain groups agreed that IPC practices were inadequate due to lack of experience. For instance, one of the participants articulated, "turnover is very important and basic barriers for infection prevention practices. When the experience staff leave and new staff join and new staff is not trained regarding the infection prevention measure it also affect infection control in hospitals." (ICN-05). As one of them articulated, "A clinical nurse should have clinical experience and should be able to supervise juniors in different areas like ICU, CCU, etc. she/he should be expert in handling different equipment and machinery used in clinical areas" (ICN-07). Most of the participants in the session agreed that nurses trained more effectively than other HCW. One study participant stated that; "negative behavior among HCW is also a barrier to the effective IC practices. Sometimes some health care workers don't want to learn, they don't act upon SOPs of ICP." (ICN-6). A participant said that "Negative attitude and non-compliance on professional care level is a barrier for practicing infection control measures. One person is giving good result while the other is not cooperating, it is also a hurdle." (ICN-4). Another participant stated that "lack of Professional communication is a perceived barrier." (ICN-8). It is essential for all hospital nurses and other HCWs to comprehend HAI and IPC standards. However, there was a knowledge gap regarding IPC practices, particularly among cleaners or caregivers. As stated by one participant "Lack of knowledge is a barrier as well. Nurses provide guidelines, lectures, implement on SOPs but audit and monitoring is not done." (ICN-3). One other participant stated that "if we have limited knowledge and lack of awareness regarding new technologies and new policies is also a barrier for prevention of IC." (ICN-5). In HCW, specifically nurses, are required to provide knowledge to patients regarding transmission based precautions. This information should be provided to Patients, as well as their family or cares. The most of the respondents in the discussion mentioned that caregivers' or patients' family faced difficulties in practicing IPC due to lack of knowledge. Some patients and their guests have negative opinions of the hospital setting. One study participant stated that; "Non-compliance on SOPs by family care givers as they are confusing between hand washing and sanitization. Nurses are not giving proper time to it. It is also a barrier or noncompliance or showing negligence, least interest." (ICN-7). One participant stated that; "Culture is also a barrier e.g. most of families strictly avoid alcohol based hand sanitization. Conflict arises which not resolved, proved as barrier". (ICN-4). All participants believe that the presence of too many families and visitors affects IPC practice and activities badly. One participant stated that; "We have a limited staff over a huge number of patients."(ICN-10).

DISCUSSION

The study's findings about barriers and difficulties had a significant impact on IPC procedures. The results can be used to other setups that are comparable in order to improve IPC actions. To maintain the IPC practices for HCWs, patients, and families or visitors at the hospital, the provision of toilet, shower, hand-washing material, and other facilities availability is crucial. In this study, the lack of resources was seen as a barrier to proper IPC practice. This was further substantiated by a related study on nurses who ignored recommended safety measures [18]. This conclusion for IP practice was validated by a similar study. The study results found many factors as barriers such as shortage of staff and lack of facilities. Other significant barriers to the practice of infection prevention were a lack of equipment and supplies, as well as their routine maintenance. Lack of time to practice activities like infection prevention techniques [19]. A similar study found that not having enough time to practice IC in the workplace was a barrier [12]. One of the main barriers to IPC practice in this study was HCW experience. Some of the participants in the discussion agreed that skilled HCWs did not adhere to proper standard precautionary measures. The importance of nurses' skills in addition to technical knowledge was emphasized to have an impact on the infection control practices. According to earlier studies, there may be a professional gap between nurses and other HCW, when co pared and found that nurses are more adherent with acceptable standard procedures. The majority of participants in this survey agreed that nurses were superior to other HCW in some practice of IPC. On the other hand, it was found that attitudes toward IPC (educational background relations), support of organizations and, educational system' priority, availability of time and capacity of staff were identified as the barriers. This knowledge barrier was shown to exist particularly in

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cleaning staff or sweepers. In a related study, this kind of difference was also noted [20]. In a hospital setting, patients are more likely to get HAI than non-patients. HC professionals are encouraged to educate patients on how to take care of themselves to avoid infections. According to studies, patients and HCWs did not communicate well about the prevention of infections. An interviews based study conducted and found that increase in number of patients increase task of nurses which becomes a key barrier to IC at the hospital. According to the findings, there was a high rate of nursing staff turnover and increased patients flow in the hospital which became the major and significant barriers in the clinical overburden [2]. The most of participants in this survey stated that patients, families, or caregivers did not practice good infection prevention. Families, caregivers, and visitors therefore increase their numbers unnecessarily in the hospital workplace atmosphere as a result of their negative perception, which makes it difficult for HCWs to complete their duties and makes it difficult to practice infection prevention.

CONCLUSIONS

In this study the participant discussed about the perceptions regarding barriers and most of the participants had good and enough information regarding the infection prevention and control programs. Organizations can find new and developing areas for improvement by conducting a work systems evaluation. Tasks, people, and organizational level elements were crucial to the effectiveness of infection control procedures. The successful adoption of infection control procedures depends on institutional support for the practice as well as resource prioritization for the recruitment and retention of skilled nursing staff.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Prevalence of Impaired Glucose Tolerance/prediabetes in Local Adult Obese Population Presenting to a Tertiary Care Hospital

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ABSTRACT

Obesity is affecting all countries across the globe and becoming an epidemic. It is a major factor contributing to metabolic disorders, diabetes and cardiovascular diseases (CVD). In Pakistan, CVD has highest mortalities which is closely related to obesity and diabetes. **Objective:** To determine the frequency of impaired glucose tolerance (IGT) in local adult obese population. A cross sectional, descriptive study was designed department of Medicine, Hayatabad Medical Complex, Peshawar. **Methods:** A total of 136 patients with BMI of more than 25kg/m2 in Medical OPD with age between 18-60 years were included. Weight and height were measured for obesity and BMI calculation. All patients were subjected to 75gm oral glucose tolerance test after 08 hours overnight fast. Venous blood was withdrawn before and after the oral glucose solution and IGT were considered positive if the blood glucose level is between 140- 199mg/dl at 2-hour post oral glucose solution. **Results:** 136 patients were analyzed in which 42(31%) patients were having age between 18-40 years, 94(69%) patients were having age between 41-60 years. Mean age was 53 years with SD ± 10.44. Forty-nine (36%) patients were male and 87(64%) patients were female. Moreover 24(20%) patients had IGT while 112(80%) patients had normal glucose tolerance. **Conclusion:** Impaired glucose tolerance was found in 20% of adult obese population. The exponential rise from obesity 1 patients having 8% and obesity 3 patients having 57% IGT shows significantly increased risk.

INTRODUCTION

Obesity (defined by body mass index BMI) is affecting all countries across the globe and becoming an epidemic. It is affecting 30% of the united stated population alone and almost similar results for most countries [1]. Obesity is a major factor contributing to metabolic disorders, diabetes and cardiovascular diseases. In Pakistan, Cardiovascular diseases is one of the major NCD's with highest mortalities, which is closely related to obesity and diabetes [2]. National diabetes survey conducted in Pakistan in 2017 was largest survey to see diabetes and prediabetes prevalence utilizing oral glucose tolerance test found higher prevalence of impaired glucose tolerance/prediabetes in Pakistan. Prevalence of pre-diabetes was 14.4%, more in urban areas (15.5%) than rural areas (13.9%). The prevalence of obesity using Asian cut-offs was exponentially high with overweight, 76.2% and obesity in 62.1% respectively [3]. Along with other factors, obesity was found a strong risk factor for diabetes and prediabetes. A study conducted in Pakistan and India also showed high prevalence of obesity in school going children in Pakistan as well [4]. Another large study conducted in same year using HbA1c as cutoff showed 16.98% prevalence of diabetes. Prediabetes was present 10.91% of subjects. The odds of having diabetes while having obesity was 1.54

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signifying the importance of dysglycemia in obesity [5]. The concept of modifiable and non-modifiable risk factors modifiable risk factors common in all cardiovascular diseases include diabetes mellitus, hypertension, dyslipidemia, overweight/obesity. This is further augmented by smoking, alcohol, dietary issues and lack of physical activity [6]. For our population in Asia these factors effect outcomes at lesser BMI cutoffs than European populations [7]. This potentiate the issues as this part of the world is more prone to the adverse outcomes then. So, WHO and international bodies are using cut off value of BMI for definition of overweight (23 to 24.9 Kg/m2) and obesity greater than 25 Kg/m2 in Asian population and same goes for the waist circumference as well? WHO 2008 figures for overweight and obesity are 35% and 12% respectively [7, 8]. Impaired glucose tolerance (IGT) is also considered pre-diabetes which signifies its importance. It is defined as "two hours' glucose level of 140 to 199 mg/dl (7.8-11 mmol/L) on the 75-gram oral glucose tolerance test. [9]. Impaired glucose levels are also called as prediabetes because its above normal but not reaching diagnostic limit established for diabetes. Impaired glucose tolerance or prediabetes is characterized by subtle increase in sugar levels and resistance to insulin and is a precursor of diabetes mellitus and a risk factor for coronary artery disease, stroke and peripheral vascular disease [10]. The progression from prediabetes to diabetes is set in, by altering the glucose processing and storage, worsening with time and leading to frank diabetes [11]. High incidence of impaired glucose tolerance in obese population has been reported, signifying the relation between obesity and insulin resistance, impaired glucose tolerance, pancreatic β-cells dysfunction and change in abdominal fat distribution [12]. The term diabesity refers to the same phenomenon where obesity increases chances of diabetes exponentially [13]. The present study was planned to ascertain the prevalence of IGT in obese adult people. After an extensive literature review, it was found that very little data exists about the IGT among adult obese population in our location. Moreover, the results of this study can be used as basis for other health care professionals to build on with furthermore extensive studies.

METHODS

This cross-sectional study was conducted over 06 months period in Department of Medicine, Hayatabad Medical Complex, Peshawar. Sample Size calculated was 136 using 9.3% proportion of IGT among obese subjects 12 with 95% confidence level and 5.4% margin of error using World Health Organization (WHO) sample size calculator. Non-probability consecutive sampling technique was used for sample size calculation. Patients with BMI more than 25kg/m2 of either gender with age between 18 to 60 years were included in the study. Those already having diabetes mellitus, liver or renal failure, on medications likes salicylates, anticonvulsants and oral contraceptives were excluded from the study. After approvals from intuitional research board, the study was conducted. All the obese subjects fulfilling the inclusion criteria were enrolled in the study. The motive was thoroughly explained to the patient and an informed consent was taken. Complete history taken and clinical examination was offered to all patients to exclude confounders. Weight and height were measured for the confirmation of obesity. All the patients were advised to re visit the hospital after an 8 hour overnight fast. All patients were subjected to 75gm oral glucose solution. Venous blood was withdrawn before and after the oral glucose solution and IGT was considered positive if the blood glucose level was between 140-199mg/dl at 2 hour post oral glucose solution. Data were saved and then analyzed using SPSS version 23.0. Mean ± SD were calculated for age, weight, height, BMI, blood glucose level before and 2 hours after test (quantitative variables). Frequencies and percentages were calculated for gender, education level, occupation, residence, family history of DM, IGT (categorical variables). IGT was stratified among age, gender, education level, occupation, residence, family history of DM to see the effect modifications by applying chi square test and keeping p-value of ≤ 0.05 as significant. Results were presented in tables and graphs.

RESULTS

In the current study, age distribution among 136 patients was analyzed as 42(31%) patients were in age range 18-40 years, 94(69%) patients were in age range 41-60 years with mean age of 53 years with SD ± 10.44. Out of total patients, 49(36%) patients were male and 87(64%) patients were female. Mean age was 53 years with SD ± 10.44 (Table 1).

Variables	n=136
Gender	
Male	49 (36%)
Female	87 (74%)
Mean age in Years	53 ± 10.44
18-40	42 (31%)
41-60	94 (69%)
Mean BMI	33 ± 3.94 kg/m
Obesity I BMI (30-40)	295 (70%)
Obesity II (40.1-50)	27 (20%)
Obesity III (>50)	14 (10%)

Table 1: Characterizes of the sample

Education level among patients was analyzed as 39(29%) patients were educated while 97(71%) patients were uneducated. Status of occupation among patients was analyzed as 15(11%) patients were laborer, 44(32%) patients were office worker, 53(39%) patients were housewife, 24(18%) patients were businessmen. Status of family history of DM among patients was analyzed as 80(59%)

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patients had positive family history of DM, while 56(41%) patients had Negative family history of DM. Status of residence among patients was analyzed as 99(73%) patients were from rural areas while 37(27%) patients were from urban areas. Status of Body Mass Index among 136 patients was analyzed. Mean BMI was 33 kg/m2 with SD ± 3.94 and further classified according to BMI classes (Table 2). Frequency of impaired glucose tolerance among 136 patients was analyzed as 24(20%) patients had impaired glucose tolerance while 112(80%) patients didn't have impaired glucose tolerance. p values for IGT with respect to age, gender and family history for diabetes are 0.96,0.93,0.84 respectively (Table 2).

Variables	n=136	p-value
Presence of IGT		
Yes	24 (20%)	
No	112 (80%)	
Presence of IGT in age groups n=24		
18-40	10 (42%)	0.96
41-60	14 (58%)	
Presence of IGT in Gender n=24		
Male	10	0.93
Female	14	
Presence of IGT in family Hx for Diabetes Mellitus n=24		
Positive	11	0.84
Negative	13	

Table 2: Impaired Glucose Tolerance IGT Comparison and Stratification

The presence of IGT in different groups of patients in accordance with BMI classification are tabulated in table 3.

Normal OGTT	112 (80%)
Impaired OGTT	24 (20%)
Presence of IGT in Obesity I (n=95)	
Normal OGTT	87 (92%)
Impaired OGTT	08 (08%)
Presence of IGT in Obesity II (n=27)	
Normal OGTT	19 (70%)
Impaired OGTT	08 (30%)
Presence of IGT in Obesity III (n=14)	
Normal OGTT	06(43%)
Impaired OGTT	08 (57%)

Table 3: Presence of Impaired Glucose tolerance in different classes of obesity

DISCUSSION

Obesity is becoming an epidemic in the current world across all subcontinents and countries. The increasing prevalence of obesity and concomitant rise in diabetes is interlinked and alarming issue for the world1. Obesity not only increases risk of prediabetes and diabetes but linked to many cardiovascular, musculoskeletal, gastrointestinal diseases, pulmonary, hematologic diseases and even some malignancies. In Pakistan, non-communicable diseases linked to high risk of mortality are closely related to obesity and dysglycemia [2]. Central obesity is more atherogenic and harbors cytokines and inflammatory markers involved in chronic diseases manifestations [14]. Various factors are involved in the explanation of discrepancy between Asians and Europeans risk of metabolic complications with similar BMI, Asian population having more fat content when compared to Europeans having same weight and body proportions [6]. They have earlier manifestations at lower BMI and that is the reason for lower cutoffs for this part of world by WHO and international obesity task force. For Asians, definition of overweight is BMI range 23 to 24.9 Kg/m2 and obesity when BMI is greater than 25 Kg/m 2.7 We used similar parameters in our study for the diagnosis of obesity. Impaired glucose tolerance/prediabetes was found in significant numbers in our studied population. 45(33%) patients had impaired glucose tolerance while 91(67%) patients didn't meet impaired glucose tolerance criteria. Ghergherechi and Tabrizi conducted a study in 68 obese children in which Impaired glucose tolerance and insulin resistance was present in 14.7% and 31.8%, respectively [15]. There was no case of overt diabetes mellitus. The higher prevalence in our study might be due to adult population in our study as compared to children. The prevalence increases with progressive years and origin of disease from childhood rather from pregnancy. Gestational diabetes in pregnancy not only increases macrosomia and birth complications chances at birth but long-term risk in borne children for obesity, type 2 diabetes and cardiovascular diseases [16]. A study conducted by Ahmad *et al.*, in Lahore had almost similar aims and outcomes where 2.5 % patients in obesity 1 had impaired glucose tolerance and in obesity 2, 10% patients had impaired glucose tolerance. in which a positive result of the patient was labeled as IGT [17]. The patients mean age was 46.3 ± 13.4 years. Out of 20% patients with impaired glucose tolerance, 8% were in class 1 obesity, 30% were in class 2 obesity and in class 3 obesity, IGT was present in 57 % of cases. This signifies that the risk of having impaired glucose tolerance increases as obesity progresses further and the risk is exponential. There is also a belief that insulin resistance/ diabetes predisposes to obesity as well contrary to popular belief with some valid reasons mentioned in review by Melone and Hansen [18]. An observational study carried out by Saaristo *et al.*, conducted similar study in Finnish population and investigated this association based on BMI as well as central obesity by measuring waist circumference [19]. Obesity was highly prevalent and impaired glucose tolerance was found in 42 % of male patients and 33% of female patients. The definition of impaired glucose tolerance included those with impaired fasting, random and even patients with diabetes previously unknown. Our study showed that in 24 patients with impaired glucose tolerance, 10 out of 49 patients were male while 14 out 59 patients were female. Generally, there is concept of less

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susceptibility in females for having diabetes than males due to effect of sex steroids(estrogen)though there may be other plausible mechanisms yet unknown[20].

CONCLUSIONS

Our study concludes that impaired glucose tolerance was 20 % in local adult obese population. These are potential diabetic patients in next few years. This demands nationwide campaign and projects regarding awareness of obesity and ways and lifestyle changes to mitigate the risk of diabetes.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Perceived Stigma, Social Support and Quality of Life in Patients of Tuberculosis

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ABSTRACT

Stigma associated with tuberculosis impairs the quality of life in the patients of this disease by causing delay in seeking treatment whereas the social support improves their quality of life. **Objective:** To find out the role of perceived stigma, and social support in predicting the quality of life among patients of tuberculosis. A correlational research design using a survey method was used in this research. The study was conducted in hospitals of Lahore during 2019-2020. **Methods:** The sample consisted of 200 patients with tuberculosis (99 men, 101 women). Urdu versions of the Perceived Stigma Scale, Multidimensional Scale of Perceived Social Support, and World Health Quality of Life were employed to collect data. **Results:** Pearson correlation analysis indicated that patients who perceived more social stigma had a significantly poor quality of life whereas those patients who perceived greater social support had a better quality of life. Furthermore, regression analysis indicated that social support appeared to be the strongest positive predictor for quality of life followed by stigma which appeared to be a negative predictor for quality of life in patients of tuberculosis. **Conclusion:** The findings of this study have important implications for mental health professionals, health psychologists, and medical practitioners.

INTRODUCTION

Tuberculosis (TB) is a stigmatized disease in many third world countries and stigma is the most common problem which hinders the compliance to treatment of this disease [1]. Stigma related to TB tends to cause delay in diagnosis of TB [2]. It has also been observed that stigma related to tuberculosis had negative correlation with social support and quality of life in patients of tuberculosis [3]. Similarly it was also indicated in a research finding that social support and perceived stigma among patients were negatively correlated with each other [4]. Patients who had high social support experienced low stigma related to their disease. Furthermore, it was also suggested that when a patient has an ample support from family members, friends and care givers, they are less likely to experience stigma related to their illness [5, 6]. Disease related stigma had strong inverse correlation with quality of life. For instance, researchers reported that stigma among patients adversely affects the quality of life. Several research findings indicated that patients of TB who experienced lower levels of stigma had good health related quality of life whereas, the patients who were highly stigmatized individuals started devaluing them and developed negative emotions in the form of guilt, shame and disgust [7]. Researchers also developed negative attitudes that include social isolation, impaired interpersonal relationships and engagement in risky behaviors [8, 9]. Similar findings were revealed in India where social stigma persisted in Indian patients suffering from tuberculosis even after successful treatment of disease. Moreover, their emotional quality of life remained poor even after they were

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cured [10]. Another research explored gender differences in perceptions about tuberculosis in Gambia. Findings indicated that large majority of patients especially female patients reported stigma attached to the disease. Consequently they tried to keep their disease confidential and took treatment from pharmacies and spiritual healers. The study highlighted the need to provide health education about this disease [11]. In Pakistan, patients of TB suffer from various psychosocial problems. A study examined the social consequences faced by patients of TB. Findings revealed that female patients experienced more severe psychosocial problems than males. In female patients, diagnosis of TB lead to divorce, broken engagements and poor chances of marriage for young ones. The underlying idea was increased risk of relapse of TB. Some females could not pursue their treatment of TB because they were pregnant and most of them were financially dependent upon their husbands for treatment expenditure. On the other hand, male patients faced financial crisis as they could not carry on their jobs due to illness [12]. Another Pakistani study depicted psychological and social constraints faced by patients of TB. The participants of the study consisted of thirty six patients of TB and qualitative data were collected by conducting in depth interviews with them. Results indicated that patients tend to hide their disease because of social stigma attached to this disease. They also experienced social isolation, hatred and others feelings of disgust. Due to lack of awareness, they also believed that it is an incurable disease [13]. Keeping in view the existing literature, the present research used quantitative research approach to examine the role of stigma and social support in determining quality of life.

METHODS

It was a correlational research which aimed to investigate the relationship of social stigma, social support and quality of life in patients of tuberculosis. Initially permission was taken from concerned authorities of all scales used i.e. Perceived Stigma, Multidimensional Perceived Social Support and World Health Organization Quality of Life Scales. Prior to the data collection permission from concerned authorities of three hospitals were taken to ensure their willingness. Later participants were approached in their beds and required to fill the consent form. Researcher explained the objectives of the study to them. They were assured that their personal identity will not be disclosed and their responses will be used for research purpose only. Afterwards, Urdu version of scales was administered to them. The meanings of difficult items were explained to the patients and the items of scale were read out for illiterate participants. The sample of the study consisted of 200 TB patients (99 males and 101 females) from public and private hospitals. Purposive sampling technique was used to draw sample. Furthermore, the sample size was calculated through G-Power analysis in accordance with variable to partcipants ratio. Inclusion criteria for the sample was that they should be diagnosed and seeking treating from reputable hospitals and TB centers of Lahore. Exclusion criteria for this sample were those patients of TB who were also not seeking treatments from hospitals as outpatients. Patients of two age groups were selected which were young and middle-aged adults with an age range of 21-35 and 36-55 years respectively. Three questionnaires were used in the study. Perceived Stigma Scale for tuberculosis was used to measure stigma attached to tuberculosis [14]. The scale consists of 23 statements and responses were obtained on four-point Likert scale i.e., strongly disagree = 0, disagree = 1, agree = 2 and strongly agree = 3. The scale had two subscales i.e., Community Perspective and Patient Perspective. These subscales were related to how community and patients perceive stigma towards tuberculosis. The subscale of community perspective contained 11 items and patient perspective has 12 items. The scale had a good internal reliability for both of the subscales i.e. .88 for community perspective and .82 for patient perspective towards tuberculosis. For current study, the reliability of stigma scale was .94 and for subscales i.e., community perspective and patient perspective it was .94 and .86 respectively. The Multidimensional Scale of Perceived Social Support is a brief research instrument intended to inquire perceptions of support from 3 sources: Family, Friends, and a Significant Other [15]. The scale comprised of 12 items, with 4 items for each subscale. The response choices ranged from 1 = very strongly disagree to 7 = very strongly agree. The internal reliability of estimates of MSPSS was .93 for complete scale and .91, .89, and .91 for the Family, Friends, and Significant Others subscales. For current research, the internal consistency estimate is .91.The WHOQOL-BREF for Quality of life included 26 questions and responses were obtained on five-point Likert scale [16]. It has four subscales i.e., physical health, psychological, social relationship and environment. Physical health includes 7 items, psychological domain has 5 items, social relationships include 3 items and environment domain includes 8 items. Alpha coefficient ranging from .71 to .86 had been found for the four subscales. For current study, the reliability of stigma scale was .91. Gender, age, profession, no. of sibling, no. of children, total number of family members, birth order, education, marital status, family income, type of TB, duration of illness of patient, family history of TB and residence were included in demographic form.

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RESULTS

Table 1 shows that the sample consisted of both young as well as middle aged patients of TB. It has almost equal representation of both male and female patients. Majority of the patients had TB of lungs. Moreover most of the patients were less educated, married and belonged to low income group in rural areas. Nearly half of them also had the family history of TB.

Variables	Categories	f (%)	Mean ± SD
Age	Young Adult	115 (57.5)	30.43 ± 4.54
	Middle Aged Adult	85 (42.5)	49.06 ± 9.17
Gender	Male	99 (49.5)	
	Female	101 (50.5)	
Type of TB	Lungs	183 (91.5)	
	Bones	8 (4)	
	Spinal	1 (.5)	
	Abdomen	5 (2.5)	
	Blood	1 (.5)	
	Glands	1 (.5)	
	Heart membrane	1 (.5)	
Duration of TB	>1 year	86 (43.0)	
	≤ 1 year	114 (57.0)	
Family Size	Medium (≥ 5)	92 (46.0)	
	Large (More than 5)	108 (54.0)	
Education	Under-matriculation	113 (56.5)	
	Undergraduates	87 (43.5)	
Marital Status	Married	146 (74.5)	
	Unmarried	51 (25.5)	
Family Income	0-10,000	36 (18.0)	
	11,000-20,000	142 (71.0)	
	21,000-30,000	16 (8.0)	
	More than 30,000	6 (3.0)	
Area	Urban	52 (26.0)	
	Rural	148 (74.0)	
Family History of Tuberculosis	Yes	98 (49.2)	
	No	101 (50.8)	

Table 1: Descriptive Characteristics of the Sample

Table 2 shows that perceived stigma of patients is significantly negatively correlated with quality of life (r = -.62, p<.001) and also with its subscales i.e. physical health (r = -.55, p < .001), psychological (r = -.54, p < .001), social relationship (r = -.45, p < .001) and environment (r = -.43, p < .001). There is a significant positive correlation between social support and quality of life of patients with tuberculosis (r = .63, p < .001), and its subscales i.e., physical health (r = .43, p < .001), psychological (r = .61, p < .001), social relationships (r = .52, p < .001) and environment (r = .46, p < .001).

	Variables	1	2	3	4	5	6	7	8	9	10	11	12
1.	Perceived Stigma	-	.93*	.92*	-.58*	-.43*	-.49*	-.47*	-.62*	-.55*	-.54*	-.45*	-.43*
2.	Community Perspective		-	.71*	-.59*	-.43*	-.52*	-.46*	-.60*	-.53*	-.53*	-.46*	-.39*
3.	Patient Perspective			-	-.48*	-.37*	-.38*	-.41*	-.54*	-.48*	-.47*	-.37*	-.40*
4.	Social Support				-	.81*	.82*	.75*	.63*	.43*	.61*	.52*	.46*
5.	Significant Other					-	.56*	.32*	.43*	.33*	.44*	.35*	.29*
6.	Family Support						-	.45*	.59*	.41*	.59*	.40*	.48*
7.	Friends							-	.49*	.30*	.43*	.49*	.34*
8.	Quality of Life								-	.82*	.87*	.67*	.87*
9.	Physical Health									-	.63*	.44*	.58*
10.	Psychological										-	.44*	.69*
11.	Social Relationship											-	.49*
12.	Environment												-

Table 2: Correlation Matrix of Study Variables (N=200)
*p<.001.

The result of hierarchical regression analysis shows that in step 1, social support is the positive predictor of quality of life among TB patients (β= .63, p<.001) and it explains 39% of variance in quality of life of patients with tuberculosis, F (1, 199) = 130.35, p <.001. Step 2 indicates that perceived stigma added 10% increase in variance in predicting quality of life, F (2, 199) = 95.15, p <.001. At step 2, the model suggests 49% of variance in quality of life is accounted for by social support and perceived stigma collectively. Social support is the strong predictor of quality of life among patients with tuberculosis (β= .41, p < .001) followed by perceived stigma which negatively predict quality of life of TB patients (β= -.37, p < .001).

Predictors	ΔR2	β
Step 1	.39	
Social Support		.63*
Step 2	.49	
Social Support		.41*
Perceived Stigma		-.37*

Table 3: Predicting Quality of life from Perceived Stigma and Social Support (N=200)
*p<.001.

DISCUSSION

The results of correlation analysis indicated that perceived stigma and quality of life of patients with tuberculosis were negatively correlated; the patients who perceived more stigma had low quality of life. These findings are in line with the previous literature, which reported that lower stigma among TB patient is associated with better health related quality of life. The results also indicated the positive correlation between social support and quality of life of tuberculosis patients. These findings are also consistent with another study by Long *et al.*, which reported that patients have better quality of life when they have adequate social support from your family. The results of this study supported the hypothesis and indicated that social support is a strong positive predictor of quality of life among TB

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patients. When family members, and other key relatives provide financial assistance to poor patients of TB, they feel less stigmatized and show more compliance to treatment [17]. Moreover, when friends of TB patients visit them and boost up their morale to fight against the disease, they perceive socially and emotionally connected to them. They also get an opportunity to have catharsis with them which adds to their quality of life. This finding is in line with previous literature by Kaulagekar-Nagarkar *et al.*, and Holt-Lunstad *et al.*, which suggested that social support is a strong predictor of quality of life and it had a significant effect on health-related quality of life [18, 19]. Similar findings were reported in other study by Chang *et al.*, indicating that quality of life in TB patients increases when they have proper social support in their surroundings. Social support may come up in the form of financial and emotional support which may enhance their quality of life [20, 21]. The results of also suggested that perceived stigma is a negative predictor of quality of life among tuberculosis patients. It was reported that lower stigma among TB patient is associated with better health related quality of life. The possible explanation for this finding could be the phenomena that stigmatization associated with tuberculosis may lead to denial from presence of disease in patients. In an attempt to hide their disease, patients don't visit the doctors and give the impression to others that they have ordinary seasonal infection. When their disease becomes adverse, then they start taking treatment. Consequently, their physical, social and emotional quality of life gets impaired [22].

CONCLUSIONS

It can be concluded from the findings of the study that the stigma associated with tuberculosis decreases the physical, psychological, and social quality of life in the patients of TB. However the patients who received high social support from their families and friends experienced better quality of life.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Work Related Upper Limb Musculoskeletal Disorders among Dentist; A Cross-Sectional Study with site and onset of Upper Limb Symptoms

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ABSTRACT

Dentists' working day involves awkward and static standing and sitting positions to work within a precise mouth area, resulting in musculoskeletal problems. **Objective:** To determine frequency of musculoskeletal pain and disorders along with the body-site-specific upper limb (UL) symptoms among dentists. **Methods:** A cross-sectional study with non-probability convenience sampling was done from March to December 2021. Data were collected using three validated questionnaires, Rapid Upper Limb Assessment (RULA), Visual Analog Scale (VAS) and Upper Extremity Functional Index (UEFI). SPSS was used to analyze data. **Results:** Fifty-three dentists were enrolled, with 5 (9.4%) males and 48 (90.6%) females. Pain regions were assessed in terms of frequency and severity of pain. There were significant differences found in different regions with p-value less than 0.001. Severe pain was found more in elbow with 42.9%, moderate pain in shoulder was observed with 37.5% however, 31.8% mild pain was observed in neck region with significant p-value of 0.004. Mean Posture Score (Neck, Shoulder, Elbow and Wrist) was found to be 5.32 ± 0.85 and Mean Posture Score (Upper Back) was found to be 4.08 ± 1.68. Female Gender was found common 25.8% in neck pain, 20.9% in shoulder pain, 16.1% in elbow, 12.9% in upper back with significant p-value of 0.016. **Conclusions:** Elbow was the most painful area in upper limb among dentists working with Clients. Female were more vulnerable in pain than male and majority reported pain related problem, which results in restricted range of motion.

INTRODUCTION

A musculoskeletal disorder occurs when bones, ligaments, muscles, tendons, joints, or nerves are injured. These disorders may be acute or chronic and show multiple signs and symptoms. The etiology includes many factors, but occupation is considered as a risk factor [1, 2]. Musculoskeletal problems faced due to occupation called as work-related disorders (WMSDs), the symptoms are aggravated by the work and circumstances of its performance. These WMSDs are most common among dental personnel, who work in a restricted field that makes high demands on vision. The requirement of this job is static posture with excessive force with fine repetitive hand and wrist movements. The causes of WMSDs are vast including not only workplace conditions, workplace exposures but also organizational, psychological, social and cultural variables [3]. Among the occupational hazards that dental professionals are exposed to are infections (such as the Human Immunodeficiency Virus and viral hepatitis); percutaneous exposure incidents, dental materials, radiation, and noise; psychological problems and dermatitis; respiratory disorders; and eye problems [4]. Furthermore, dentists tend to suffer from musculoskeletal issues, especially neck pain. The trapezius muscle is particularly sensitive to stress, which

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can increase muscle tension and cause pain [5, 6]. A number of factors can increase the likelihood of developing WMSDs, including gender, height, and not enough rest [7]. Age, gender, body mass index, smoking habits, co-morbidities, and predispositions to certain ailments are among the most important factors beyond the physical and psychological characteristics of the individual [8]. A study highlighted several risk MSD risk factors in dentistry profession. Prolonged sitting, static posture, rhythmic and repetitive movements are important. Poor posture is the major risk factor for dentist [9]. Posture of people assessed by RULA is at high risk of MS injuries. They require immediate attention. If they are failed to correct their posture for longer, leaving profession is the ultimate solution. Every year dentists are specifically forced to correct their posture and reduce their working hours in order to live a better life in context of health. High treatment cost and work loss due to pain decreases the efficiency and increases the financial impact. Previously many dentists leave their clinical practices, reduced their practice time and even thought about the early retirement. Due to less working and medication, expenditure efficiency of work is decreased and evolved economic problems. Static posture has an impact on muscles to be in isotonic state for long hours and this stagnant position of muscles cause the reduced circulation and ultimately reduced oxygen to the muscles. Different parts of the body are predisposed to pain for dentists. Among dentists, dental assistants, and dentistry students, Work-related musculoskeletal disorders (WRMSDs) and symptom severity were most commonly reported in the back (36.3%-60.1%) and neck areas (19.8%-8.5%). Moreover, this study found that female dentists and dental assistants had a higher prevalence of arm, wrist, shoulder, and neck MSD symptoms compared to males (60.0%-69.5%) [10]. Dentists who performed surgeries cannot avoid long sitting, even in normal sitting position half side of the muscles of the body are contracted statically and even the vertebral column is static. This will cause damage to back, neck or shoulder. If this daily occurring pain is neglected, it will cause mega damage and the career is on stack. Basic posture for a dentist to assume is important professional health issue. It is universally accepted that working postures should be normal and banced.im proper posture will cause musculoskeletal disorders and pain. A detailed study reported physiological problem as comprehensive treatment plan is developed.in dentistry, static posture, long working hours and repetitive tasks contributes greatly to musculoskeletal disorders and pains [11]. Multiple studies show that severity of WRMSDs is more in dentistry profession than in any other occupation [12].

WRMSDs are observed when the human body's physical capabilities do not match the demands of the task. There is a significant link between the development of MSDs and work activities and conditions. Present study aimed to determine frequency of musculoskeletal pain and disorders along with the body site specific upper limb (UL) symptoms.

METHODS

This was an observational cross-sectional study conducted on dentists. A The Bahria University Medical and Dental College (BUMDC) Institute Research Ethical Committee has approved this study. Data collection period were March to December 2021. Sample size calculated from online software Openepi version 3 by using Single proportion sampling technique with statistical indications of 95% confidence interval and 5% margin of error. Researcher used 50% hypothesized prevalence to get big sample from desired population. Population size of dental faculty working in BUMDC was 60. Total sample size drawn from software was 53. Samples were collected using non-probability convenience sampling method. The inclusion criteria were all the dentist of age ranging from 25 to 40 years, engaged in clinical practice, working more than 3 hours continuously in a day having experience of more than 1 year, dentists who feel pain from doing clinical practice. Exclusion criteria were those dentists who are working in a part time job, having any congenital or musculoskeletal problem, non-consenting dentists. Three validated Questionnaires used for data collection. Rapid Upper Limb Assessment (RULA), Visual Analog Scale (VAS) and Upper Extremity Functional Index (UEFI). The RULA designed for easy use without any need for expensive equipment. RULA developed to evaluate the exposure of individual workers to ergonomic risk factors associated with upper extremity musculoskeletal disorders. By using RULA, the evaluator assigns scores of each region. after the data of score collection these scores were used to evaluate the risk factors that represents the musculoskeletal disorder [13]. In hospitals and clinics, clinicians use the VAS to measure pain severity [14]. A functional impairment caused by a disability or pain in the upper limb can be assessed by UEFI. Patients with shoulder, elbow, wrist or hand impairments can use this scale to assess how much their upper limb disability and pain affect their ability to carry out daily activities [15]. Researcher circulated this form on social media platforms (WhatsApp, Facebook & Email) to those the dentist who qualified inclusion criteria. Estimated time for completing the questionnaire was 20 minutes. Statistical Analysis has done using Statistical Package for Social Sciences (SPSS IBM Chicago, IL) version 25.0. All the continuous variables presented as mean and standard deviation. For categorical variables, frequency and percentages were shown. To check significance Fischer

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Exact test applied. p-value ≤ 0.05 considered statistically significant.

RESULTS

A total of 53 dentists participated in this study. Gender distribution was 5 (9.4%) males while 48 (90.6%) were female. There were 13 (24.5%) Assistant Professors, 4 (7.5%) Clinical Instructors, 18 (34%) Consultant dental surgeons and 18 (34%) were general dentists. Pain regions were assessed in terms of frequency and severity of pain. There were significant differences found in different regions with p-value less than 0.001. severe pain were found more in elbow with 42.9%, moderate pain in shoulder was observed with 37.5% however, 31.8% mild pain was observed in neck region with significant p-value of 0.004 (Table 1).

Region	Frequency of Pain			Severity of Pain			
	Constant	Frequent	Occasional	Mild Pain	Moderate Pain	Severe Pain	Total
Neck	3(60.0%)	7(41.2%)	5(16.1%)	7(31.8%)	6(25.0%)	2(28.6%)	15(28.3%)
Upper Back	0 (0.0%)	3 (17.6%)	10 (32.3%)	8 (36.4%)	5 (20.8%)	0 (0.0%)	13 (24.5%)
Shoulder	2(40.0%)	7(41.2%)	1(3.2%)	1(4.5%)	9(37.5%)	0(0.0%)	10(18.9%)
Elbow	0(0.0%)	0(0.0%)	5(16.1%)	2(9.1%)	0(0.0%)	3(42.9%)	5(9.4%)
Wrist	0(0.0%)	0(0.0%)	10(32.3%)	4(18.2%)	4(16.7%)	2(28.6%)	10(18.9%)
Total	5 (100.0%)	17 (100.0%)	31 (100.0%)	22 (100.0%)	24 (100.0%)	7 (100.0%)	53 (100.0%)
p-value	0.001			0.004			

*Fischer Exact test applied to see the significance

Table 1: Pain Region Associated With Upper Body during Professional Work

Mean Posture Score (Neck, Shoulder, Elbow and Wrist) was found to be 5.32 ± 0.85 and Mean Posture Score (Upper Back) was found to be 4.08 ± 1.68 (Table 2).

Mean Posture Score	Mean ± SD
Posture Score (Neck, Shoulder, Elbow and Wrist)	5.32 ± 0.85
Posture Score (Upper Back)	4.08 ± 1.68

Table 2: Mean Posture Score

RULA score was compared with complain. It was seen that restricted range of motion was common in all participants, 23.1% who need to change their posture, and 15.4% is on change soon category and 61.5% had to implement change in their posture (Table 3).

Major complain	RULA Score				P-value
	Further Investigation, change may be needed	Further investigation, change soon	Investigate and Implement change	Total	
Pain	5(12.5%)	12(30.0%)	23(57.5%)	40(100.0%)	0.461
Restricted range of motion	3(23.1%)	2(15.4%)	8(61.5%)	13(100.0%)	
Total	8(15.1%)	14(26.4%)	31(58.5%)	53(100.0%)	

*Fischer Exact test applied to see the significance

Table 3: Complain versus RULA score status of respondents

When asked about, when did you first experience pain in this occupation-related problem, with pain complain there were 19 (47.5%) having > 2-year time period, 7 (17.5%) observed with 1-2 years and 14 (35.0%) observed with less than 1 year problem (Table 4).

When did you first experience pain in this occupation-related problem?	Major Complaint		
	Pain	Restricted range of motion	P-value
> 2 years	19(47.5%)	9(69.2%)	0.202
1-2 years	7(17.5%)	0(0.0%)	
Less than 1 year	14(35.0%)	4(30.8%)	
Total	40(100.0%)	13(100.0%)	

*Fischer Exact test applied to see the significance

Table 4: Association of complain versus year of working

DISCUSSION

Dentist working in Karachi showed various MSD focusing on upper back and neck in majority those who had been working for more than 2 years. Most of the participant reported bad posture during working. Females are more prone to work related musculoskeletal disorder as compared to men. These WMSD may get worse if were not reported timely and results in restricted range of motion and osteoarthritis. Khan *et al.*, reported in their study that 86% of the dentists were suffering from MSD. The most affected area was the neck region (96%) followed by the shoulder and upper extremities. Dentists complaining of few hours of discomfort for 1 year lie in the range of 4% to 6%, daily pain complaints for 1 month were reported between 4% to 10%, and those who had no complaints ranged from 4% to 8%. Dentists that sought medical help because of pain were 10% to 14% [16]. In this study, 77.8% of general dentists and 92.3% of assistant professors had neck pain. As we focused on the period of working which showed 47.5% of dentists working for > 2 years had pain while 17.5% and 35% had pain between 1-2 years and less than 1 year respectively. According to Meisha *et al.*, 70% of dentists in Jeddah suffer from MSD as a result of their dental work. Back pain (85%), neck pain (84.6%), and shoulder pain (81.2%) were the top three locations for WMSD pain. Moreover, it was reported that dentists who torsional and flexion their necks for better vision while working were twice as likely to report MSD as dentists who don't [17]. Present study observed most frequent pain region was neck which was found in 28.3% participants, followed by upper back 24.5%, wrist and shoulder 18.9% ad elbow 9.4% with highly significant p-value 0.001. Similarly, Ali *et al.*, found that back and neck pain are highly prevalent among dentists in Karachi between the ages of 20 and 40. Seventy-five percent of respondents reported back pain, 45 percent reported shoulder pain, 10 percent reported elbow pain, 3% complained of wrist pain, and 36 percent reported upper back pain [18]. However, Current study showed 24.5% reported back pain, 18.9% had shoulder pain, 28.3% with neck pain, 9.4% had elbow pain and 18.9%

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had wrist pain with significant p-value of 0.001. A pilot study was done by 19. Alghadir *et al.,* on thirty graduated dental surgeons with working experience of 1 year or more, postgraduates, and faculty of dental college evaluated the significant association between age and stiffness of neck with p-value of 0.048 [19]. This study also highlighted severity of pain in maximum participant is elbow region which is 42.9%. However, there were 28.6% participant had severe pain in neck and wrist region with significant p-value of 0.004 [20]. Chamani *et al.,* found that the neck, shoulder, wrist, elbow, and back were the most commonly reported places of musculoskeletal pain, based on the NMQ and RULA pain scores [20].

CONCLUSIONS

This study demonstrated that Elbow was the most painful area in upper limb among dentists working with Clients. Besides this female, reported more overall pain as compared to male and majority of participants reported pain related problem within 2 years of work, which results in restricted range of motion. Further analytical studies are warranted to explore in depth the factors related to work and musculoskeletal pain at work place. here were 28.6% participant had severe pain in neck and wrist region with significant p-value of 0.004 [20]. Chamani *et al.,* found that the neck, shoulder, wrist, elbow, and back were the most commonly reported places of musculoskeletal pain, based on the NMQ and RULA pain scores [20].

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Effect of Chest Drain Management Guidelines on Knowledge and Practice Among Nurses at Services Hospital

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ABSTRACT

Chest drain are inserted to help treat various conditions like pneumothorax, empyema and pleural effusion etcetera. It is also very much indicated after chest trauma and thoracic surgeries**. Objective:** To determine the effect of chest drain management guidelines on knowledge and practices among Nurses at Services Hospital Lahore, Pakistan. **Methods:** One group Pre-post quasi experimental design was used. The study was conducted from December 2021 to April 2022 at the thoracic surgery, medical and surgical ICUS department of services hospital Lahore, Pakistan. Thirty-six registered nurses were selected by convenience sampling from services hospital Lahore according to inclusion and exclusion criteria. Data was collected from the participants by adopted, valid, and reliable tools. A structured questionnaire was used to evaluate the pre-post data that contained 25 true false-based knowledge questions and checklist containing 13 items were used to assess the level of practice of nurses before and after guidelines-based educational intervention. **Results:** The results revealed a positive effect of educational guidelines on improving the knowledge and practice of nurses about chest drain management with Mean ± S.D(8.83±1.69; 19.08 ±2.53) (4.92±1.73; 10.97±0.74) in post-test respectively with statistically significant p-value (p-value <0.001). **Conclusions:** The education of nurses by educational guidelines have a significant effect on improving nurses' knowledge and practice about chest drain management.

INTRODUCTION

Chest drain are inserted to help treat various conditions like pneumothorax, empyema and pleural effusion etcetera. It is also very much indicated after chest trauma and thoracic surgeries [1]. Globally it has been founded that there are nineteen (19) people dying from chest drain per 1000 people [2]. In U.S over one million chest drain are inserted every year [3]. British thoracic society (BTS) pleural procedure audit estimated that an acute hospital would carry out the placement of fifteen drains per month on average, thus approximating 15,00 drains yearly in UK [4]. National Patient Safety Agency (NPSA) reported in 2018, 45 deaths related to chest drain risks. The reason behind these risks is nurses' unsatisfactory practice [5]. More than 300,000 patient undergo cardiothoracic surgery every year, requiring placement of at least one chest drain, the procedure of chest drain system carries 02-25% of severe consequences which can result due to lack of nurses' knowledge about thoracic anatomy and not following standard practices [6]. The second most prevalent cause of chest drain was physical trauma to the chest, which occurred in 13.5 percent of patients. Other causes of chest intubations include COPD in 7.5 percent of patients, lung malignancy in 4.5 percent of patients, and spontaneous pneumothorax in 1.5 percent of patients. A chest drain was also placed on 0.5 percent of patients with a burst lung abscess [7]. In Australia all major trauma patients about more than 25% of patient admitted to trauma center needed chest drain. Furthermore American Heart Association (AHA) reported that more than 448,000 patient underwent cardiothoracic surgery annually, including Coronary Artery Bypass Grafting (CABG), valve replacement, or repair of defects which are familiar

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rationales for chest drain insertion [3].Numerous studies reported that nursing practices for chest drain management is unsatisfactory regarding swinging, bubbling, tidal ling, kinking, milking, protecting drain while positioning, monitoring the drain entrance area for sign of infection and Valsalva manure [8]. The inappropriate management of chest drain may result significant morbidity which leading to prolonged hospitalization. Nurses are the first professional on the patient's bedside after chest drain insertion. So, they should have enough knowledge and good skills on the chest drain management. The critical care knowledge and technical practicing skills among the critical care nurses need to be sustained with the help of updated and appropriate clinical guidelines and relevant education [9]. Nurses play an important role to provide care of patient's chest drain including, assisting, insertion, managing and removing chest drain. Regarding the educational practice guidelines content for nurses working in the critical care department should include: knowledge, skills and competencies to maintain a quality critical care patient's management. Educational session needs to be planned to promote nurses' knowledge and improve skills about chest drain [10]. Chest drains care is a very complicated and critical nursing activity. Nurses with good knowledge about it and practicing basic guidelines and skills while taking care of patients with chest drain will be helpful to protect the patients. Knowledge among nurses regarding chest drain system and performing basic skills can help the nurses to recover patients from serious pulmonary problem [11]. Patients with chest drain have chance of Complication as high as 30%. Inappropriate management of chest drain may cause delayed or incomplete evacuation of the collected air or fluid in the pleural space, and delayed expansion of the collapsed lung. In Pakistan, there is a frightful situation due to poor management of chest drain patients. A statistically significant relationship exists between chest drain management and use of guidelines; it shows guidelines are still ignored for caring the patients. Proper guidelines at the hospitals are the need of hour in Pakistan to reduce the high rates of chest drain complication and morbidity [12]. Since, nurses need to get the education about guidelines regarding chest drain management to improve the knowledge and practice of nurses for empowering the nurses. This influences the researcher to conduct the research.

METHODS

Study was conducted by using the protocols of declaration of Helsinki. All the participants were well-informed and written consent was obtained. Institutional Review Board of University of Lahore had granted the approval (IRB-UOL-FAHS/976/2021) dated on 26-10-21 to conduct this study. One group Pre-test Post-test (quasi-experimental) study was conducted from December 2021 to April 2022, Registered nurses were included from the thoracic surgery unit, Surgical Intensive care units and medical intensive care units of Services hospital Lahore.36 registered nurses were selected by using purposive sampling technique. Nurses who attended the recent training session on chest drain management, who had the plan to go on leave and Nurse working at managerial posts were excluded from the study. To calculate the sample size, mean and standard deviation is used from the previously published articles. Sample size was 36 by adding 20% drop out rate and 80% power of the test. Tool was adopted from the published research with permission [13, 14]. Tool had three parts; Part A Demographic Variables, Part B Knowledge Assessment Questionnaire, Part C Practice checklist. Knowledge level assessed by using True false based questionnaire that contained the 25 questions before and after educational intervention. Right answer was marked as '1' and wrong answer marked as '0'. Knowledge was categorized by summing the scored obtained as; poor knowledge< 50% (1-12.5), if percentage is 50-70% (12.5-17.5) it will be considered as moderate and >70%(18-25) will be considered as good. Nurse's practice checked by using 13 statements on Practice categorized into two by summing up the obtained scores as; unsatisfactory practice <70% (9.1) and satisfactory practice >70% [10]. Educational intervention was given to the nurses by making small groups including 3-5 nurses and also carried out with 1 nurse according to availability and working schedule. 10 Weeks educational training was given by using PowerPoint lectures, audio-visual demonstration and videos regarding chest drain management. Total 15 sessions were conducted by taking 3 sessions per week. 2 weeks were given for the implication of knowledge and 4 weeks were given for practice improvement. SPSS version 20.0 used for statistical analysis. Demographic and professional variables assessed by frequency and percentages. Data collected in the form of whole numbers and twice i.e. before and after educational intervention. Mean difference calculated by paired t-test with $p \leq 0.05$ considered as significant.

RESULTS

Total 36 individuals were chosen from Services hospital Lahore. Table 1 depicted that most of the nurses 14 (38.9%) had Diploma in Nursing. 15(41.1%) had working experience between 1-5 years; 15(41.7%) were 26-30 Years of age (Table 1).

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Variables	Frequency (%)
Age (years)	
26-30	15 (41.7%)
31-35	12 (33.3%)
36-40	9 (25.0%)
Gender	
Female	36 (100%)
Education	
Diploma nursing	14 (38.9%)
Post RN	11 (30.6%)
BSN	11 (30.6%)
Experience (years)	
0-1	3 (8.3%)
1-5	15 (41.7%)
6-10	11 (30.6%)
> 10	7 (19.4%)

Table 1: Demographic characteristics of studied sample

Table 2 depicted that Mean ± SD in pre-teaching indicates all nurses had poor level of knowledge while in post-teaching, majority of the nurses had good level of knowledge. This showed a statistically significant difference in mean Knowledge Scores after intervention with p-value <0.05.

Variable	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean difference	t-test	p-value
Knowledge	8.83±1.69	19.08 ±2.53	10.25±.44	23.45	<.001

Table 2: Comparison of pre and post intervention Knowledge score of nurses regarding chest drain management(n=36)

Table 3 depicted that Mean ± SD in pre-teaching indicates all nurses had poor level of Practice while in post-teaching, majority of nurses had good level of Practice. This showed a statistically significant difference in mean practice Scores after intervention with p-value <0.05(Table 3).

Variable	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean difference	t-test	p-value
Practice	4.92±1.73	10.97±0.74	2.67±0.48	6.056	<.001

Table 3: Comparison of pre and post intervention practice score of nurses regarding chest drain management(n=36)

DISCUSSION

The aim of study was to determine the effect of educational Guidelines for improving the knowledge and practice of nurses regarding chest drain management. Knowledge and practice of the nurses are the basic pillars to enhance the patient care. This study has the same findings as the previous study conducted in Peshawar using pre and post intervention assessment design showed that there is an increase in the knowledge and practice level of nurses regarding chest drain management [15]. which highlights the positive correlation between knowledge and practice of nurses. So, educational programs should be arranged by the Nursing administrators to enhance the practice and knowledge regarding chest drain management. The findings of the current study are consistent with the study conducted in Ismailia University which revealed significant improvement in mean scores as Mean ± SD (56.0±19.5, 95.6±3.4,) for the knowledge of Nurses as compared to the poor knowledge before education [16]. Since, the entire studied nurses did not have any under or postgraduate training program about chest drain management, lack of supervision, unpresented evaluation system for nurses' performance. Another study conducted in North Gujrat using cross sectional study design with a sample size of 70 nurses to evaluated the knowledge of nurses regarding chest drains management through a validated questionnaire [17]. The results of the study showed similar findings that, majority of the participants (81.4%) had poor knowledge regarding chest drains care management. Similarly, scores regarding nurses' role in chest drain management (65.7%), and nursing interventions (68.6%) were reportedly poor. A study conducted in Lahore regarding the knowledge of staff nurses regarding chest drain care with a sample of 150 nurses [18]. The findings of the study were in contrast with our findings which showed that 24% participants had poor or average score while majority of the participants (40%) has good score where they answered 19 or more questions correctly. Another study on assessing the effects of nursing management guidelines for patients with chest tube drainage on nurse's performance showed that before implementing the guidelines, nurses' had poor knowledge level (62.5%) with unsatisfactory practice level (70%). After implementation of the guidelines, results showed improvement with 65.0% of them had good knowledge level and 90% had satisfactory practice level. It also indicated that education in the form of informative booklet is helpful in improving knowledge and practice of nurses [19]. Another study where the effectiveness of an educational program on nurses' knowledge and practices regarding nursing interventions of chest drain drainage system was conducted using a pre-test/post-test approach for the study group and control group. The results of this study showed significant improvement in nurses' knowledge and practices for chest drainage system in post-test which is similar to the findings of this study [20].

CONCLUSIONS

This study concluded the effect of educational guidelines in improving nurses' knowledge and practice regarding chest drain management has a significant positive impact.

Conflicts of Interest

The authors declare no conflict of interest.

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Original Article

Effect of Educational Guidelines on Nurses' Knowledge and Practices Regarding Ventilator Associated Pneumonia at Tertiary Care Hospital Lahore

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ABSTRACT

Ventilator associated pneumonia (VAP) is a kind of pneumonia which develops in patients receiving mechanical breathing after 48 hours. One of the most prevalent nosocomial infections and the main factor in the high morbidity and mortality of intensive care units is ventilator-associated pneumonia (VAP). In order to prevent VAP, intensive care unit nurses are best equipped to use the available evidence-based measures (VAP). **Objective:** To determine the effect of educational Guidelines on the knowledge and practice of nurses regarding ventilator associated pneumonia. **Methods:** A Quasi-experimental one group pre-post, test was used conducted between January 2022 to May 2022 at a tertiary care hospital in Lahore, Pakistan, in the department of Medical intensive care unit and surgical intensive care unit. 36 registered nurses were selected by convenience sampling from tertiary care hospital Lahore according to inclusion and exclusion criteria. A structured questionnaire was used to evaluate the pre-post data that contained 20 MCQ-based knowledge questionnaire and 21 items containing practice checklist were used to check the practice level of nurses before and after guidelines-based educational intervention. **Results:** The results revealed a positive effect of educational guidelines on improving the nurse's knowledge and practice about Ventilator-associated pneumonia (VAP). Mean ± S.D (7.78 ± 1.22; 15.86 ± 1.22) (8.94 ± 2.39; 17.39 ± 0.96) in post-test respectively with a statistically significant p-value (p-value <0.001). **Conclusion:** The education of nurses by educational guidelines has a positive effect on improving nurses' knowledge and practice about Ventilator-associated pneumonia (VAP).

INTRODUCTION

One of the most frequent pneumonias that people on ventilators develop in hospitals is known as ventilator-associated pneumonia (VAP). High morbidity and death during hospitalization is major cause of VAP. The fact that intensive care unit nurses frequently are not aware of evidence-based recommendations for preventing VAP has a negative effect on patient care. Patients having mechanical ventilation had a frequency of 8 to 28% Ventilator-Associated Pneumonia [1]. With continuing use of a ventilator, it could develop worse [2]. Worldwide, the prevalence of ventilator-associated pneumonia ranges from 5% to 67%, and its high death rate is between 24% and 70% [3]. The major cause of infection-related death in critically ill patients is VAP, the second most frequent illness picked up in hospitals. VAP is acknowledged as a critical issue everywhere. In Europe, there are 14.5 incidence of VAP per 1,000 ventilator days. It happens in approximately in 10–20% of patients who need mechanical breathing, and this rate has not reduced throughout the years. It has a detrimental impact on patient outcomes and is related to increased intensive care unit (ICU) mortality [4]. In the US, there are 2 to 16 occurrence of VAP every 1,000 ventilator days [5]. In underdeveloped nations, the VAP rate ranges from 1.5 to 41.7 per 1000 ventilator days. Additionally, frequent hospital acquired infections (HAI) are related to higher patient costs, longer hospital stays, and mortality in impoverished nations [6]. Studies suggest that about 55% cases with VAP can be prevented by having appropriate knowledge and proper practicing protocols [7]. Due to lack of nurses knowledge and poor practice regarding VAP prevention patients are affected [8]. VAP is preventable, therefore appropriate knowledge and

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practices among ICU Nurses are recommended to reduce the prevalence of VAP [9]. ICU Nurses should have equipped with knowledge and timely managed which will reduce the occurrence of VAP. Different nursing practices can reduce the incidence of VAP and patient's outcomes measure can be improved [10]. Critical care Nursing is a complex specialty which is developed to serve the diverse health needs of seriously sick patients with fatal and life-threatening conditions [11]**.** The number of days spent in the ICU can be decreased from 36 to 27 days by using a bundle to avoid VAP. Because of preventive efforts, infection rates have decreased from 8.6 VAP/1000 ventilator days to 2.0 VAP/1000 ventilator days. Headboard elevation between 30° and 45°, oral hygiene with 0.12% chlorhexidine mouthwash, mechanical teeth brushing, endotracheal tube pressure check, and ventilator filter position are examples of low-cost, simple-to-implement preventive measures [1]. In Pakistan, there is a frightful situation due to continuous increase in ventilator associated pneumonia. A statistically significant relationship exists between ventilator associated pneumonia and use of guidelines; it shows guidelines are still ignored for caring the patients. Proper usage bundle guidelines at the hospitals are the need of hour in Pakistan to reduce the high rates of ventilator associated pneumonia [12]. Since, nurses need to get the education about guidelines regarding prevention of VAP to improve the knowledge and practice of nurses for empowering the nurses. This influences the researcher to conduct the study.

METHODS

A quasi-experimental study One Group Pre-test Post-test was conducted from January 2022 to May 2022, Registered nurses were included from the Medical and surgical ICU department of tertiary care hospital Lahore Pakistan. 36 registered nurses were selected by using purposive sampling technique. Nurses who attended the recent training session on prevention of ventilator associated pneumonia, who had the plan to go on leave and who had the previous ventilator associated pneumonia were excluded from the study. To calculate the sample size, mean and standard deviation is used from the previously published articles. Sample size was 36 by adding 20% drop out rate and 80% power of the test. Data collection tool was adopted from the published research with permission [13]. Tool had three parts Part a Demographic Variables, Part B Knowledge Assessment Questionnaire, Part C Practice checklist. Educational intervention was given to the nurses by making small groups including 3-5 nurses in each group and also carried out with 1 nurse according to availability and working schedule. 10 Weeks educational training was given by using PowerPoint lectures cum audio-visual demonstration and videos regarding the VAP, classification of VAP, criteria to diagnose ventilator associated pneumonia and guidelines to reduce the VAP. Total 15 sessions were conducted by taking 3 sessions per week. 2 weeks were given for the implication of knowledge and 4 weeks were given for practice improvement. SPSS version 20.0 used for statistical analysis. Demographic and professional variables assessed by frequency and percentages. Data collected in the form of whole numbers and twice i.e., before and after educational intervention. Mean difference calculated by paired t-test with $p \leq 0.05$ considered as significant.

RESULTS

Total 36 individuals were chosen from Services Hospital Lahore. Table 1 depicted that most of the nurses 29(80.6%) had Diploma in Nursing. Almost of 15(41.6%) the nurses had working experience between 1-5 years; 13(36.1%) were 30-34 Years of age, majority of the nurses are female (Table 1).

Variables	F (%)
Age (years)	32.97±4.35
25-29	11(30.6)
30-34	13(36.1)
34-39	9(25)
40-44	3(8.3)
Gender	
Female	36(100)
Male	0 (0)
Education	
Diploma nursing	29(80.6)
BScN	7(19.4)
Experience (Years)	
<1	1(2.8)
1-5	15(41.1)
6-10	9(25)
>10	11(30.5)

Table 1: Demographic Variables of study sample

Table 2 depicted that Mean ± S.D in pre-teaching indicates all nurses had poor level of knowledge while in post-teaching, majority of the nurses had good level of knowledge. This showed a statistically significant difference in mean Knowledge Scores after intervention with p-value <0.05.

Variable	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean difference	t-test	p-value
Knowledge	7.78 ± 1.22	15.86 ± 1.22	8.08	30.81	<0.001

Table 2: pre and post intervention comparison of Knowledge score of nurses regarding ventilator associated pneumonia (n=36)

Table 3 depicted that Mean ± S.D in pre-teaching indicates poor level of Practice in all nurses had while in post-teaching, majority of nurses had good level of Practice.

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This showed a statistically significant difference in mean Practice Scores after intervention with p-value <0.05.

Variable	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean difference	t-test	p-value
Practice	8.94 ± 2.39	17.39 ± 0.96	8.44	-19.9	<0.001

Table 3: pre and post intervention Comparison of practice score of nurses regarding ventilator associated pneumonia(n=36)

DISCUSSION

The goal of this study was to evaluate the effect of educational Guidelines for improving the knowledge and practice of nurses regarding VAP. Nurses provide the care to the patients in the health care facilities. Knowledge and practice of the nurses are the essential element to control the ventilator associated pneumonia that in result improve the patient care. A pre-test post-test quasi experimental study was conducted to evaluate the effect of educational guidelines on the knowledge and practice of nurses regarding ventilator associate pneumonia. Current study has the statistically significant difference (p<0.05) in the knowledge of the studied nurses in pre-post intervention Mean ± S.D (7.78 ± 1.22 15.86 ± 1.22) as the previous study conducted at private tertiary care hospital Karachi that nurses had the poor knowledge regarding evidence based guidelines for the prevention of VAP, before educational program which highlights the positive correlation between knowledge and evidence based guideline [14]. There is statistically significant difference (p<0.05) in the knowledge of the studied nurses in pre-post intervention Mean ± S.D (7.8 ± 2.9 10.8 ± 2.1) So, educational programs should be arranged by the Nursing administrators to enhance the knowledge and practice for reduction in ventilator associated pneumonia. The findings of the current study are consistent with the studies of quasi experimental studies conducted in Jordan which also revealed a statistically significant difference (p<0.05) in the knowledge of the studied nurses in pre and post intervention [15]. Similar findings were revealed by Apisarnthanarak *et al.*, study conducted in tertiary care center Thailand; the study found significant difference in pre-post in educational intervention [16]. The study also found the unsatisfactory knowledge level of the participants before educational intervention, while satisfactory knowledge level was assessed after educational intervention. In comparison to the study conducted in by Jansson *et al.*, which show the systematic review the effectiveness of the educational program on nurses' knowledge and practice in association with patients suffering from VAP [17]. The review not only found the effectiveness of the educational program in reducing the VAP. The current study has reported statistically significant differences in studied nurses' practice in pre-post intervention Mean ± S. D (8.94 ± 2.39 117.39 ± 0.96). Similar findings were reported by Osti *et al.*, study conducted in Nepal the study found statistically significant difference between the practice of the entire studied nurses (100%) between pre and post-program implementation [18]. The study showed high significance throughout the follow up of the program implementation i.e., decline in scores significant improvement in the post-test scores (p<0.001). Similarly, a quasi-experimental study by Mishra and Rani conducted in India and found the effectiveness of the management guidelines in the practice of the nurses regarding educational guidelines on VAP [19, 20]. The study also reported improved performance of the studied nurses' post-intervention implementation (p<0.001). It is indicated that well defined educational guideline in the different aspect of ventilator associated pneumonia is helpful in improving knowledge and practice of nurses.

CONCLUSIONS

This study concluded the effect of educational guidelines improving nurses' knowledge and practice regarding VAP has a significant positive impact.

Conflicts of Interest

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Original Article

Effect of Educational Intervention on the Knowledge of Nursing Students Regarding Dengue Fever

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ABSTRACT

Dengue (DEN-gee) fever is a tropical disease caused by a virus carried by mosquitoes. The virus can cause fever, headaches, rashes, and pain throughout the body. **Objective:** To determine the effect of educational program regarding dengue fever among 4th year nursing students in Peshawar Pakistan. **Methods:** This quasi-experimental study was conducted in Peshawar from October 2020 to March 2021. The study duration was six months. It was one group pre and post study design. The sample was collected through simple random sampling from 4th November 2020 to 4th December 2020. The sample size was 65; while the target population was fourth year nursing students in five different nursing colleges in Peshawar. Data analysis was performed through SPSS version 20. **Results:** In the pre-test, majority of the participant's knowledge was average 72.3%, while the remaining participant's knowledge were poor 27.7% regarding dengue fever. In post-test the level of knowledge of all the participants were good 100%. The mean knowledge score of pre-intervention was 16.98 with the SD of 2.88 whereas; the mean knowledge score of the post-intervention was 27.16 with the SD of 1.13. Similarly, the p-value was found statistically highly significant (p=0.001, t (64) = -27.914, CI 95%). **Conclusion:** The study concluded that interventional study may help to convey the knowledge from classroom to other nursing students, patients, homes, and friends.

INTRODUCTION

Dengue fever (DF) became one of the major causes of high morbidity and mortality in adults across the globe. According to WHO before 1970 only nine countries were affected from DF epidemic but, now the disease became endemic more than 100 countries of the world. 400 million people get infected globally each year due to DF and 5 million people were hospitalized because of severe signs and symptoms; moreover, the estimated mortality rate is 2.5% which may increase to 20%. Thousands of people are dying each due to DF. DF has putted almost half of global population at risk approximately 2.5 billion people which become 40% of the entire population [1, 2]. The incidence of DF has raised 30 folds from the last 5 decades [3]. DF is a communicable mosquito-borne infection [4]. Aedes Aegypti Mosquito is the prominent carrier of Dengue virus (DV). This infection is common in all age groups and sexes including male and female. Severe dengue causes serious illness among adults and young children [5, 6]. The dengue virus infection also classified into different categories; dengue fever, dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) undifferentiated fever (UF) extended dengue syndrome (EDS) [7, 8]. DF has shown the

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regular occurrence in all over Pakistan. The first epidemic of dengue was occurred in Pakistan in 1994, but burden of dengue was sudden raised in Karachi in 2005[9]. 21,685 new cases and 350 deaths were reported from Pakistan in 2011 while, 71649 cases and more than 757 deaths were reported in 2016 [7]. Almost 8343 DF cases included 57 deaths were reported from swat in 2013 [10]. In 2019 the first dengue case was reported from Khyber teaching hospital, Peshawar. Almost 47,120 DF cases along with 75 deaths were reported from Pakistan in 2019. Region wise 3,075 dengue cases and 3 deaths were reported from Baluchistan, 12,053 cases and 33 deaths from Sindh, 9,676 cases and 16 deaths from Punjab, 12,986 cases and 22 deaths from Islamabad, 1,689 cases and 1 death from Azad Kashmir, while 7,641 cases from Khyber Pakhtunkhwa in 2019 [11]. The burden of DF has been increased dramatically worldwide from the last 20 years. This is mainly due to the spread of DV and uncontrollability of Aedes Aegypti mosquitoes which cause high morbidity and mortality not only in Pakistan, but all over the world. DF is considered as one of the emergent diseases in Pakistan and outbreaks occur every year which lead to great socio-economic impact. Asian countries are expensing 950 million dollars on DF each year [12]. This is because of unplanned and uncontrolled urbanization and no proper sewage system. No effective control and preventive measures for Aedes aegypti in addition; lack of knowledge and awareness not only in health care provider as well as in public on community level regarding DF. If the DF is not controlled then more 2 billion people will affect until 2080 [13, 14]. The purpose of this study was to assess the knowledge of nursing students regarding DF after that provide the knowledge of DF and its prevention to the nursing students through an educational intervention program in different nursing colleges across the province in KPK.

METHODS

Study design, study setting and sampling: A quasi experimental study (pre-test post-test) design was used for the current study without control group. The study was conducted in the five selected nursing colleges such as Institute of Nursing Science (INS), Post Graduate College of Nursing (PGCN), Rehman Nursing College (RCN), Northwest Nursing College (NNC), Ruphida College of Nursing (RNC) in Peshawar, Khyber Pakhtunkhwa (KPK). The study target population was composed of both gender male and female 4th year nursing students including semester 7th & 8th in five selected nursing colleges at Peshawar, KPK, while those students who were absent or received training on dengue in last six months were excluded from the study. Simple random sampling technique was used for data collection. Sample size was 65, final year nursing students of generic BSCN. The sample was calculated through OpenEpi with 95% confidence level and 5% margin of error. Lottery method was used for sample size selection. The paper was labelled with yes and no (yes for inclusion and no for exclusion) everyone drawn their lottery paper by themselves randomly and allocated to the group accordingly. Study Instrument: Validated adopted self-administered questionnaire (SAQ) was used for data collection. The reliability was checked through spearman brown split half technique. It was found r= 0.437 which showed the tool validity and reliability. The Questionnaire consists of two sections. Section 1**:** It was included of demographic characteristics such as age, gender, father occupation, family income, religion, residence area and source of information regarding DF etc. Section 2**:** It was consisted of 30 items regarding the knowledge of DF, each question was four options, and each correct answer was one score. If the answer was incorrect the score was considered zero. The highest score was 30 and the participants were categorized according to their score percentage. Therefore, cutoff values were set for interpretation that are: The score for adequate knowledge was 76% - 100%. The score for moderate knowledge was 51% - 75%. The score for inadequate knowledge was 0% - 50% [8]. Study Intervention and Data collection Procedure*:* The intervention for the study was developed through books, and from interventional studies which was validated from my supervisor and 5 more nursing education specialists. The study intervention was divided into 2 sessions each of half hour (Table 1).

	Contents	Duration
Session 1	Explanation of Dengue fever, its types and Epidemiological features and Mode of transmission.	30 mins
Session 2	Clinical manifestation, diagnostic procedure, risk factors, prevention, management, and complication of dengue	30 mins

Table 1: Contents of educational intervention of this study

Data were collected from 4th November 2020 to 4th December 2020. The data collection was divided into three phases, pre intervention, intervention, and post intervention (Figure 1).

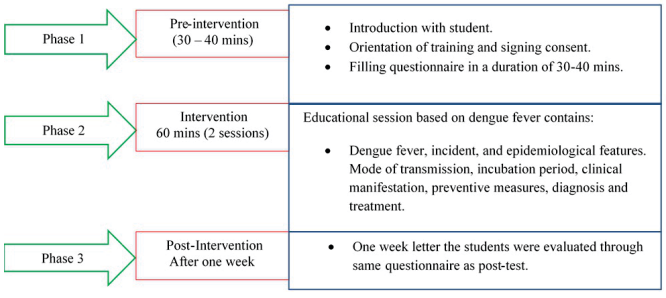

Figure 1: Data collection steps

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The data were put and analyzed through SPSS version 25.0. Frequencies, percentages, and proportion were calculated for categorical variables. Mean and standard deviation were calculated for continuous variables. The pair t-test was applied for mean score difference. Data collection permission was taken after approval of Advance Study and Research Board (AS&RB), Ethical Review Board (ERB) of Khyber Medical University (KMU). Permission was also taken from the authority of concerned nursing educational department as well as from the participants. Before data collection they were informed about the purpose of the study in written and verbal form. Informed consent was also taken in written form. The participants were ensured about their anonymity and confidentiality after data collection.

RESULTS

The number of study participants was 65. The number of female participants was in majority (72%) compared to male participants (28%), while the mean score of age were 22.2 ± 1.1. The number of students from Ruphida College of nursing were in majority (23%), followed by Rehman College of nursing, northwest institute of nursing, institute of nursing sciences (20%), and post-graduate college of nursing (17%) (Table 2).

Characteristics	Variables	Frequency (%) (n=65)
Gender	Male	18 (28%)
	Female	47 (72%)
Age	Mean ± SD	22.2 ± 1.1
	Single	60 (8%)
Marital status	Married	5 (92%)
	Institute of Nursing Science	13 (20%)
	Post Graduate College of Nursing	11 (17%)
Institutes	Rehman Nursing College	13 (20%)
	Northwest Institute of Health Science	13 (20%)
	Ruphida College of Nursing	15 (23%)
Religion	Islam	61 (93.8%)
	Christian	4 (6.2%)
Semester	7th semester	42 (64.6%)
	8th semester	23 (35.4%)
Have information about dengue fever?	Yes	42 (64.6%)
	No	23 (35.4%)

Table 2: Demographic characteristics of the participants

The level of knowledge of pre-test was categorized as poor, average and good score. In pre-test majority of the participants score was average (72.3%), while in post-test the level of knowledge of all the participants was good (100%) (Table 3).

	Poor knowledge	Average knowledge	Good knowledge	Mean score	Standard error	p-value
Pre-test	18 (27.7%)	47 (72.3%)	0	16.98 ± 2.88	.35727	.001
Post test	0	0	65 (100)	27.16 ± 1.13	.14137	

Table 3: Pre-test and post-test with level of knowledge

Table 4 shows that gender is not associated with level of knowledge, while there is significant association between knowledge and semester.

Variables	Pre-intervention Knowledge	
	t-value	p-value
Gender	-.741	.462
Semester	-2.163	0.034

Table 4: Association of pre-test knowledge with selected variables

DISCUSSION

The pre interventional mean knowledge score of this study regarding DF was 16.98 whereas, the mean knowledge score of the post intervention was improved to 27.16 and the p-value 0.0001 which was found highly significant. Similarly, the research study which was conducted in India resembles to this study because the pre-education interventional mean knowledge score was 12.92 and post intervention knowledge score was 21.52 while p-value was 0.0001. (The poor knowledge was 84% which was improved to 100% of adequate knowledge after the educational intervention). The study showed, highly significant association between the educational intervention and post intervention knowledge score [15]. Comparably, finding of this study are similar with the study which was conducted in Malaysia, as the pre intervention mean knowledge score of that study was 60.44 with SD 23.087 whereas, the post intervention mean score was 76.55 with SD 15.50 with p-value less than 0.05%. There was highly significant difference between pre and post intervention knowledge score. Therefore, the relationship was found between knowledge score and educational intervention as evidence by improvement in the knowledge of students regarding DF [4]. The result of another study is matching with this study which was conducted in India, the pre intervention mean score was 36.4 and SD 11.3 improved to the post intervention mean knowledge score 82.6 and SD 9.6. The study concluded that effective educational session boosts up the knowledge level of nursing students [16]. The aim of this study same as the study that was conducted in India, the pretest poor level of knowledge was 44.1% improved to adequate level of knowledge 72.1 % after educational intervention and the p-value was 0.001 which was highly significant. Its mean the relationship was present between level of knowledge and educational session [17]. The purpose of this study is same as the study was conducted in

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India. The pre intervention mean knowledge score of that study was 19.7 with SD 5.01 whereas, the post intervention mean score was 31.93 with SD 3.98 and the p-value less was than 0.05%. There was highly significant difference between pre and post intervention knowledge scores [18]. Another such study like this study conducted in Sri Lanka among students regarding DF, the pre-education interventional session poor knowledge level was 46.31%, moderate knowledge was 42.62% and excellent knowledge was only 2.92% which was researched to excellent knowledge 41.84%. Overall, the adequate knowledge was improved up to 38.92% after intervention. There was significant difference between pre and post intervention educational score so; it showed that college based educational intervention has important role to enhanced the education of nursing students regarding DF and able them to put the adequate knowledge into their daily nursing and clinical practices [19]. The findings of this study are much closed to the study which was conducted in India among students. The pretest mean knowledge score was 28.25% and the post intervention mean knowledge score was 70.83% so that the differentiation between pre and post session was 42.28%. It revealed that the educational session is playing a key component role for improvement of knowledge regarding infectious diseases especial for DF [14]. As to demographic variables such as age was associated with pre-intervention knowledge score of DF; the mean age of participants was 22.27 years with SD 1.17. These finding are related with the study which was conducted in Nepal, showed no statistically significant associations between age and the pretest knowledge scores [20]. However, demographic variables; the female gender was approximately more than half of the study sample (72.3%) and male was (27.7%) while the p-value was 0.462; the same study was conducted in Baghdad which showed that the female was 58.8% and male was 41.2% while the p-value was more than the level of significance. Based on the enough evidence that the insignificant relationship was found between gender and participants pre intervention knowledge [21].

CONCLUSIONS

The study concluded that the educational program based on self-administered questionnaire for DF had a significant effect on the knowledge of final year nursing students. Thus, the methodology and study findings clearly signify the importance of these sorts of educational intervention and training programs for the betterment to keep prevent oneself as well as others from this infection. This study also revealed that there was not a significant relationship between pre-intervention level of knowledge and some demographic variable for example age and gender.

Conflicts of Interest

The authors declare no conflict of interest.

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Original Article

Efficacy of Retromandibular Approach in The Management of Mandibular Subcondyle Fractures

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ABSTRACT

Mandibular condylar fracturing are a common outcome of mandibular trauma. Condylar and subcondylar injuries benefit best from the retromandibular technique, which also offers the greatest exposure to the joint and ascending ramus. **Objective:** To determine the efficacy of the retromandibular approach in treating condylar fractures with open reduction and internal fixation (ORIF). **Methods:** A total of 25 subjects with age range 14 to 55 years having unilateral mandibular condylar fractures with disturbed occlusion utilizingretromandibular approach were included in the study. Relevant information was gathered and evaluated. **Results:** The average age of the sufferer was 31.18 ± 8.17 years and mean duration of fracture was 5.32 ± 0.73 days. There were 21(84%) male patients and 04 (16%) female sufferers. RTA was the most common mode of injury seen among patients (60%). The shattered segments' anatomic reduction and fixation were successful. The efficacy was 72% on basis of ease of operation and 96% on fracture stability. **Conclusion:** This technique is effective in term of ease of operation and fracture stability. Scar acceptability can be considered drawback of this procedure.

INTRODUCTION

Mandibular condyle fractures account for 25% to 30% of all mandibular fractures, making it one of the most frequent facial fractures. Anywhere along the line from the sigmoid notch to the mandibular angle, there are many types of fractures that might happen. Various mandibular fractures are frequently present along with it [1]. The stabilization of fractures of the mandibular condyle head, neck, and base has long been a contentious issue. Many people hold the concept that essentially all displaced condylar fractures should be repaired surgically, whereas others hold the opposite viewpoint [2]. These fractures are typically treated conservatively due to the technical challenges of exposing and fixing as well as the possibility of facial nerve damage. The incidence of delayed consequences including temporomandibular joint ankylosis, condylar necrosis, regression of mandibular development, and occlusal anomalies have been recorded in the research, despite the fact that favorable early clinical findings are frequently

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obtained with conservative management [3]. Open surgery, as opposed to conservative treatment, can quickly restore normal occlusion and jaw movement. Condylar fractures have been treated surgically using a variety of techniques, including submandibular, preauricular, rhytidectomy, intraoral, and retromandibular. For subcondylar fractures, the submandibular approach has a very poor success rate, while the preauricular technique has a very high success rate. The retromandibular method is mentioned in the research as a possible option relatively occasionally [4]. Hinds and Girotti first suggested the retromandibular incision in 1967 [5]. It is chosen by surgeons because it offers clear visibility of the whole ramus and the lower subcondyle from the posterior edge [6]. This incision is closer to the subcondyle than the submandibular incision, allowing for easier fracture care and direct accessibility to the subcondyle's fractured line, which facilitates the subcondyle's reduction. Additionally, it enables the operator to operate perpendicular to the fracture, preventing the need for a transfacialtrochar and minimizing excessive retraction [7]. Additionally, it can prevent direct contact with the facial nerve, protect the function of the parotid gland and its capsule, and create a scarcely perceptible scar at a location that is largely covered. Mandibular subcondylar fractures are identified by a fracture line that is lower than the level of the sigmoid notch's most inferior portion [8]. In this study, open reduction and internal reduction for mandibular subcondylar fractures using the retromandibular technique were evaluated for effectiveness and results.

METHODS

The department of Oral and Maxillofacial Surgery, Institute of Dentistry, LUMHS Jamshoro, conducted this prospective non-controlled trial(case study) using non probability consecutive sampling from October 2021 to August 2022. The sample size calculation was done using the Raosoft Sample size calculating formula. With confidential interval 95%, power 90% and drop-out 10%, sample size became 25. Patients with age span of 18 to 50 years with clinical and radiographic evidence of unilateral displaced subcondylar fracture with disturbed occlusion, which are indicated for ORIF, were included in the study. Patients having bilateral subcondylar and condylar neck fractures, who were unwilling to take part in the trial, mentally retarded patients or those whose health makes them unfit for general anesthesia were excluded from study. This research comprised patients who met the inclusion requirements and were referred to the Outpatient Department (OPD) or the Emergency Department (ED). Every participant or their attendant signed a documented permission form. On the Proforma, participant information such as name, age, gender, and hospital registration number were entered. After receiving clearance from the Ethical Review Committee, the study was carried out. Clinical assessment, orthopantomography (OPG), and P.A view of face were used to diagnose a mandibular condyle fracture. A written informed consent was taken before starting the surgical procedure. Mode of injury and duration of fracture were also noted. Open reduction and internal fixation with miniplates were performed on all patients using a retromandibular incision. The patient was recommended to go to the hospital and was maintained nil per oral for 6 hours the day before procedure. The general anesthesia permission was collected simultaneously on the day of operation by hospital staff. Before beginning surgery, the normal universal method for draping and preparation was followed. Procedure was carried out with lidocaine 2% with adrenaline 1:80000(max: 7.5 mg/ml) at the incision site. The anticipated two-centimeter incision was made at the beginning of the procedure, around 0.5 cm inferior to the ear lobe and 0.5 cm posterior to the mandibular boundary. The course of the facial nerve branches was located using a nerve stimulator after passing the cutaneous, subcutaneous, and parotid capsules. A blunt dissection was then carried out from both sides of the nerve tract using a curving hemostat to expose the masseter muscle. After the pterygomasseteric sling was incised, the fracture line was forced by subperiosteal dissection using a periosteal elevator. After achieving anatomic reduction, two 2-mm titanium miniplates were used to stabilize the fracture line. Closure was done with resorbable suture followed by proline 3.0. All participants received intermaxillary training elastics for a week following surgery. Post operatively, patients were called for follow checkup at 3 months. After surgery, the patient's perception of the scar (acceptable to patient or not), facial nerve function(with nerve stimulator), fracture stability(by radiographic evaluation; no gap and proper ongoing healing), and occlusal disparity (lack of maximum intercuspation) were all evaluated. The procedure was labeled effective if the proper access to subcondylar area to reduce the fracture (ease of operation) and bone osteosynthesis with miniplates (fracture stability) and with no injury the facial nerve. Data analysis were performed in R programming. Age and duration of fracture were computed as mean and SD. Categorical data like gender, injury mechanism, and postoperative assessment calculated as frequencies and percentages. The effectiveness (ease of operation and fracture stability) was stratified among genders to see effect modification using Fisher exact test. $p<0.05$ was taken significant threshold.

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RESULTS

A total 25 patients with unilateral subcondylar fracture were treated with retromandibular incision. The mean age of the subjects was 31.18 ± 8.17 years and mean duration of fracture was 5.32 ± 0.73 days. The range for age and duration of fracture were 14-55 years and 3-7 days. There were 21(84%) male patients and 04 (16%) females. The most common age group was 31-45 years(n=14, 56%) followed by 15-30 years(n=10, 40%)(Table 1).

Variable	Characteristic	N = 25*
Gender	Female	4(16.00)
	Male	21(84.00)
Age group (years)	15-30	10(40.00)
	31-45	14(56.00)
	45 and above	1(4.00)

Table 1: Distribution of gender and age group
*n(%)

RTA was the most common mode of injury seen among patients (60%), followed by fall (32%). One patient each was having sports injury and interpersonal violence. Details of mode of injury are mentioned in figure 1.

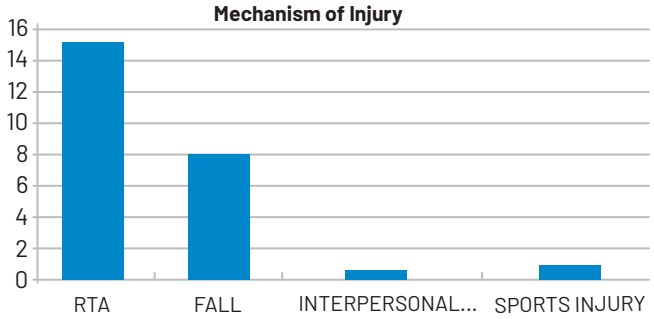

Figure 1: Showing mechanism of injury

Effectiveness on basis of ease of operation was 80% and on basis of facture stability was 96%. Ease of operation was noted in 20(80%), fracture stability in 24(96%), 1 patient has postoperative facial nerve paresthesia, salivary fistula was noted in 3(12%). 18(72%) patients were satisfied with scare appearance. Only 1 patient was reported with malocclusion on one month follow up. All these findings are mentioned in table 2.

Variable	Characteristic	n (%)
Ease of Operation	Absent	5(20.00)
	Present	20(80.00)
Facial Nerve Injury	Absent	24(96.00)
	Present	1(4.00)
Salivary fistula	Absent	22(88.00)
	Present	3(12.00)
Scar Acceptability	Absent	7(28.00)
	Present	18(72.00)
Fracture Stability	Absent	1(4.00)
	Present	24(96.00)
Occlusal Discrepancy	Absent	24(96.00)
	Present	1(4.00)

Table 2: Outcomes of retromandibular approach at three months follow ups

The concern for scar among females was 50% and males were 23.81% but the difference was statistically significant. Similarly, the ease of operation and fracture stability was also not differed statistically (p>0.99) (Table 3).

Variable	Characteristic	Female, N = 4	Male, N = 21	p-value*
Ease of Operation	Absent	1(25.00)	4(19.05)	>0.999
	Present	3(75.00)	17(80.95)	
Scar Acceptability	Absent	2(50.00)	5(23.81)	0.644
	Present	2(50.00)	16(76.19)	
Fracture Stability	Absent	0(0.00)	1(4.76)	>0.999
	Present	4(100.00)	20(95.24)	

Table 3: Comparison of outcomes of retromandibular approach among genders
*Fisher exact test

DISCUSSION

Both conservative and surgical approaches can be used to treat subcondylar fractures. The conservative approach to treating condylar fractures was preferred in the past. However, an open reduction was the first treatment method used to stabilize a low subcondylar fracture in 1925, and it has subsequently become increasingly popular, most likely due to the development of plate and screw fixation systems [9]. Many surgeons today choose open reduction for displaced fractures because the stiff fixation and reduction allow for quick function and appropriate anatomic realignment [3]. In this study, open reduction and internal reduction for mandibular subcondylar fractures using the retromandibular technique were evaluated for effectiveness and outcomes. Our study comprised total 25 patients with unilateral subcondylar fracture, which were treated with retromandibular incision. The mean age of the subjects was 31.18 ± 8.17 years and mean fracture duration was 5.32 ± 0.73 days. There were 21(84%) male patients and 04 (16%) female sufferers. RTA was most common mode of injury encountered in patients in this study. in around 76%. We feel ease in operation using this approach, and 96% patients were treated adequately and achieved stable occlusion. This approach provides better outcomes in terms of facial nerve injury and scar acceptability. Rahim *et al.*, and Kshirsagar *et al.*, findings, which claimed that the retromandibular technique gives a sufficient exposure for the majority of condylar fractures, offer strong justification for all of the research results of our work [10, 11]. Ellis and Dean evaluated the anatomy and several surgical techniques for addressing mandibular condyle fracture with plate and screws [12]. He discussed the benefits and drawbacks of the retromandibular approach, as well as the preauricular, submandibular, intraoral, and rhytidectomy techniques. He came to the conclusion that the

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retromandibular technique is superior to the others because it has a shortened operating contact from the incision to the condyle, wider exposure because the tissue can be retracted up to the extent of the sigmoid notch, outstanding visibility even in faces with marked edema. The majority of condylar fractures can be successfully exposed via the retromandibular technique. The material of the parotid gland may contain branches of the facial nerve and retromandibular vein. As the technique crosses the gland, there is a potential of a salivary fistula, which can be avoided by transfixing the gland capsule. The majority of fistulas heal on their own [13]. In this study 3 patients were found to have salivary fistula, which is somewhat not desired by the surgeon. In our viewpoint, failing to restore the parotid capsule will probably lead to a salivary fistula. Ayub *et al.*, in their study similar to our findings have noticed 1 case of salivary fistula while utilizing retromandibular approach [14]. In this study, only 1 patient out of 25 experienced some occlusal discrepancy following the procedure. The fracture line can be reached at a straight angle using the retromandibular approach, and the force applied to the fractured edge is readily visible. The fixation of the fracture anatomically is facilitated, according to the experts. Facial nerve was noted in one patient in this study, which was temporary and resolved afterwards. The likelihood of facial nerve injury increases with strong soft tissue retraction and ranges from 30 to 48% [15, 16]. According to different research, the likelihood of facial nerve damage after surgical fracture repair of the mandibular condyle varies from 12% to 48% [17,18]. Dissection and retraction of the tissue, handling of fracture pieces, or the use of hardware may all cause nerve injury [19, 20]. To treat subcondylar and high ramus mandibular fractures with extraoral surgery, we think the retromandibular approach is the best option because it provides effortless access to the fracture line, ensures that the scar is hidden behind the mandible for aesthetic reasons, and has a relatively little complications frequency.

CONCLUSIONS

Our observations of 25 patients indicated that the retromandibular route was a secure and efficient technique. The subcondylar region is adequately exposed using the retromandibular technique, which is a respectable alternative in the treatment of condylar fractures.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Relationship of Periodontal Health and Multiple Common Stress Factors Among The Socially Deprived Women

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ABSTRACT

Periodontitis is a prevalent chronic inflammatory disease in developing countries which may impose multiple negative impacts on the quality of life. The possible role of psychosocial factors in the aetiology of inflammatory periodontal diseases needs further investions to establish the fact. **Objective:** To evaluate the general periodontal health and the relationship of periodontal inflammation with multiple common stress factors among the socially deprived and separated women residing in a shelter home of Multan city. **Methods:** This group comparative study was spanned over one month. Through purposive sampling, a cohort of 115 women aged 20-40 years, residing in the SOS village shelter home, Multan for more than a month were included. Women were divided into Cases (with stress) and Controls (without stress) and were matched for age and educational status. Periodontal examination was done employing Community Periodontal Index while Life Events Scale was used to assess the type of stress. A structured and validated questionnaire was used to record the readings. Descriptive statistical measures including mean and frequency percentages along with Logistic regression analysis were used employiong SPSS version 21. **Results:** Significant relationship ($p<0.001$) was found between periodontal disease and self-health-related stress, financial stress and family health-related stress. Logistic regression analysis revealed that subjects who felt self-health-related stress are 0.016, financial stress are 0.125 and family health-related stress are 0.207 times more prone to have periodontal disease than those who never or rarely felt such stresses. **Conclusion:** Self-health-related stress, financial stress and family health-related stress are the potential risk indicators for the development of periodontal disease among socially deprived women.

INTRODUCTION

Periodontitis is a prevalent chronic inflammatory disease which may impose multiple negative impacts on the quality of life [1, 2]. It is a multifactorial disease and entails the phases of aggravation combined with episodes of diminution. It represents a confined infectious load that starts indigenous inflammation and tissue damage [3]. Experimental evidence suggested bacterial plaque deposits as the primary factor initiating periodontitis [4, 5]. Several risks and susceptibilities have been associated with periodontitis, like systemic diseases, socio-economic or educational status, tobacco smoking and psychological stress [6, 7]. Genetic, dermatological, haematological, granulomatous, immunosuppressive, and neoplastic disorders can also have periodontal manifestations [8, 9]. Reviewing the literature concerning the possible role of psychosocial factors in the aetiology of inflammatory periodontal diseases, there is strong evidence that emotional stress is one of the predisposing factor to gingivitis [10, 11]. Several stress markers are found in blood and saliva of patients with periodontal diseases and

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influence the development of periodontal diseases by several mechanisms including modifications of the inflammatory response and changes in the composition of the dental biofilm [12, 13]. Stress is usually compatible to survive with the encounters of daily life. Complications initiate when the stress reaction is incompatible with the severity of challenge. Psychosomatic stress can down control the cellular immune reaction [14]. When matched with the subjects who are not depressed, both medically compromised and medically well people with severe depression were revealed to have all prime features of inflammation with high inflammatory mediators like prostaglandins, significant inflammatory cytokines and all the solvable receptors in peripheral blood and cerebrospinal fluid [15]. Relationship between stress and poor periodontal condition has been well established by several studies in Western countries [16-18]. However, very limited data is available to support this relation in South East Asia. Most of the previous studies have assessed the relation of academic stress, stress related to self health and job stress with periodontal inflammation [14, 17]. Whereas, the periodontal status of individuals suffering from other stresses such as emotional stress due to academic issuses, family problems, financial stress, stress de to marital issues is as yet unknown. Therefore, this study was envisioned to evaluate the general periodontal health and the relationship of periodontal inflammation with multiple common stress factors among the socially deprived and separated women residing in a shelter home of Multan city.

METHODS

This group comparative study was spanned over one month (February-March 2021).The study sample consisted of a cohort of women aged 20-40 years. Through non-probability, conveinient and purposive sampling, out of a total of 380 women, 115 women who were residing in the trust for more than a month were approached at SOS village welfare trust/ shelter home, Multan. Permission to conduct the study was obtained from the Official Ethical & Review Board of Multan Medical & Dental College, Multan under MDC No. 0013 (parent institution of the research). Permission was also taken from the trust administration. The official visit day was informed to the participants beforehands on which informed consents were priorly obtained. Participants with all possible confounders for periodontal disease, including systemic diseases, any prosthesis in oral cavity, lack of any of the index teeth and all subjects who did not gave consent were disqualified from the present study. Nominated subjects were questioned employing a structured and validated questionnaire for evaluating periodontal condition and stress factors. Subjects were made sure about the information taken from them will be kept confidential and therefore, they must be honest to all answers. From the final sample (n=115) all the subjects completed the periodontal clinical examination and answered the questionnaire. Based on this, a total of 58 sujects revealed the presence of any of the given stress and therefore fell into the category of stress group and were considered "Cases"; the other 57 subjects responded no stress condition and were considered healthy with no stress "Control". Cases and Controls were particularly matched for age and educational status. For this purpose females were further divided into sub-groups, 20-30 and 31-40 years and under graduates and graduates. Periodontal inspection was lead by a competent inspector following all cross infection protocols using mobile dental units. Sterilized instruments were used to execute the examination. Community Periodontal Index (CPI) was employed as basic examination tool. Life Events Scale was used to assess the type of stress from which the subjects were suffering. Later on 10% of the study population intra-examiner reliability of the inspecter was also measured. Descriptive statistical measures including mean and frequency percentages were calculated to describe the distribution of replies against all study variables. Logistic regression analysis was also used employiong SPSS version 21.0. Intra-examiner reliability was measured by Cohen's Kappa. Any value having $p<0.05$ was said to be statistically significant at 95% confidence interval.

RESULTS

The mean age of the women identified was of 27 ± 6.84 years. The intra-examiner reliability (mean Kappa value) was found to be 0.95. Table 1 reveals the responses of the study participants in percentages against all study variables. Mainstream of participants (n=82) were between 20-30 years and most of them (n=101) were undergraduates. Stress due to financial reasons was the most commonly identified stress (n=27) however, self health stress was least found (n=12) amoung the study subjects. Almost 52% (n=60) subjects were identified to have healthy periodontium while, around 28% and 19% had bleeding and calculus respectively.

Variables	Options	Cases (N=58)	Controls (N=57)	Total
Age	20-30 Years	42	40	82
	31-40 Years	16	17	33
Educational Status	Under Graduate	52	49	101
	Graduate	6	8	14
Stress Type	No Stress	-	57	57
	Self Health Stress	12	-	12
	Financial Stress	27	-	27
	Job Stress	00	-	00

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	Stress Related To Family Care	05	-	05
	Family Health Related Stress	00	-	00
	Stress Related To Parenting	00	-	00
	Stress Related To Neighbor Hood	00	-	00
	Stress Related To Other Factors	14	-	14
Periodontal Status	Healthy	37	23	60
	Bleeding	21	12	33
	Calculus	13	09	22

Table 1: Descriptive Results of Study Population

The results of logistic regression analysis indicative of association of stress with periodontal condition and resultant odds ratio. Significant associations were found between periodontal disease and financial stress ($p<0.001$), periodontal disease and self-health-related stress ($p<0.001$) and periodontal disease and stress related to family care ($p<0.001$). It has also been revealed that subjects who felt self-health-related stress are 0.016 times more likely to develop periodontal disease whereas, subjects who reported financial and stress related to family care are 0.125 and 0.207 times more prone to have periodontal disease respectively than those who never or seldom felt such stresses (Table 2).

Stress Factors	p-value	Odds Ratio (95% Ci)
Self Health Stress	0.001	0.016
Stress Related To Family Care	0.001	0.207
Financial Stress	0.001	0.125

Table 2: Logistic regression analysis demonstrating association of stress with periodontal condition and corresponding odds ratio

DISCUSSION

This study has reported the periodontal status of the socially deprived and separated women and the relationship of periodontal inflammation with different stress factors. To date, there is no data which has assessed this association among the underprivileged women population. This entails that, it was high time to work on this endeavor and reveal the consequences induced by emotional stress on periodontal health. In the present study, nearly half (49.6%) of the study subjects responded no stress condition whereas, the rest (50.4%) reported different types of stresses from which they were suffering. Stress due to financial reasons was the most commonly identified stress, however, self health stress was least found among the study subjects. These finding are in contrast to the previous literature which reported the presence of job stress as commonest felt stress, followed by self and family health related stress. Financial was least found among the study subjects, suggesting a better financial stability and health concioussness in Japan as compare to our part of the world [19]. In the present study, almost 52% subjects were revealed to have healthy periodontium while, around 28% and 19% had bleeding and calculus respectively. This suggests that subjects with no stress showed no periodontal disease while those with different stresses showed diseased periodintium on clinical examination. Similarly, current study reported significant statistical associations ($p<0.001$) between periodontal disease and financial stress, self-health-related stress and stress related to family care. These clinical and statistical findings clearly indicate a strong association of stress with periodontal pathologies. These findings of the present study are similar to many previously reported by Shah *et al.*, and Talib which determined that subjects with stress were additionally prone to periodontal pathologies than those who under no circumstances or only seldom felt the stress [19, 20]. Likewise, high occurrence of periodontal disease was seen in subjects who sensed job stress than those without such stress [18]. Another similar study by Akcali stated that "Chronic stress has a negative impact on the occurrence, development, and response to the treatment of periodontal disease via indirect actions on the periodontium" [12]. Few other studies testified that increase plaque depositions and poor gingival status was present in the students with psychological problems and different stressses in comparision to their controls [21, 22]. Direct relationship between different types of stresses in our society and many oral pathologies including periodontal disease still needs to be discovered.

CONCLUSIONS

Self-health-related stress, financial stress and family health-related stress are the potential risk indicators for the development of periodontal disease among socially deprived women. Stress reduction interventional measures may be recommended to prevent and control the increasing trend of periodontal disease.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

To Determine the Frequency of Urinary Tract Infection in Women with Preterm Premature Rupture of Membranes

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ABSTRACT

Preterm labor affects around thirteen million of births worldwide annually and is more observed in developing nations as compared to developed world. While 2 to 3% of pregnancies develop preterm premature rupture of membranes (PPROM) that result in increased morbidity and mortality of mother and child. Pregnancy induced hypertension and ante partum hemorrhage remained other important factors to develop preterm labor. Once diagnosed, needs expert consultation and management. **Objective:** To determine the frequency of urinary tract infection(UTI) in women with preterm premature rupture of membranes. **Methods:** This Cross Sectional study was done in department of Obstetrics and Gynecology, ATH, Abbotabad. From 30th August 2019 to 29th February 2019. We included 202 patients fulfilling the inclusion criteria. Informed consent was taken. The data were collected on prepared proforma. **Results:** In our study 202 patients with mean age of 25.93 ± 4.70 years were included. Mean gestational age was 33.09 ± 1.69 weeks. Mean parity was 2.36 ± 0.92. In our study, frequency of urinary tract infection (UTI) in women with PPROM was found in 09 (4.46%) patients. **Conclusion:** This study concluded that frequency of UTI in women with PPROM was found in 4.46% patients.

INTRODUCTION

PPROM and idiopathic preterm labor are the most common cause of preterm labor. Cesarean section as preferred mode to deliver baby, especially for very preterm infant age less than 30 weeks gestation . Preterm labor may be prevented in patient at high risk specially those who had already history of preterm delivery by taking some general and some specific measure in antenatal period. So poorly formed uterine segment, increased operative hemorrhage and infections are related with increase maternal morbidity and mortality. PPROM needs aggressive management if there is active labor, abruptio placenta or clinical evidence of maternal fetal infection [1]. The use of amniocentesis to detect covert or occult intra amniotic infection is in practice but still controversial. One of the main risks associated with PPROM is UTI. It is most commonly results due to catheterization and repeated vaginal examination. UTI may manifest as asymptomatic defined as presence of >10 5 bacteria per ml within the urinary specimen in asymptomatic patient. Symptomatic UTI is defined as presence of >100 bacteria/ml and pus cells >5/ml along with urinary symptoms of frequency, urgency and/or burning micturition [2]. Asymptomatic and symptomatic bacteriuria are found in 13% and 17.9% of pregnant women respectively. UTI is more in pregnant women [3]. Any gravid

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with preexisting renal disease is more prone to develop UTI. Colonization of vagina and preuretheral region with enterobacteriacae and gram positive organisms is the initial step. Changes at the level of urinary tract during pregnancy make it more likely that asymptomatic bacteriuria will progress to symptomatic UTI [4]. As in the absence of treatment may lead to pyelonephritis. There is paucity of local data, so the objective of our study is to determine the frequency of UTI in women with preterm premature rupture of membranes.

METHODS

This Cross Sectional study was done in department of obstetrics and gynecology, ATH, Abbottabad. From 30th August 2019 to 29th February 2019**.** By taking expected percentage of UTI as 3.4% with confidence level of 95% and margin of error 2.5% size of sample was 202 was calculated [5]. We included 202 patients fulfilling the inclusion criteria using Non-Probability, Consecutive Sampling. All the full term pregnant patients admitted in gynae and obs. unit of age 18 to 40 years and gave informed consent. We included gravida with Gestational age 30-36 weeks on LMP, parity 0-4 and PPROM as per operational definition. We Excluded patient with history of hypertension, diabetes and those who refused informed consent. The data were collected on prepared proforma from the prepared list. We enrolled 202 patients meeting the criteria from department of obstetrics and gynecology, ATH, Abbotabad were included in the study. Permission from ethical committee and research department of CPSP was taken. Informed consent was taken by explaining benefits of the study. Basic demographics (age, gestational age, parity, residential status (rural/urban) and weight on weighing machine) was recorded. Urine sample from all women was collected and sent to same hospital laboratory for urine test. Data were collected on proforma. Data were analyzed on SPSS-version-22. Frequency and percentage was computed for qualitative variables like residential status and urinary tract infection. Mean ± SD was presented for quantitative variables like age, gestational age, parity and weight. Effect modifiers like age, gestational age, parity, residential status and weight was controlled by stratification. Chi square test was applied and $p \leq 0.05$ was considered significant

RESULTS

Age range in this study was from 18 to 40 years with mean age of 25.93 ± 4.70 years. Majority of the patients 162 (80.20%) were between 18 to 30 years of age. Gestational age varies 30 to 36 weeks with mean of 33.09 ± 1.69 weeks as shown while mean parity was 2.36 ± 0.92 . Mean weight was 68.70 ± 11.30kg as shown in table 1.

Variables	Range	Mean ± SD
Age (years)	18-40	25.93 ± 4.70
Gestational age (weeks)	30-36	33.09 ± 1.69
Parity	0-4	2.36 ± 0.92

Table 1: Distribution of demographic and clinical characteristics of the study sample

In our study, frequency of UTI in women with PPROM was found in 09(4.46%) patients as shown in figure 1.

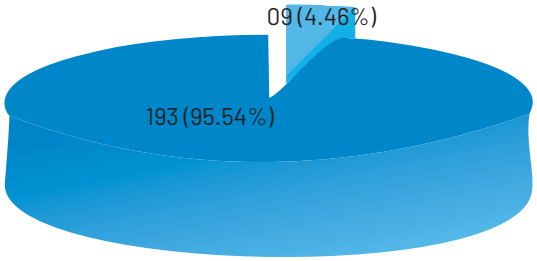

Figure 1: Frequency of UTI in women with PPROM (n=202)

Stratification of UTI with respect to age groups that shows more in age group of 30-50 years (55%) and gestational age of 30-33 weeks has more cases (66%). In our study UTI was more observed in patients with higher parity of 3-4(55%). Higher weight patient developed more UTI (88%) and patients with urban background developed more (88%) shown (Table 2).

Variables	Urinary tract infection		p –value
	Yes	No	
Age (years)			
30-50	5	157	0.058
51-71	4	36	
Gestational age (weeks)			
30-33	06	106	0.488
34-36	3	87	
Parity			
0-2	4	115	0.36
3-4	5	78	
Weight (kg)			
60	1	61	0.193
>60	8	132	
Place of living			
Rural	1	53	0.279
Urban	8	140	

Table 2: Frequency of UTI by various patients characteristics

DISCUSSION

PPROM is one of main factor for premature delivery of baby and associated with high morbidity and mortality of mother as well as child. It can be avoided by adopting certain measure like bed rest , avoidance of strenuous activities

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and coitus. Patient should be aware to symptoms like lower abdomen pain, change in the character of vaginal discharge and increase amount of fluid. PROM is multifactorial; very few literatures was published locally. Infection is one of the most common factors in development of PROM. Studies have shown that race specific risk for African American are at higher risk for developing PROM. Evidence support the prophylactic use of antibiotics in women. Aggressive management is employed when delivery is necessary and management is case specific. There was variation of choice and duration of antibiotics associating upper genital tract infections with PROM. Neonatal survival after 30 completed weeks is more than 95%. Testing for lung maturity in women with PROM has positive predictive value. In our study age varies from 18 to 40 years while major group is between 18 to 30 years. In our study UTI was found in 09 women with preterm premature rupture of membranes with frequency of 4.46%. In a study by Hackenhaar *et al.*, has showed that frequency of UTI was 3.4%in women with PROM [5]. Another study by de Vasconcelos-Pereira *et al.*, has showed that frequency of UTI was 6.7%inwomen with PROM [6]. In a case-control study done by Farzaneh *et al.*, observed 112 patients with preterm labor and 112 patients in the control group were at term. 33 of them developed asymptomatic bacteriuria in the preterm labor group while only 6 in control group with p-value < 0.05 which shows relevant correlation between asymptomatic bacteriuria and preterm labor [7]. Similar findings of another study by Verma *et al.*, showed preterm labor is associated with urogenital infections [8]. Chhabra and Patil reported women with preterm labor with cervical colonization and UTI [9]. McPheeters *et al.*, observed UTI in women with preterm labor 17.1 % vs 10.9% without preterm labor [10]. Bacteriuria is associated results higher preterm delivery rate as compared to without bacteriuria. Romero *et al.*, found that acute pyelonephritis is the major concern for majority of complications during pregnancy and can be addressed at asymptomatic stage [11]. Findings were also consistent in study by Kinningham, while study by Kass *et al.*, reported that preterm birth of child was result of bacteriuria as observed in animal model [12, 13]. Patterson and Andriole found that bacteriuria is responsible for chorio-amnionitis that result in initiation of preterm labour [14]. In study done by Bhalla *et al.*, prevalence of UTI with respect to place of living, more cases were seen in urban compared to rural (38.6% vs 28.8%), this finding is consistent with our study where 8 cases were in urban 1 in rural [15]. Tiemstra *et al.*, showed the prevalence of infection seen as 17.3% higher number may be large sample size [16]. Morgan observed similar trend of UTI in preterm labor after premature rapture of membrane. The findings were also consistent with Muglia and Katz observation in their study [17, 18]. UTI if not treated properly then it will develop pyelonephritis that may prove as nightmare for pregnant women. If left untreated, UTI can lead to, preterm labor or infection in the newborn as shown in studies by Sheiner *et al.*, and Pararas *et al.*, also found the same observations that infection is more relevant to PPROM [19, 20].

CONCLUSIONS

Our study showed that frequency of UTI in women with preterm premature rupture of membranes was found in 4.46% patients. So, we recommend that early and proper management of UTI whether symptomatic or asymptomatic can be undertaken in order to reduce the incidence of PPROM as well as it is associated morbidity and mortality of both mother and fetus.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Comparative Study of Retrograde Intrarenal Surgery and Mini-Percutaneous Nephrolithotomy among Renal Stone Patients

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ABSTRACT

Mini-Percutaneous Nephrolithotomy (Mini-PCNL) and Retrograde intra-renal surgery (RIRS), can be carried out in a single stage or numerous phases depending on the burden, size, and/or location of the stone. **Objective:** To check the efficacy of Mini-Percutaneous Nephrolithotomy and Retrograde intra-renal surgery on adult patients with a renal stones. **Methods:** A total of 101 patients were included who underwent RIRS (n=51) or mini-PCNL (n=50) at Doctors Hospital Jail Chowk in Gujrat, Pakistan in 2021. Retrospective observations were made on 101 individuals who received RIRS or mini-PCNL. **Results:** The mean hospital stay time was significantly lower in RIRS group *i.e.*, 01.81 ± 0.59 days as compared to mini-PCNL group (p value <0.001). The operation time was 63.72 ± 14.94 minutes for mini-PCNL and 72.65 ± 15.83 minutes for RIRS group. The stone clearance rate was 92% in mini-PCNL group and 82.35% in RIRS group. **Conclusions:** In conclusion, we found that both mini-PCNL and RIRS are safe and effective ways to treat renal calculi. RIRS is a non-invasive, practical therapeutic option with reduced hospitalizations times, morbidity, and complication rates for these individuals.

INTRODUCTION

In the present, kidney stones with a lower pole can be removed with extracorporeal shock wave lithotripsy (ESWL). However, treatment with ESWL is often ineffective for lower-pole (LP) stones and other kidney stones in dependent regions. [1, 2]. Open surgery for big stones has been substituted with percutaneous nephrolithotomy (PCNL), a procedure that was developed in the 1970s [3]. As experience has increased and morbidity has decreased, it is increasingly employed for even medium-sized stones in the lower pole. Helal *et al*. revealed the "mini-perc" technique's initial development for young patients [4]. A "mini-perc," as described by Jackman *et al.* [5, 6], is a PCNL performed through a sheath that is too small to accommodate a conventional rigid nephoscope. Retrograde intrarenal surgery (RIRS), a different approach for treating LP stones, can be carried out in a single stage or over several phases depending on the weight, size, and/or location of the stone [7]. As an outpatient operation, RIRS can reduce the hazards of percutaneous renal surgery, including hemorrhage, pleural and visceral damage, and

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urine leak. RIRS may be carried out in a single or numerous stages depending on the burden and position of the stones, is a helpful alternative in these individuals. In cases that were previously handled with ESWL or PCNL, RIRS is now being used in a rising number of centers, including our own. On the other hand, no prior study has directly evaluated the proven consequences of the PCNL and RIRS in this patient population [8-10]. PCNL offers substantially greater stone-free rates than ESWL and requires less auxiliary procedures. This tendency is further supported by the advent of miniature PCNL (mini-perc), which is regarded to be to a lesser extent invasive than conventional PCNL because to the smaller equipment. Due to the juvenile kidney's small size and mobility, its friable renal parenchyma, and its small size, PCNL may still cause complications in children even with variations such the "mini-perc." [11]. This study reported the efficacy of mini-PCNL and RIRS on adult patients with a larger sample size. Related aspects like hospital stay length, expense, problems, and results were also assessed.

METHODS

A total of 101 patients were included who undertook RIRS (n=51) or mini-PCNL (n=50) at Doctors Hospital Jail Chowk in Gujrat, Pakistan in 2021. Retrospective observations were made on 101 individuals who received RIRS or mini-PCNL. Patients laboratory tests were done including X-rays, CBCs, Urinalysis, intravenous urography, ultrasonography, computerized tomography (CT), and coagulation testing, before to the treatment. The two largest diameters (mm) recorded on CT sections were multiplied to determine the size of the stone. The surgery method used was based on the patient's anatomy, their preference, and the surgeon's judgement. Patients were put in the lithotomy position on an endoscopic table equipped with fluoroscopic imaging while under general anesthesia. Every procedure was carried out under video and fluoroscopic supervision. A hydrophilic safety guidewire is then inserted into the body through the ureter while being guided by ultrasound and fluoroscopic imaging during ureterorenoscopy. After evaluating and dilating the ureter with a semi-rigid ureteroscope (model and size), it is removed, and a flexible ureteroscope (model and size) is inserted via a guidewire or ureteral access sheath. Stone is dispersed into small pieces upon advancement of the laser fiber (model and kind), which is then suctioned out. All procedures for the mini-PCNL technique were carried out while the patient was unconscious. A 14 or 16-F catheter was used to drain the bladder after a 05 to 06-F ureteral catheter was inserted. A rigid ureteroscope is also used to enlarge the nephrostomy. Stone is fractured with a HoYag laser and then removed by suction. A 14 Fr nephrostomy catheter is frequently kept in place after the treatment to ensure outward urine flow and is removed within 48 hours. For statistical analysis, data was entered and analyzed using SPSS v22.0. The mean ± SD for each quantitative measure was reported, and the frequency and percentages for each qualitative variable. The Chi-square test was employed to compare the two patient groups. To determine whether there was a significant difference in operative time, hospital stay, and stone size between groups, an independent sample t test was used. p-value less than 0.05 was regarded as significant.

RESULTS

Amon total 101 patients in two groups, 50 were in mini-PCNL while 51 were in RIRS. Most of the patients were male in both groups. In mini-PCNL 26 were male and 24 were female, while in RIRS 27 were male and 24 were female (figure 1).

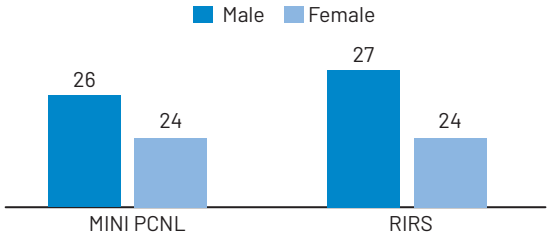

Figure 1: Gender wise distribution of patients

Figure 2 show the mean age of participants in groups that were not significantly different. The mean age of participants in mini-PCNL were 42.28±13.06 while mean age of participants in RIRS group were 38.73±13.08.

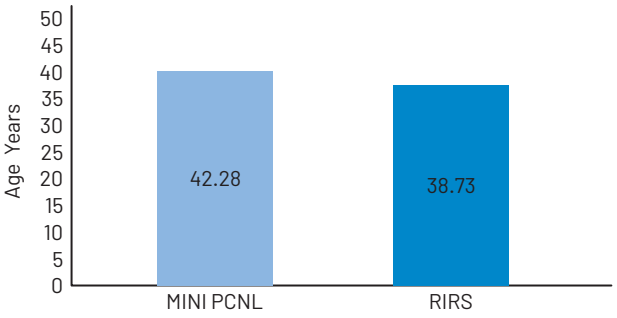

Figure 2: Mean age of patients in both techniques

Table 1 showed the comparison between mini-PCNL and RIRS among patients. The mean hospital stay time was low in RIRS group 01.81±0.59 days as compared to mini-PCNL group and significant by using independent sample T test (p value <0.001). The operation time was 63.72 ± 14.94 minutes for mini-PCNL and 72.65 ± 15.83 minutes for RIRS group. The stone clearance rate was 92% in mini-PCNL group and 82.35% in RIRS group.

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	Mini-PCNL mean ± SD	RIRS mean ± SD	p-value
Hospital stay (days)	02.63±0.86	01.81±0.59	< 0.001*
Operation time (minutes)	63.72±14.94	72.65±15.83	< 0.005*
Stone clearance n(%)	45(92.0%)	42(82.35)	> 0.005[a]
Complications n(%)			
Hospital stay (days)	02.63±0.86	01.81±0.59	< 0.001*
Operation time (minutes)	63.72±14.94	72.65±15.83	< 0.005*
Stone clearance n(%)	45(92.0%)	42(82.35)	> 0.005[a]

Table 1: Comparison of mini-PCNL and RIRS techniques

Figure 3 represents the overall summary of both the employed techniques. It was found that mini-PCNL had greater potential than RIRS in terms of stone clearing and operating time. However, RIRS performed better in terms of reducing the hospital stay with mild complications in both the procedures.

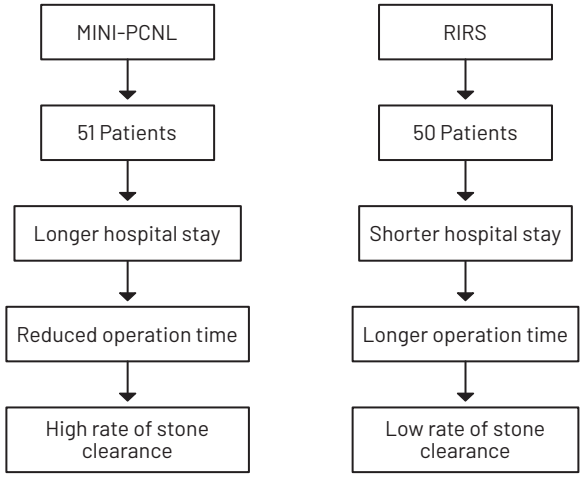

Figure 3: Overall comparison of both the techniques.

DISCUSSION

For small to medium-sized renal stones, ESWL was the favored first treatment. Despite this, the ESWL limits cause a decrease in the stone-free rate. Thus, lower-pole stones up to 1.5 cm have been given consideration for ESWL. But in recent years, the majority of urologists have chosen to favor PCNL or RIRS for the management of LP stones. Although ESWL is proposed for small kidney stones (less than 10 to 15 mm), there is some disagreement over the optimal course of action for LP stones less than 15 mm [12-14]. In this investigation, the removal of stone was accomplished using both the mini-PCNL and RIRS procedures. In this study, the mini-PCNL group's stone clearance rate was 92%, whereas the RIRS group's was 82.35%. A previous study found that after several sessions, the overall success rate of RIRS ranged from 77% to 93% for intrarenal calculi larger than 2 cm. Stone-free rates following the second sessions were comparable to those attained using mini-PCNL. The need for a second session is by far RIRS' biggest drawback when compared to PCNL [15]. Results of 15 PCNL and 12 RIRS patients who received treatment for the clearance of 1 to 2 cm renal calculi were compared by Chung *et al*. They stated that the percentages of PCNL and RIRS patients without stones were 87% and 67%, respectively [16]. In this study results the mean hospital stay time was significantly low in RIRS group 01.81 ± 0.59 days as compared to mini-PCNL group (p value <0.001). The operation time was 63.72 ± 14.94 minutes for mini-PCNL and 72.65±15.83 minutes for RIRS group. The average operation times for the group RIRS and PCNL in the study by Akman *et al*. were 58.2 ± 13.4 and 38.7 ± 11.6 min, respectively [15]. For the ureteroscopic therapy of renal stones vary between in size from 02 to 04 cm, Mariani *et al*. observed a mean operating time of 64 minutes [17]. Earlier study results of Mishra *et al*. compared standard percutaneous nephrolithotripsy and mini-PCNL, the researchers came to the conclusion that while the mini-PCNL procedure took longer than the standard PCNL, it had advantages over the latter in terms of a significantly lower hemoglobin drop and a lower need for analgesics. Additionally, we used the mini-PCNL method with nephoscope sizes between 16 and 18 to treat the LP stone. In our investigation, we discovered that the mini-PCNL group's achievement rate was 97.2% and its stone-free ratio was 89.1% [18]. For LP calculi, RIRS is a suitable alternate therapy approach. According to the recommendations of the Urology Association of Europe, RIRS is now the third option for stones that are between 1 and 2 cm in size or the second alternative for calculi less than 1 cm in size. Since RIRS has been used in urological practice, authors have looked into its effectiveness in prior studies. Low rates of morbidity and complications are RIRS's benefits. Compared to RIRS, PCNL is a best intrusive therapy choice and is known to have more general problems [19, 20].

CONCLUSIONS

Both RIRS and mini-PCNL are very safe and effective therapies for renal lithiasis, and both can be utilized to achieve exceptional stone-free rates.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Serum Levels of Uric Acid in Females of Polycystic Ovarian Syndrome with and without Insulin Resistance

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ABSTRACT

Females suffering from polycystic ovarian syndrome have marked insulin resistance, independent of obesity. These women also have multiple risk factors for cardiovascular diseases, such as dyslipidemia, insulin resistance and hypertension. Uric acid level has also been recognized recently as a risk factor for cardiovascular diseases, females with PCOS may have abnormal profile of uric acid. **Objectives:** To compare uric acid levels in females of polycystic ovarian syndrome with and without insulin resistance. **Methods:** Cross-sectional comparative study was conducted in Biochemistry Department of Islam Medical College, Sialkot. Patients were divided into 2 groups based on their insulin resistance. In group-A patients were taken with PCOS and in group-B patients were taken with PCOS without insulin resistance. A total of 108 cases (54 in each group) fulfilling the inclusion/exclusion criteria. In both groups uric acid level was measured by standard procedure. Data were entered and analyzed using SPSS version 22 accordingly. **Results:** The mean age for all the cases was 29.43 ± 4.08 years, while mean age in insulin resistance group was 29.33 ± 4.06 years and mean age in non-insulin resistance group was 29.52 ± 4.13 years. The mean uric acid in insulin resistance and non-insulin resistance group was 4.92 ± 0.89 mg/dl and 4.48 ± 0.95 mg/dl with significantly higher mean uric acid in insulin resistance group, p-value < 0.05. **Conclusion:** We conclude that females having PCOS with insulin resistance had higher mean uric acid levels. Females with insulin resistance must be prevented from hyperuricemia to minimize the further risk of insulin resistance.

INTRODUCTION

Polycystic ovarian syndrome (PCOS) is a very diverse endocrine abnormality of the females. Anovulation, hyperandrogenism, infertility, and metabolic dysfunctions are the main characteristic features of this disease [1, 2]. Increased prevalence trend of insulin resistance and its related abnormalities has been noticed in female having PCOS [3]. In the process of atherosclerosis, chronic inflammation and endothelial dysfunction are major early defects. The exact etiology of PCOS is not known but different theories exist about the pathogenesis of PCOS. One of the major underlying causes of polycystic ovarian syndrome is relative insulin resistance [4, 5]. This relative insulin resistance leads to chronic hyperinsulinemia which leads to impaired growth of ovarian follicles, irregular metabolism of ovarian androgen and altered response of gonadotropins [6, 7]. An organic acid called uric acid (UA) is formed during the metabolism of purine nucleotides. Elevated serum uric acid (SUA) is intimately linked to metabolic diseases such metabolic syndrome, type 2 diabetes, insulin resistance, and obesity. Reproductive hormones have reportedly been shown to impact SUA levels [8]. Through mechanisms involving renal secretion

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clearance and reabsorption, estradiol (E2) may have an impact on the SUA level. The concentration of UA is positively correlated with follicle-stimulating hormone (FSH), while E2 and progesterone (P) levels are negatively correlated with the concentration of UA [9, 10]. Additionally, there was a correlation between a greater UA level and a higher likelihood of anovulation. The relationship between different endocrine hormone alterations in women and the SUA level is not well understood. According to various diagnostic criteria, 4–18% of women of reproductive age have polycystic ovarian syndrome (PCOS), a widespread endocrine and metabolic disorder. The reproductive hormones androgen, the luteinizing/follicle-stimulating hormone (LH/FSH) ratio, and estrogens are frequently disturbed in women with PCOS [11]. It is yet unclear if the hormonal imbalance in PCOS has an impact on the SUA level and the prevalence of hyperuricemia. Rare studies that evaluate the SUA level in PCOS are available, and those that do offer inconsistent findings [12]. Due to the variability of PCOS, we expected that these studies with limited sample sizes could not draw a firm conclusion. The objective of this study was to compare uric acid levels in females of polycystic ovarian syndrome with and without insulin resistance.

METHODS

This Cross-sectional comparative study was conducted in the Biochemistry Department of Islam Medical College, Sialkot in collaboration with Islam Teaching Hospital, Sialkot. A total of 108 females were taken in this study selected using non-probability purposive sampling. Patients were divided into 2 groups based on their insulin resistance. Group-A: In this group patients were taken with PCOS and insulin resistance. Group-B: In this group patients were taken with PCOS without insulin resistance. All patients in the age group of 20-40 years diagnosed with PCOS using Rotterdam criteria, visited in outpatient's department of Gynecology, Islam Teaching Hospital, Sialkot was the inclusion criteria. The subjects having hypertension, coronary heart disease, diabetes mellitus, cushing's syndrome, renal diseases, liver cirrhosis, inflammatory intestinal diseases and malabsorption syndromes were excluded. Subjects on vitamin supplementation, diuretic medications and with history of alcohol and smoking were also not included. HOMA-IR (Homeostatic Model Assessment-Insulin Resistance) was used for the determination of the Insulin resistance. Blood glucose level was measured by the enzymatic colorimetric method. Serum uric acid was measured by the enzymatic colorimetric method. Serum insulin level was determined by the ELISA (Enzyme-Linked Immunosorbent Assay).

$$\text{HOMA} - \text{IR} = \frac{\text{Fasting insulin (µlU/ml)} \times \text{Fasting glucose (mg/dL)}}{405}$$

All data were entered and analysed using SPSS version 220.. Qualitative data like gender were presented in form of frequency (%). The quantitative data like age and uric acid were presented in form of mean ± S.D. Independent sample *t* test was used to compare uric acid level in both study groups. p-value ≤ 0.05 was considered as significant.

RESULTS

The mean age of cases was 29.43 ± 4.08 years. The mean age in insulin resistance group was 29.33 ± 4.06 years and mean age in non-insulin resistance group was 29.52 ± 4.13 years. The median age in both groups was same (Table 1).

Age (years)	No. of cases	Mean ± S.D	Median	IQR
Insulin resistance	54	29.33 ± 4.06	28.50	7.00
Non-insulin resistance	54	29.52 ± 4.13	28.00	5.25
Total	108	29.43 ± 4.08	28.00	6.00

Table 1: Comparison of Age (years) in both study groups

The mean weight in insulin resistance and non-insulin group was 78.04 ± 11.36 (kg) and 75.91 ± 11.32 (kg) respectively, the mean height in insulin resistance and non-insulin group was 1.56 ± 0.08 and 1.60 ± 0.09 m. The mean BMI in insulin resistance and non-insulin group was 32.04 ± 4.08 and 29.79 ± 3.78 respectively. The mean weight was insignificant in both groups, p-value > 0.05 while mean BMI in insulin resistance group was significantly higher than non-insulin group, p-value < 0.05 (Table 2).

Parameter		No. of cases	Mean ± S.D	t-test (p-value)
Weight (kg)	Insulin resistance	54	78.04 ± 11.36	0.235 (0.331)
	Non-insulin resistance	54	75.91 ± 11.32	
	Total	108	76.97 ± 11.34	
Height (m)	Insulin resistance	54	1.56 ± 0.08	0.976 (0.031)
	Non-insulin resistance	54	1.60 ± 0.09	
	Total	108	1.58 ± 0.09	
BMI	Insulin resistance	54	32.04 ± 4.08	2.97 (0.004)
	Non-insulin resistance	54	29.79 ± 3.78	
	Total	108	30.91 ± .07	

Table 2: Comparison of Weight (kg), Height (m) and BMI in both study groups

The mean Uric acid in insulin resistance and non-insulin group was 4.92 ± 0.89 mg/dl and 4.48 ± 0.95 mg/dl with significantly higher mean uric acid in insulin resistance group, p-value < 0.05 (Table 3).

Variables	Insulin resistance	Non-insulin resistance	Total
No. of cases	54	54	108
Mean ± S.D	4.92 ± 0.89	4.48 ± 0.95	4.70
Minimum	3.20	2.60	2.60
Maximum	6.91	6.84	6.91
p-value	<0.05	0.521	0.552

Table 3: Comparison of Uric acid levels in both study groups

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DISCUSSION

Polycystic ovarian syndrome (PCOS) is a widespread female endocrinopathy that affect around 5% females of reproductive age group. In the women of reproductive age group, PCOS is a very commonly found hormonal disorder [13]. According to Paradisi *et al.*, and different studies, the prevalence of PCOS has increased in the sub continental region during the recent past, in Indian Kashmiri women it is 37.3% and Pakistani women it is 20.7% [14, 15]. The mean age of cases was 29.43 ± 4.08 years. The mean age in insulin resistance group was 29.33 ± 4.06 years and mean age in non-insulin resistance group was 29.52 ± 4.13 years. The median age in both groups was same (Table 1). Cardiovascular risk factors are associated with PCOS as demonstrated by different studies. Common clinical features of PCOS which include hyperandrogenism, oligo/amenorrhea, insulin resistance and obesity [16]. Increased prevalence trend of insulin resistance and its related abnormalities has been noticed in female having PCOS. In the process of atherosclerosis, chronic inflammation and endothelial dysfunction are major early defects. Tzeng *et al.*, and Leustean *et al.*, also describe the relationship between elevated urid acid serum levels that reflect low-grade chronic inflammation. The metabolic disturbances associated with PCOS like insulin resistance, hyperandrogenism, and hypertension may adversely accelerate the cardiovascular risk profile in these women [17, 18]. Polycystic ovarian syndrome is not only a reproductive abnormality but also known as a very important metabolic disorder, having increased risk of diabetes mellitus and cardiovascular diseases. Women suffering from PCOS also have insulin resistance, independent of obesity. The mean weight in insulin resistance and non-insulin group was 78.04 ± 11.36 (kg) and 75.91 ± 11.32 (kg) respectively, the mean height in insulin resistance and non-insulin group was 1.56 ± 0.08 and 1.60 ± 0.09 m. The mean BMI in insulin resistance and non-insulin group was 32.04 ± 4.08 and 29.79 ± 3.78 respectively. The mean weight was insignificant in both groups, p-value > 0.05 while mean BMI in insulin resistance group was significantly higher than non-insulin group, p-value < 0.05 (Table 2). Studies have shown that uric acid has inflammatory, proliferative and oxidative actions at endothelial level, thus increasing the cardiovascular risk. Studies have been reported for inverse correlation in patient with metabolic syndrome between insulin sensitivity and uric acid and this shows the inherent feature of hyperuricemia as metabolic syndrome. These studies and data result in the consideration to use uric acid as diagnostic marker for identification of insulin resistance and metabolic syndrome. Two groups of Forty-two young women similar age, one with PCOS and other as control were designed to study relationship between lipoprotein level, uric acid and insulin resistance in obese and non-obese patients with PCOS. The key conclusions of the study revealed that HOMA-IR and Plasma uric acid levels were greater in patients with PCOS than in healthy women as compared with obese PCOS, non-obese PCOS subjects which shows higher TG, insulin, HOMA-IR and uric acid levels. Study also revealed no correlation among HOMA-IR, plasma uric acid and serum androgen. Hence there is an increased level of uric acid in PCOS as also describe by Luque-Ramírez *et al.*, [19, 20]. Serum uric acid elevated level may also exert pro-oxidant, proinflammatory, and proliferative role at the endothelial lining, increase cardiovascular risk leading to endothelial injury. In women suffering from PCOS both classical and non-classical risk markers for cardiovascular diseases are present and uric acid is considered among them. Relationship between obesity, insulin resistance and uric acid in obese and non-obese patients having PCOS was also explored by Zhang *et al.*,. They include thirty-eight obese and overweight women with PCOS and thirty control with same age group. Study didn't show and statistically significant finding and difference in uric acid levels between women with control and PCOS but contrary shows significant with obese PCOS patients having higher level of uric acid. Obese PCOS patient also had comparatively higher levels of HOMA-IR than overweight PCOS patients. However, a statically significant positive correlation was reported by the author between HOMA-IR and level of uric acid, BMI, insulin levels and waist circumference in PCOS group. The mean Uric acid in insulin resistance and non-insulin group was 4.92 ± 0.89 mg/dl and 4.48 ± 0.95 mg/dl with significantly higher mean uric acid in insulin resistance group, p-value < 0.05. In a recent study for the evaluation of traditional and non-traditional cardiovascular risk factors in women with PCOS, 40 diagnosed patients of PCOS and 40 healthy age and BMI matched controls were studied. Author has reported statistically significant raised levels of HOMA-IR, homocysteine, uric acid and CRP in patients of PCOS as compared to the control group. Women with PCOS are usually insulin resistant and exhibit hyperinsulinism. There is an inhibitory role of raised level of insulin on excretion of uric acid from kidney. This can be the explanation of raised levels of uric acid (though within the reference range) in patients with PCOS as compared to healthy control group. Uric acid level in PCOS women may also rise due to hepatic induction of purine metabolism by androgen. Moreover, as uric acid appeared as an early indicator of cardiovascular risk, hence, early interventions such as screening and treatment to lower down uric acid have been associated with prevention of cardiovascular outcomes. In a study of forty women with PCOS and forty non-hyperandrogenic

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women, levels of serum uric acid were measured [21, 22]. The study was further carried out by Krysiak *et al.*, and El-Eshmawy *et al.*, on thirty-four women with PCOS who were given either metformin or an oral contraceptive having ethyl estradiol with cyproterone acetate for 6 months. There was significant decrease in uric acid level in patients of PCOS due to correction of androgen levels with anti-androgenic contraceptive pill [23, 24]. In current study the mean uric acid in insulin resistance and non-insulin resistant group was 4.92 ± 0.89 mg/dl and 4.48 ± 0.95 mg/dl with significantly higher mean uric acid in insulin resistance group, p-value < 0.05.

CONCLUSIONS

We conclude that females having PCOS with insulin resistance had higher mean uric acid levels. Females with insulin resistance must be prevented from hyperuricemia to minimize the further risk as elevated levels of uric acid have been associated positively with insulin levels in a many clinical situations.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Buster Effect of Apricot Kernel Oil on Hypocholesteremia

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ABSTRACT

Cholesterol is a natural substance produced by liver in human body According to research based on Framingham Heart Study, ideal cholesterol level is below than 150 mg/dL. Apricot (*Prunus armeniaca)* is an important medicinal plant belongs to family *Rosaceae* which is also grown in Pakistan. In local language it is called "Kubani" having nutritious flesh, pits containing kernels. **Objective:** To explore therapeutic potential of apricot kernel oil on hypercholesterolemic rabbits. **Method**: Apricot kernel oil was extracted by cold extraction method. Rabbits were adapted for two weeks before starting treatments. Total feed doses i.e. 250 g was divided in two portions and were given to rabbits in early morning and early evening. Food consumption for every rabbit was consistent to 250 g/day for four week's experimentation. **Results:** After usage of 1 % apricot Kernel oil (supplemented) the maximum blood cholesterol level decreased from 159.38 mg/dL to 122.8 mg/dL and also decreased in blood triglyceride level was from 237.82 mg/ dL to 192.20 mg/ dL. The HDL contents of rabbits were increased from 26.750 mg/ dL to 33.450 mg/ dL. LDL contents of rabbits were decreases from 46.90 mg/ dL to 36.05 mg/ dL. VLDL contents of rabbits were decreases from 23.7 mg/ dL to 18.3 mg/ dL detected after Six weeks. **Conclusion:** Current study was carried out. Apricot kernel oil has ability to remove the lipid profile especially cholesterol

INTRODUCTION

Hypercholesterolemia is a lipoprotein metabolic ailment categorized by raised serum low density lipoprotein and blood cholesterol. It is one of the most significant threat leading to cardiovascular diseases (CVDs) [1]. Energy store in the form of lipids and a substantial role as enzyme co-factors, intracellular messengers, and hormones play by them [2]. Cholesterol has vital functions in human body. It is a significant component of cell membrane which can regulate the membrane over a variety of physiological temperature. Human body utilizes the cholesterol as a precursor for the synthesis of bile acids, for the digestion of dietary fats and fat-soluble vitamins [3, 4]. Hypercholesterolemia contributed to 45% of heart attacks in Western Europe and 35% of heart attacks in Central and Eastern Europe [5]. Apricot (*Prunus armeniaca* L.) is classified under the *Prunus* species of Rosacea family of the Rosales group and has an important worth in human nutrition. Apricot has rich nutritional profile in context of

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sugar (60%), crude fiber (11.50%), protein (8%), crude fat (2%), total minerals (4%), vitamins (highly rich in vitamin A, C, K and B complex), and sensible amounts of organic acids (citric acid and malic acid) [6]. As a need of new times, further dietary approaches have been made that plays a substantial role in lowering hypercholesterolemia. These approaches comprise the use of probiotics, prebiotics, soy proteins, useful microbiota, soluble dietary fibers, plant sterols and stanols. The oil obtained from kernels is of pharmacological, nutritional and industrial importance. Rich nutritional profile of oil makes it an acceptable source of omega fatty acids, antioxidants and tocopherol which tends to lowers down the oxidative damage caused by free radicals, lowers the raised level of cholesterol in blood due to presence of tocopherols and improves liver functioning. The best intake ratio of omega-6 to omega-3 is 1: 1 and 4: 1 and the minimum dietary intake amount for omega 3 and omega 6 of a healthy adult person is 1.4-1.5g/day [7]. Imbalance in the intake quantity of omega's and deficiency of fatty acids leads to harmful disorders counting schizophrenia, heart attack, asthma, diabetes mellitus, depression, increased aging, obesity, stroke, Alzheimer's disease and osteoarthritis [8]. Kernels inside seed shell can be used to yield oils which are rich sources of nutritional compounds like oleic, linoleic and linolenic acids, carotenes, antioxidants, tocopherols and several other active components can be used to treat certain medical disorders. The oil obtained from kernel of apricot is rich in polyunsaturated fatty acids and heart friendly compounds and its consumption avoids the plaque formation in arteries leading to blockage and several other diseases [9]. Due to presence of antioxidant present in oil make the heart protective [10]. Due to phenolic compound present in oil reduce the risk of free redical that make the oxidative damage in living cells and some common disorder like cardiovascular disease and cancer [11]. Oil has also some properties of antioxidant, antitumor, anti-carcinogenic, anti -platelet, anti-microbial, anti -mutagenic and anti-allergic [12]. Apricots provide a significant amount of fiber (soluble and insoluble) [13]. Soluble dietary fiber is effective in lowering LDL cholesterol by binding bile acids or cholesterol during intraluminal micelle formation; thereby reducing the cholesterol content in liver cells and increasing the clearance of LDL cholesterol [14]. Our objective of this study was to check the effect of apricot kernel oil efficacy in the sense of lipid profile (cholesterol, triglyceride level, HDL, LDL and VLDL) in rat.

METHODS

The details of material used and analytical methods employed during the study are given below. The apricot kernel was purchased from local market of Sargodha and oil was extracted by cold extraction method. After removed any coating or husks left on the kernel of apricot cleaned the kernels. Before ready to press then heated kernel. Heating helps the extraction of the oil. Oven is adjusted no higher than 120 degrees Fahrenheit. Placed the seeds on a cookie sheet and heated them for about 10 minutes. Feed the kernel into the press. Removed press's end cap after finish with kernel stock. Allowed all the oil to drip through the holes of the end cap, before removing it to take out the press cake. Clarified the cold pressed oil. Covered the container of oil with a piece of cheesecloth, and allowed it to rest for three to four days in a dark or semi-dark location. Any debris in the oil will float to the top. Removed the top layer of the oil. [15]. Biological study was performed by using rabbits as experimental model kept in animal house, department of pharmacy, University of Sargodha. 24 white New Zealand rabbits of age 8 – 10 weeks of mixed gender were purchased from local market. They were kept distinct from each other under experimental conditions. Feedings of rabbits were prepared at Food Microbiology Laboratory at Institute of Food Science and Nutrition, University of Sargodha, Sargodha - Pakistan. Feed was prepared for treatment of hypercholesterolemic rabbits. All feeding ingredients were purchased from local market of Sargodha. Feeding used for experiment includes corn starch, barley water, common salt (NaCl), vitamins (Mix), sucrose and corn oil. Hyperlipidemic feeding preparation: Corn starch, vitamins, barley powder, common salt, sucrose was mixed with 7 g of corn oil according to feeding pattern given in Table 1 [16]. Feed for 6 week. Total feed dose i.e. 250 g was divided in two portions and were given to rabbits in early morning and early evening [17].

Quantity (g/100g)		
Ingredients	**Standard Feed**	**Hyperlipidemic Feed**
Barley	35.0	35.0
Corn Starch	38.0	35.0
Sucrose	12.0	12.0
Salt (NaCl)	0.50	0.50
Vitamin	3.00	3.00
NaHPO4	2.00	2.00
CaCO3	2.50	2.50
Cholesterol(powder)	0.00	2.00
Corn oil	7.00	8.00
Total	100.00	100.00

Table 1: Preparation of hyperlipidemic feed (g/kg) for making rabbits hyperlipidemic [16]

Feed used for treatment was prepared by mixing basic components like corn starch, barley, vitamins, sucrose and common salt with 7 g of corn oil. The feed was mixed finely by adding distilled water and pebbles were prepared in order to feed rabbits. According to Table 2, four different feed were prepared using different concentrations of

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apricot kernel oil [16]. Four experimental treatments were formed by dividing e24 hyperlipidemic rabbits into 2 groups. One group containing 12 male rabbits and second group contains 12 female rabbits. All rabbits were fed separately according to treatment feed. Food consumption for every rabbit was consistent to 250 g/day for four week's experimentation [17].

Ingredients (g/100g)	On Normal feed	Hyperlipidemic induced		
	Control	T0	T1	T2
Barley	40	35	35	35
Corn Starch	40	38	38	38
Sucrose	12	12	12	12
Salt (NaCl)	0.5	0.5	0.5	0.5
Vitamin	3	3	3	3
NaHPO4	2	2	2	2
CaCO3	2.5	2.5	2.5	2.5
Apricot kernel Oil	0	0	0.5	1
Corn oil	0	7	6.5	6
Total	100	100	100	100

Table 2: Formulation of treatment feedings (g/100g) [16]

The blood was withdrawn from cervix vein of all rabbits by trapping them in stand. The blood was withdrawn by using 3 cc BD syringe and was put in different blood collecting tubes of 5ml containing Ethylenediaminetetraacetic acid (EDTA) in for separation of serum. After centrifuge at 3000 rpm for 5 minutes' serum was separated and was sent to diagnostic laboratory for analysis [17]. The analysis involves triglycerides, cholesterol, low density lipoproteins (LDL), very low-density lipoproteins (VLDL), and high-density lipoproteins (HDL) values every week after weighing stage. Statistical Analysis: The final data which obtained under multi factor factorial completely randomized designs (CRD) was exposed for statistical analysis of variance technique (ANOVA). The values $p \leq 0.05$-0.01 will be considered as statistically significant. LSD test is used for comparing the mean of all treatments [18]. The data were analyzed by using SPSS version 17.0 (Statistical Package for Social Sciences).

RESULTS

The cholesterol level significantly decreased with increase in concentration of the apricot kernel oil. The lowest blood cholesterol level was perceived in rabbits having feedings supplemented with 1% apricot kernel oil and vice versa. The range for cholesterol contents was from 88.49 mg/ dL to 145.71 mg/ dL.The blood cholesterol level decrease from 159.35 mg/ dL to 122.80 mg/ dL during the treatment period of 6 weeks, while no significant at 0 % feeding. The maximum decrease in blood cholesterol level was detected after 6 weeks in the rabbits fed on food supplemented with 1% apricot kernel oil with mean values of 159.38 mg/ dL to 122.8 mg/ dL as shown in table 3. The triglycerides in the blood of rabbits fed on feeding supplemented with various concentrations of apricot kernel oil were significantly declined with increment in concentration of the apricot kernel oil. The lowest triglyceride contents were detected in rabbits consuming feed supplemented with 1% apricot kernel oil whereas the highest TG count in blood of rabbits fed on feed supplemented with 0% apricot kernel oil. The ranges for triglyceride contents were from 256.59 mg/ dL to 154.86 mg/ dL, respectively. With the passage of treatment time, decline in triglyceride contents of rabbits was significantly observed. The decrease in blood triglyceride level was from 237.82 mg/ dL to 192.20 mg/ dL during a period of 6 weeks as shown in table 3. When the concentration of apricot kernel oil increase in the feed, there was slow raise in HDL level. The extreme HDL level was perceived in rabbits fed on feed supplemented with 1% apricot kernel oil whereas the least level of HDL was observed in rabbits fed on feed supplemented with 0% apricot kernel oil. The range for HDL was from 18.829 mg/ dL to 31.086 mg/ dL. With passage of treatment time a significant increasing trend for HDL contents in rabbits was detected during a period of 6 weeks from 26.750 mg/ dL to 33.450 mg/ dL as shown in table 3. Significantly lowest level of LDL was found in rabbits fed on feed supplemented with 1% apricot kernel oil whereas the significantly lowest level was observed in rabbits fed on feed supplemented with 0% apricot kernel oil from 26.14 mg/ dL to 42.77 mg/ dL. With passage of treatment time a significant decreasing trend for LDL was perceived during a period of six weeks from 46.90 mg/ dL to 36.05 mg/ dL. Significant decreasing trend was displayed by effects of 1% apricot kernel oil showed maximum decline in blood VLDL count from 13.34 mg/ dL to 29.94 mg/ dL as shown in table 3. With passage of treatment time a significant decreasing trend for VLDL was perceived during a period of six weeks from 23.7 mg/ dL to 18.3 mg/ dL (table 3).

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	Mean					
	Weeks	**T1**	**T2**	**T3**	**T4**	**Mean**
Cholesterol	0	96.2±6.37^{KLM}	181±16.4C^{DEF}	182.4±13.2^{CDE}	182.4±13.2^{CDE}	159.35±11.45^{AB}
	1	91.8±5.34^{KLM}	194±16.4^{ABCDE}	195.4±13.2^{ABCD}	195.4±13.2^{ABCD}	168±11.19^{A}
	2	84.6±5.08^{M}	199.8±9.99^{ABC}	173.1±10.75^{EF}	173.1±10.75^{EF}	154.65±8.26^{BC}
	3	89.6±5.73^{KLM}	205.6±4.97^{AB}	150.8±14.67^{GH}	150.8±14.67^{GH}	144.35±7.75^{CD}
	4	86±2.98^{LM}	214.6±4.97^{A}	127.8±14.67^{I}	127.8±14.67^{I}	138.45±7.06^{DF}
	5	85.8±8.75^{LM}	212.8±4.92^{A}	106.1±9.92^{JKL}	106.1±9.92^{JKL}	130.65±7.13^{EF}
	6	85.4±7.12^{LM}	211±7.32^{AB}	84.4±8.16^{M}	84.4±8.16^{M}	122.8±7.77^{F}
	Mean	**88.4857±5.91^{C}**	**202.686±9.28^{A}.**	**145.714±12.0^{B}**	**145.714±12.0^{B}**	
TG	0	155.8±9.72^{F}	260.64±21.53^{AB}	182.4±13.2^{CDE}	270.84±19.58^{A}	237.82±16.3^{A}
	1	149.6±5.51^{F}	247.72±5.18^{ABC}	195.4±13.2^{ABCD}	255.84±5.24^{ABC}	229.81±6.57^{A}
	2	153.2±11.06^{F}	255.12±7.8^{ABC}	173.1±10.75^{EF}	257±18.63^{AB}	226.18±12.7^{A}
	3	148.8±9.23^{F}	265.04±11.07^{AB}	150.8±14.67^{GH}	226.6±19.37^{CD}	208.76±13.33^{B}
	4	161.2±11.45^{F}	256±3.86A^{BC}	127.8±14.67^{I}	196.4±17.2^{E}	201.75±11.01^{BC}
	5	162.6±6.92^{F}	258±3.19^{AB}	106.1±9.92^{JKL}	177.2±20.03^{EF}	198.95±10.72^{BC}
	6	152.8±11.82^{F}	253.6±3.1A^{BC}	84.4±8.16^{M}	168.8±20.86^{EF}	192.2±12.1^{C}
	Mean	**154.86±9.38723^{C}**	**256.59±7.96085^{A}**	**145.714±12.0^{B}**	**221.81±17.2725^{B}**	
HDL	0	20.6±1.44^{LMN}	45±1.58^{AB}	23.4±1.81^{JKL}	18±1.83^{N}	26.75±1.66^{EW}
	1	19.4±1.12^{LMN}	45.4±0.88^{A}	25.2±0.86^{IJK}	22.8±2.1^{KLM}	28.2±1.24^{DE}
	2	18±1.1^{N}	45.8±1.18^{A}	26.8±1.11^{IJK}	27.4±3.18^{IJ}	29.5±1.64^{CD}
	3	19±1.3L^{MN}	43.8±1.18^{AB}	28.2±1.25^{HI}	32.2±3.25^{GH}	30.8±1.75^{C}
	4	18.2±0.58^{N}	43±2.12^{ABC}	34.6±1.45^{FG}	36.8±2.25^{EF}	33.15±1.6^{B}
	5	18.4±1.96^{MN}	41.4±3.41^{ABCD}	40.8±2.06B^{CDE}	41.6±2.76^{ABCD}	35.55±2.55^{A}
	6	18.2±1.46^{N}	38.8±3.6^{CDEF}	38±2.16^{DEF}	38.8±2.87C^{DEF}	33.45±2.52^{AB}
	Mean	**18.83±1.28^{C}**	**43.31±1.99^{A}**	**31±1.53^{B}**	**31.09±2.61^{B}**	
LDL	0	28.6±1.94^{LMN}	53.2±4.86^{DEFG}	52.4±2.91^{EFG}	53.4±4^{DEF}	46.9±3.43^{AB}
	1	27±1.48^{LMN}	56.8±4.67^{BCDE}	56±2.68C^{DEF}	57.2±3.89^{ABCDE}	49.25±3.18^{A}
	2	25.2±1.46^{N}	58.6±2.99^{ABCD}	47.2±2.1^{GH}	50.4±3.1^{FGH}	45.35±2.41^{BC}
	3	26.2±1.66^{MN}	60.2±1.5^{ABC}	38.4±1.71^{IJ}	44.4±4.24^{HI}	42.3±2.28^{CD}
	4	25.4±0.93^{MN}	63±1.58^{A}	36.8±1.5^{JK}	37.6±4.12^{J}	40.7±2.03^{DE}
	5	25.6±2.54^{MN}	62.4±1.27^{AB}	34.8±1.5^{JK}	31.4±2.96^{KLM}	38.55±2.07^{EF}
	6	25±2.02^{N}	61.8±2.06^{ABC}	32.4±2.51^{JKL}	25±2.52^{N}	36.05±2.28^{F}
	Mean	**26.14±1.72^{C}**	**59.43±2.7^{A}**	**42.57±2.13^{B}**	**42.77±3.55^{B}**	
VLDL	0	14.8±0.97^{IJKL}	26.8±2.53^{CDE}	26.4±1.56^{DE}	26.8±2.06^{CDE}	23.7±1.78^{AB}
	1	13.6±0.75J^{KL}	28.4±2.33^{BCD}	28.2±1.44^{BCD}	28.6±1.94^{BCD}	24.7±1.62^{A}
	2	12.8±0.73^{L}	29.8±1.5^{ABC}	24±1.16^{EF}	25.6±1.56^{DEF}	23.05±1.24^{B}
	3	13.4±0.93^{KL}	30.4±0.88^{AB}	19.2±0.86^{G}	22.6±2.19^{F}	21.4±1.21^{C}
	4	13±0.45^{KL}	31.8±0.63^{A}	18.6±0.66^{GH}	18.8±2.06^{GH}	20.55±0.95^{CD}
	5	13±1.3^{KL}	31.2±0.63^{AB}	17.6±0.66G^{HI}	16±1.36H^{IJK}	19.45±0.99^{DE}
	6	12.8±0.97^{L}	31.2±1.11^{AB}	16.6±1.33G^{HIJ}	12.6±1.33^{L}	18.3±1.19^{E}
	Mean	**13.34±0.87^{C}**	**29.94±1.37^{A}**	**21.51±1.09^{B}**	**21.57±1.79^{B}**	

Table 3. Effect of treatments and time period on Cholesterol, TG, HDL, LDL and VLDL of rabbits

DISCUSSION

The maximum decrease in blood cholesterol level was detected after 6 weeks in the rabbits fed on food supplemented with 1% apricot kernel oil with mean values of 159.38 mg/ dL to 122.8 mg/ dL as shown in table 3 are supported with this result Performed an experimental study to investigate the effect of apricot kernel oil (AO) and pumpkin oil (PO) on plasma cholesterol and triacylglycerol levels [19]. After the treatment period, it was concluded that both AO and PO possess protective effect on hypercholesterolemia. The administration of plant sterols with margarines at doses of 1.5 and 3 g/day for 6 months induced the same reduction in both total (–8.9% vs. –8.3%) and LDL cholesterol (–11.3% vs. 10.6%) [20]. The decrease in blood triglyceride level was from 237.82 mg/ dL to 192.20 mg/ dL during a period of 6 weeks. Was match with the reported that feeding of oleic acid and linoleic acid (5%) decreases the level of triglycerides, LDL-C and total cholesterol [21]. Apricot kernel oil contains maximum amount of oleic and linoleic acids possessing excellent anti-inflammatory and anti-atherogenic potential [22]. Demonstrated that the effect of treatment, fermentation time, and interactive effect of treatment and fermentation time on substrate utilization was found to be significant after 6 hours of fermentation highest substrate was utilized in treatment T18 (where 2 % probiotic, 1.5 % GOS, and 1.5 % Maltodextrin were used) with mean value of 23.81 %. The range for HDL was from 18.829 mg/ dL to 31.086 mg/ dL support the study in which cholesterol lowering potential of linoleic acid was justified by human trials [23].

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Apricot kernel oil contains a favorable amount of linoleic acid having protective effect on HDL. With increase in concentration of apricot kernel oil in the feed, there was a progressive decrease in LDL levels. from 26.14 mg/ dL to 42.77 mg/ dL. Similer result found with performing experimental trials to evaluate the effect of dietary oils on liver and lipid peroxidation LDL level [24]. Results showed that dietary oils like apricot kernel oil like reduce the LDL level as it contains an excellent number of tocopherols which are main antioxidants present in apricot kernel oil. They tend to lower the LDL levels by reducing the production of LDL in body. VLDL contents of rabbits were decreases from 23.7 mg/ dL to 18.3 mg/ dL this trend also found in efficacy of plant sterols and stanols in reducing total cholesterol [25]. This was similar to current findings due to excellent amount of sterols especially phytosterols and stanols having ability to lowers down the cholesterol as well as LDL and VLDL.

CONCLUSIONS

Current study was carried out to explore therapeutic potential of diet supplemented with apricot kernel oil on hypercholesterolemic rabbits. Apricot kernel oil has ability to remove the lipid profile especially cholesterol. The maximum cholesterol level was decreased 159.38 mg/ dL to 122.8 mg/ dL, triglyceride 237.82 mg/ dL to 192.20 mg/ dL, High density lipoprotein increased from 26.750 mg/ dL to 33.450 mg/ dL, Low density lipoprotein decreased from 46.90 mg/ dL to 36.05 mg/ dL, very Low density lipoprotein decreased from 23.7 mg/ dL to 18.3 mg/ dL during the 6 week feeding of animal in-Vivo study having 1 % kernel oil. Low cast and easily available oil by extraction method.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Nurses' Knowledge of First Aid Management of Burn Patients at the Peshawar Burn and Plastic Surgery Center

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ABSTRACT

A burn is an injury to the skin and tissues caused by chemical, electricity, radiation or heat. Burn injuries cause a relatively high morbidity and mortality rates worldwide. **Objective:** to assess first aid knowledge of nurses working in burn centers. **Methods:** A descriptive cross-sectional design with a sample size of 84 using an appropriate sampling technique was used in the study. The study was conducted in July 2022 and he August at the Peshawar Burn and Plastic Surgery Center. The instrument used for data collection was his 10-item self-structured questionnaire with a Chronbach alpha reliability of 0.87. SPSS version 24.0 was used to calculate frequencies and percentages for categorical variables. **Results:** Overall, 56% of participants reported having a good knowledge of burns, while 32% of participants reported being average, and 12% of participants reported first aid for burn patients reported low knowledge. **Conclusions**: This study concluded that nurses working in burn and plastic surgery departments have good knowledge of first aid administration.

INTRODUCTION

An injury to the skin and tissues known as a burn can be brought on by chemicals, electricity, radiation, or heat [1]. The burn is classified according to severity of the burn; first degree burn is an injury to the epidermis, second degree or limited thickness burn is damage to the epidermis and some part of the dermis, third degree burn or full thickness is involved the deepest layer and tissues underneath [2]. Burn related injuries the most common and alarming issues all over the world. According to WHO, nearly 180,000 death occur due to burn every year [3]. The numbers of cases reported in the developing countries are maximum compared to developed countries; therefore the developing countries mortality rate is higher than developed world [4, 5]. Ultimately this extends the Disability Adjusted Life Years (DALYs) in low and middle income countries. According to WHO, the Pakistan has higher incidence 1388/100000 as compared to global incidence which is 110/100000 [6]. Patients with severe burns require an intensive and multidisciplinary medical approach. Nurse's work in burn centers is essential for the care required for burn patients. The knowledge and practices of nurses in burn centers play a vital role in

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providing high quality care to burn patients [7, 8]. Assessment, early response and first aid are the initial steps taken not only for the rehabilitation of burns but also for the mass damages as a result of burns. Mainly burned patients are not treated in specialized burn centers initially, but are treated at local emergency departments of district hospitals as early management. Emergency departments will prioritize cases of mass burn victims, and offer emergency care to the burned sufferers [9]. The advancements and literature available have helped improve burn patient care procedures among nurses worldwide [10]. Burn injuries cause a relatively high morbidity and mortality rates worldwide. Patients with severe burns require an intensive and multidisciplinary medical approach [11]. Globally the world health organization (WHO) estimated that 265000 peoples died annually as a result of burn injuries, among the death rates the people of south asia is more vulnerable (57%), followed by Africa (12.2%) and eastern Mediterranean (11%) [12]. The center for diseases control (CDC) reported that every 2 hourly approximately 2000 peoples death occur, while in every 23 minutes one person affect as a result of burn in the United States [13]. Nurses play a major role in the awareness and control of infections in burn patients. The advancements and literature available have helped improve burn patient care procedures among nurses worldwide [10]. Therefore, the concern of the present study was to find out the way nurses use their knowledge and practices regarding prevention of burn site infections. Additionally, more information and knowledge will be added to the already existing literature about prevention of burn site infections. The basic aim of this study is to assess the knowledge of nurses regarding first aid management of patients with burn injuries in Burn and Plastic Surgery Peshawar.

METHODS

The study used a cross-sectional study design and the study setting was the Hayatabad Peshawar Burn and Plastic Surgery Unit. Sample size was calculated through online calculator having 95% confidence interval and having a 5% margin of error that was 84 while using convenient sampling technique. This survey he conducted in July and August 2022. Nurses working in the emergency room, operating room, and burn ward were inclusion criteria for study participants, and nurses working in plastic surgery were excluded from the study. The vehicle used for data collection was a self-structured questionnaire based on American Burn Association (ABA) and WHO guidelines so the validity and reliability of the content has been reviewed and assessed by experts involved in burns and management. A pilot study was conducted on questionnaire reliability with a sample size giving a Chronbach alpha of 0.87 in her 10% of participants. Questioners were reviewed by the Peshawar Tertiary Hospital Ethics Review Board and the ERB team. First, the study was approved by the supervisor. This study was conducted at Hayatabad Peshawar Burn Center Hospital. Permission for data collection was granted by hospital administrators. The objectives and objectives of the study were explained to the participants in an understandable manner. Ethical Approval Written approval was obtained from the Director of the Institute of Nursing Sciences KMU. Permission for data collection was granted by the Medical Director of the Peshawar Burns and Plastics Centre. Written consent was obtained from all study participants prior to data collection. Data were collected in a separate room to ensure study confidentiality. The participant was assured that personal data would never be passed on to third parties. Data were investigated with her SPSS version 22.0. Frequencies and percentages were calculated for all study variables. A chi-square test was used to estimate the association between burn patient knowledge level and burn injury and the sociodemographic profile of the participants.

RESULTS

In the current study majority of the participants were female (76.2%) compared to male (23.8%) (table 1).

Characteristics	N (%)
Gender	
Male	20 (23.8 %)
Female	64 (76.2 %)
Age	
Less than 25 Years	33 (39.3 %)
25 - 35 Years	51 (60.7 %)
Experience	
Less than 2 Years	51 (60.7 %)
2 - 5 Years	32 (38.1 %)
6 - 10 Years	1 (1.2 %)
Marital status	
Single	48 (57.1 %)
Married	35 (41.7 %)
Widow	1 (1.2 %)
Qualification	
Diploma in Nursing	36 (42.9 %)
Post RN BSN	21 (24.0 %)
Generic BSN	26 (31.0 %)
MSN	1 (1.2 %)

Table 1: Demographic data of the participants

The nurse's knowledge regarding the first aid management was assessed. The majority (78.6%) of the participants were reported in wounds of thermal water is best measure (table 2).

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	N (%)
1: Use of cold water	
a) Yes	66 (78.6%)
b) No	18 (21.4%)
Total	84 (100.0%)
2: what is your choice in the following?	
a) Ice	17 (20.2%)
b) Toothpaste	26 (31.0%)
c) Fish oil	2 (2.4%)
d) Honey	2 (2.4%)
e) None of above	37 (44.0%)
Total	84 (100.0%)
3: if patient eye is affected then what is your priority ?	
a) Move the victim to the nearest hospital as soon as possible	36 (42.9%)
b) Finding and applying neutral agent	4 (4.8%)
c) Stimulate and keep blinking with fresh water	33 (39.3%)
d) Using high pressure water to clean the injured eyes	11 (13.1%)
Total	84 (100.0%)
4: Estimated parkland for adults The formula is	
7 (8.3%)	36 (42.9%)
75 (89.3%)	4 (4.8%)
1 (1.2%)	33 (39.3%)
1 (1.2%)	11 (13.1%)
84 (100.0%)	84 (100.0%)
5: If hydration is required in adult then what should be the volume of urine?	
a) 3ml/kg/h	8 (9.5%)
b) 2ml/kg/h	20 (23.8%)
c) 0.5ml/kg/h	40 (47.6%)
d) As much as possible	16 (19.0%)
Total	84 (100.0%)
6: Needed urine output to indicate adequate hydration in burnt child:	
a) 1ml/kg/h	47 (56.0%)
b) 2ml/kg/h	17 (20.2%)
c) 3ml/kg/h	7 (8.3%)
d) As much as possible	13 (15.5%)
Total	84 (100.0%)
7: Symptoms of inhalation injury:	
a) Occurred in closed space	2 (2.4%)
b) Face burn	8 (9.5%)
c) Voice change	5 (6.0%)
d) Difficulty in breathing	23 (27.4%)
e) Carbonaceous	1 (1.2%)
f) All the above sign	45 (53.6%)
Total	84 (100.0%)
8: Appropriate method of fluid ventilation for mass burns:	
a) Rehydrate orally with caution	21 (25.0%)
b) Intravenous only	63 (75.0%)
Total	84 (100.0%)
9: Transferring patients with mass injuries on priority basis	
a) First come first served	23 (27.4%)
b) On the basis of severity	61 (72.6%)
Total	84 (100.0%)
10: For mass burns with suspected inhalation injury, is intubation required before transfer?	
a) Yes	22 (26.2%)
b) Assess for condition before shifting	48 (57.1%)
c) Only for respiratory distress	14 (16.7%)
Total	84 (100.0%)

Table 2: Knowledge of nurses regarding first aid management

The Overall knowledge regarding first aid management among 56% of participants reported having adequate knowledge of burns, while 32% reported having average knowledge and 12% of participants reported first aid for burn patients reported low knowledge of management (Figure 1).

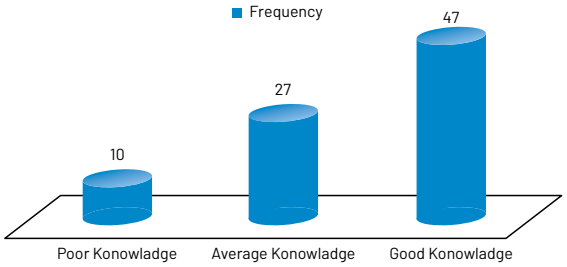

Figure 1: Overall knowledge of nurses regarding first aid

DISCUSSION

In the current study, 56% of participants reported good knowledge of first aid for burn victims, 32% of participants reported average knowledge, and 12% of participants reported I reported my lack of knowledge. Studies that support current evidence report that nurses have a good knowledge of first aid for burns [9]. Similarly, another study reported that 39.8% of participants answered 50% or more of the questions correctly. A majority of 71.8% of participants thought that taking oral rehydration was the appropriate method, but the current study found that 75% of nurses reported limiting IV fluids [10]. Nurses in the current study reported that ice (20.2%), toothpaste (31%), fish oil (2.4%) and honey (2.4%) should be applied to burns immediately after injury. According to the survey, 43.8% of nurses said they applied cold ice water to the wound, and 78.5% of nurses said they had never applied raw eggs, honey or green plants to the burn site. Toothpaste is traditionally applied to burns and has been reported to be effective in lubricating burns. /kg/% should be dosed [14, 15]. TBSA Similar to these results, a study reported that fluid restriction should be based on body weight and surface area of the burn area. In addition, 2–4 ml/kg of crystalloids were required for basic rehabilitation therapy in the first 24 h, depending on the TBS area of the burn wound treatment [16]. The study resulted in an average knowledge score of 8.07 out of 13 [17]. In addition, another study reported quite different results, revealing a low level of knowledge among nurses regarding the care of burn patients [18]. In the sampler context, unsatisfactory

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awareness among the nurses was reported regarding first aid management of burn wound injuries [9]. According to 78.6% of survey participants, cold water is the best first aid for burns. According to studies supporting the current findings, 68% of patients received cooling before being brought to a burn center, and 46% received cooling for at least 20 minutes [19]. This result indicates that the initial burn response is directly related to minimal wound severity is consistent with Cold fresh water reduced the intensity of burn pain and swelling. Similarly, another study also reported that in wounds of thermal water that should be cold is best measure. Cool fresh water reduced the intensity of pain and swelling as a result of thermal burn injuries [20]. The study showed a significant association between knowledge level and age, gender, nationality, marital status, job title (P<0.001) [9].

CONCLUSIONS

The study concluded that nurses working in burn and plastic surgery have a good sense and knowledge regarding first aid management of burns patient, but this practice could be improved by providing continuous training and monitoring. The study also revealed that first aid knowledge is not correlated with age, gender and qualification.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Comparison of Duhamel's Pull-Through Procedure Versus Soave's Pull Through Procedure for The Management of Hirschsprung's Disease

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ABSTRACT

The Hirschsprung's disease is managed via surgical procedures. Mostly two different procedures are common called Soave's and Duhamel's. we compared the procedure safety and output benefits and complications rate of these two studies. **Objectives:** To find the efficacy of Soave's and Duhamel's pull-through procedure that which method is more safe and efficient for the children with Hirschsprung's disease. **Methods:** Randomized clinical trials were conducted. The sample included was consists of 60 children of less than 1 year of age up to 3 years. Sample size was calculated by world health sample size calculator for randomized control trials. With the confidence interval of 95%. Purposive sampling technique was used to collect the data. The study used paired t-test to compare the outcomes of two surgical procedures. 30 patients got Soave's procedure and 30 underwent Duhamel's procedure. Overall 54 boys and 6 girls were under study. Paired t-test were used to analyze the data. **Results:** In Soave's pull-through the 26 patients recovered without any serious complications. If we compared this to the Duhamel's procedure output the complications rate was a little high 23 patients recovered uneventfully while complications reported in 7 patients. The results of this study prove the significant findings in terms of efficiency and associated complications. **Conclusion:** In the light of above mentioned clinical trials the Soave's procedure covers less frequency of complications and cost-efficient in comparison to Duhamel's pull-through procedure in which the complications rate was significantly higher and a costly procedure.

INTRODUCTION

Many colonic congenital abnormalities had been reported in infants and children. Anorectal malformations and Hirschsprung's disease in the most frequently diagnosed and occur with a high incidence rate. In Hirschsprung's disease there is a migration failure of neural crest cells and that result in a ganglionic colon resulting in a functional abnormality and functional obstruction of the colon. The children and infants present with hyper dilated colon and inability to contract the colon and pass the feces. The obstruction creates discomfort and pressure in colonic walls [1]. The Hirschsprung's disease is further categorized by the length of ganglionic part of the colon. There are three possibilities. Short segments long segments and a ganglionic colon [2] This also confers the severity of illness of the disease and time of diagnosis. Although the disease is more prevalent in males than females [3]. We have found the prevalence of male to female 4: 1 in under developed countries where nutritional deficiencies in children and mothers are frequent [4]. The pull through surgical procedure is performed to treat the disease and the

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procedure includes to resection of complete ganglionic part of the colon right above the dentate line and adjoining the functional part of colon so that it can perform normal functions [5]. The study and the literature focuses on the procedure of pull-through surgeries. There are comparisons of different pull through procedures. The most common techniques are called Soave's pull-through and Duhamel's pull-through procedure [6]. These two surgical procedure are commonly performed for the treatment of Hirschsprung's disease after the colostomy formation. The outcomes of these procedures are categorized on the basis of rate of constipation. [7]. The constipations rate is high in patients underwent Soave's procedure. By literature we found out that the constipation and soiling remain the most important indicator of the functional outcomes after the surgery [8].In some studies the outcome and complications frequencies were also studied. The study we performed compare not only the functional outcomes but the frequency of the complications occur in follow-up of these patients. Also and economical comparison was also done to indicate which procedure is cost-efficient and most effective. Although the literature provides the evidences of functional outcomes defective in Soave's procedure. But there are some studies that proves no such differences [9]. The reasons for the defective outcome and high constipation rate might be due to the muscular cuff created by the rectal muscles in the Soave's procedure. The systemic analysis proves the frequency of 8 folds high of constipation in such patients [10]. The sample size is highly recommended for the comparisons of complications rate. The retrospective study forbids such large sample size. Although the frequency of HD cases are high in Pakistan and other countries [11]. But he choice of procedure sometimes depends on the availability of state which are used in Duhamel's procedure and costly. For the management of Hirschsprung's disease three traditional surgical procedures are known and have been used to lessen the extent of intraabdominal wound and injuries to the colon. Swenson,[12]. Soave and Duhamel. New surgical techniques with the aid of laparoscopy are also common these days. Pediatric surgery always intend to evaluate the age of patients. The infants tends to heal quick and better functional response after these surgical procedures there is no big difference and contraindications have been found or recorded. Some studies compare the nutritional status among patients. The nutritional status helps in improvement and healing of wound [13]. Krickenbeck classifications is used by many researchers to evaluate the outcome of these surgical procedure and I or study we followed the same trend. Krickenbeck classification was initially used for the patients of anorectal malformation and having colostomy formation surgeries. But later it was also modified to evaluate the functional outcome of the HD the patients who are suffering from HD do not posses any anomaly of rectal muscles [14]. And also have a normal sphincter. Vertebrae and spinal cords are also normal in these patients. Therefore the classification have different functional outcomes and rates [15]. The overall response of soiling and constipation improve after the pull-through surgery done by any way. Pediatric surgeon focuses on many symptoms of the patients starting with algorithm of soiling and eating habit. Later the rectal biopsy is done to confirm the a ganglionic part of the colon and accordingly first and second stage pull-through surgeries are done. Latest era also focuses of laparoscopic guided pull-through surgeries. The patients must be follow up for 3 to 6 months to monitor the efficacy and general output after the surgery. If any anomaly happen the patients must be evaluated accordingly.

METHODS

A sample of 60 by world health sample size calculator for randomized control trials was calculated. With the confidence interval of 95%. Purposive sampling technique was used to collect the sample. The study used paired t-test to compare the outcomes of two surgical procedures. Soave's and Duhamel's pull-through surgeries done for the management of the Hirschsprung's disease. Randomized clinical trials were conducted to evaluate the efficacy of these procedures. The sample included was consists of 60 children up to three years of age and infants. The functional outcomes, efficacy and recovery time, post-operative issues and complications were calculated a analysis of cost effective comparison was also done. By the institutional ethical approval and consent of the parents and guardian the data from the patients was taken. A follow-up of up to 3 months was done to compare the later life and soiling issues. All the patients have confirmed the diagnosis of HD and the part of ganglionic colon was measured. The length of segment and outcome of surgery was an important indicator. Rectal biopsy was done the confirm the agranulosis and during surgery the length was measured. Data collected included; height, weight, age clinical presentations, type of surgery or pull-through performed. Clinical findings of follow-ups and record of other surgical procedure which were done during the follow-ups. Symptoms of enterocolitis were also noted represented but the fever and abdominal cramps or episodes of pain. Total record of antibiotics were also noted which evaluated the infection rate of the surgeries. Paired t-test were used to analyze the data. Cost-analysis was also done for both procedures. Statistical evaluations were performed by running the SPSS/PC software package version 24.0 (SPSS, Inc., Chicago, IL, USA). P

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values of less than 0.05 will be regarded as statistically significant. Wilcoxon paired non-parametric tests were used to compare the p values for the interventions of two groups

RESULTS

A 30 patients got Soave's procedure and 30 underwent Duhamel's procedure discussed in table 1. Overall 54 boys and 6 girls were under study. The disease is more commonly found in males than females. With a frequency comparison of 4: 1.

Parameter	Soave pull-through n	Duhamel pull-through n	p-value
Gender			
Male	28	26	0.86
Female	2	4	0.14
Aganglionosis type			
Short-segment	21	25	0.62
Long-segment	6	4	0.34
Total aganlionosis	2	1	0.04

Table 1: Clinical presentations of patients of HD

Demographics of patients were also studies discussed in table 2. In HD diagnosis 36 patients were of less than 1 years of age.

Demographics	Frequency n=average
Age of HD diagnosis	
Less than 1 year	36
Above one year	24
Age of pull-through	
Soave's	0.2 to 200 months
Duhamel's	1 to 200 months

Table 2: Demographics of patients

In Soave's pull-through the 26 patients recovered without any serious complications. If we compared this to the Duhamel's procedure output the complications rate was a little high 23 patients recovered uneventfully while complications reported in 7 patients discussed in table 3.

Functional outcomes	Soave (n, %)	Duhamel (n, %)	p-value
Voluntary bowel movements	28/30(98)	26/30 (94)	0.66
SoilingConstipation	3/30	6/30	0.12

Table 3: Functional outcomes of patients of HD in follow up

The Soave's pull through procedure followed mentioned complications. Cuff abscess in 1 patient managed conservatively with antibiotics. 2 patients developed strictures. Enterocolitis in 2 patients. Anastomotic leakage was not observed in any case and no additional surgery was required. Duhamel's procedure complications were as follows; Stricture is not presented in any patient. And enterocolitis in six patients. Leakage of stump 1 patient, which required diversion colostomy at transverse colon discussed in table 4.

Parameter	Soave's (n)=30	p-value	Duhamel (n)=30	p-value
Complications	4/30	0.18	7/30	0.24
Strictures	2		0	
Enterocolitis	2		6	
Anastomotic leakage	0		1	
Cuff abscess	1		0	

Table 4: Comparisons of complications HD patients underwent Soave and Duhamel pull-through

The rate of complications was same in both procedures. The results of this study prove the significant findings in terms of efficiency and associated complications. Another comparison was done of the surgical technique and pot operative findings. Duhamel's pull through surgical time was 90 to 120 minutes on average. Soave's pull through surgical time was 100 to 150 min on average. Post-operative hospital stay was also recorded. Duhamel's pull through procedure included 5 to 6 days on average. Soave's pull through procedure included 4 to 5 days on average. Another comparison of cost, the Duhamel's procedure needed extra cost for linear staplers used while in soave's procedure the cost of surgery was less discussed in table 5.

Surgical procedure efficacy	Soave's	Duhamel's
Operative time	100-150 minutes	90-120 minutes
Hospital stay of patients	4 to 5 days	5 to 6 days
Recovery rate	high	low
Total cost	Cost efficient	costly

Table 5: Comparisons of surgical procedures efficacy

DISCUSSION

We conducted the study for the comparison of two pull-through surgeries. In our study the efficacy and outcome were found more than the Duhamel's procedure but many study support the Duhamel's procedure more than laparoscopic surgeries. Kiely and colleagues evaluated the efficacy of Duhamel's procedure over laparoscopic techniques. The results come out in support of laparoscopic procedure [12]. Soave's and Duhamel's pull-through are mostly preferred for the infant surgeries for children of older age and adults Swenson's technique is more commonly used and have better results. This study evaluated the pull-through procedures for children less than 3 years of age [14]. Hirschsprung's disease early sign and symptoms help in diagnosis and treatment of this disease is done in early ages. There are some cases in which the segment of a ganglionic part of colon is smaller and the symptoms are not developed at an early age. But in later age the patients present with developing sign of dilated and obstructed colon [15]. A comparative review done to study the functional outcomes of HD by Aworanti and colleagues. The scoring grades of constipation and soiling levels were done to compare efficacy or the

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surgery. The surgical techniques used under study were both Soave's and Duhamel's. but the study found no definite comparisons and difference among these two procedure [16]. Another study supports the outcome of the pull-through surgeries for the treatment of HD [17]. The main pitfall of any surgery is the introduction of infections in the body. And that is the most frequent type of complication reported and studied. The rate of infection was not dependent on the type of procedure, soave's and Duhamel. But the surgical environment and post-operative care. Our study reported no such infectious wound cases and sepsis [18]. Langley focused for the management of post-operative care for the children suffering from HD. The study aimed to find the management ways of post-operative obstruction and the solutions [19]. Trans anal and transabdominal surgeries both are common and used for the patients suffering from Hirschsprung's disease. Standard and emblem compared the functional outcomes of trans anal and transabdominal surgeries. Literature confers the pull-through surgeries are better than abdominal surgeries [20]. Some systemic review conducted in recent era impacts on the science and surgery for the management of Hirschsprung's disease. The patients have better response toward pull-through surgeries [21]. Less number of patients and lack of funds were the limitation of our study.

CONCLUSIONS

The Soave's procedure covers less frequency of complications and cost-efficient in comparison to Duhamel's pull-through procedure in which the complications rate was significantly higher and a costly procedure. our study support the results and outcome of Soave's pull-through procedure and found it more feasible for patients and surgeons both.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Effect of Nursing Intervention regarding Centers for Disease Control and Prevention Guidelines on Nursing Knowledge in Operating Room

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ABSTRACT

Sterilization techniques are the basic and important responsibility of health care professional's especially nurses. **Objective:** To evaluate effect of intervention CDC guidelines on nurses' knowledge regarding Aseptic techniques in operating room. **Methods:** A quasi experimental study was conducted on 46 male and female nurses working in the operating room and having experience in operating room more than six months. A random sampling technique was used for data collection. The questionnaire consists of 22 questions about the knowledge of nurses regarding sterile techniques. Nurses were given 3-month intervention regarding aseptic technique, pre and post data was gathered from nurses regarding sterile techniques in operating rooms. Data were entered and analyzed in SPSS version 24. For quantitative variables mean and SD was computed. For categorical variables frequency and percentages was computed. p-value $\leq$ 0.05 was considered statistically significant. **Results:** The majority of nurses were married and female and 32 (69.6%) were between the age group 25-35 years. In the post-intervention phase there were 0(0), 21(45.7%) and 25(54.3%) participants had poor, fair and good knowledge respectively regarding aseptic techniques in operating room. The findings revealed that there was a significant difference between pre and post interventional practice scores as evident by (p-value <0.001). **Conclusion:** The current study concluded that the educational interventions on operation room nurses significantly enhance operating room nurses' knowledge regarding aseptic techniques.

INTRODUCTION

Sterilization techniques are the basic and important responsibility of health care professionals especially nurses [1]. The basic effect of unsterile techniques is delayed outcome and prolonged hospital stay due to infection [2]. Approximately, 1.7 million patients in hospitals were admitted to hospitals for treatment acquire healthcare-associated infections. They further reported that almost 98,000 patients die due to these infections. Infection due to unsterile techniques in hospitals is the main source of infection [3]. According to center for disease control 1.7 million infections are hospital acquired which is an associated factor for death [4]. The aseptic technique is practiced in operating rooms. The aseptic technique includes the usage of sterilized equipment's, gloves and gowns [5]. The prevention of infection which sometimes leads to unnecessary complication arising from surgery the aseptic technique is very vital. Aseptic approaches are required for the applications of plant cell, tissue, and organ cultivation [6]. A study reported that the most important in maintaining sterility in the operation room is to maintain the environment and the equipment's neat and clean [7]. Pre-operative sterilization of the types of equipment should be carried out, proper gowns, masks, and gloves should be used to maintain the sterile field during operation [8]. The results revealed that for patient's safety nurses play significant role. It was concluded that operating room nurses must be well-prepared and demonstrate thorough knowledge and competence in the

field of sterilization and they should be sterile at all times to diminish the spread of potential microorganisms [9]. Furthermore, health care workers especially the nurses are the most valuable health care professionals in the operation room who have more contact with the patients and assisted the surgeons during the operations [10]. Nurses have the main responsibility to follow the aseptic technique and prevention the patients and health care individuals from contamination [11, 12]. The role of scrub nurses is very important to maintain the sterility of the equipment's, environment in the operation room to break the chain of infection transmission [13]. Also, the nurses have the responsibility to maintain the aseptic field and scrub the patient's site of incision using the proper standard techniques [14]. Nurses' knowledge is critical for effective infection prevention and control. Barriers to IPC compliance include unfamiliarity with CDC standards, lack of awareness of preventive indications in routine patient care, and the potential dangers of transmitting germs to patients. Therefore, it is necessary to give education on CDC guideline to improve the nurse's knowledge and practices about aseptic techniques. The objective of the currents study is to evaluate effect of intervention CDC guidelines on nurses' knowledge regarding aseptic techniques in operating room.

METHODS

After the approval of Institutional review board of University of Lahore, quasi experimental study was conducted on 46 male and female nurses working in the operating room and having experience in operating room more than six months. Sample size of 46 cases was calculated with 95% confidence interval, 7% margin of error. A random sampling technique was used for data collection. Data for the current study were collected using a validated questionnaire developed by Nsekambabaye Jean Pierre to assess the knowledge of nurses regarding aseptic techniques [15]. The questionnaire consists of 22 questions about the knowledge of nurses regarding sterile techniques. The knowledge score ranges from 0-29. The knowledge was assessed as Poor Knowledge = 0-49 % Fair Knowledge = 50-74 % Good Knowledge = 75-100%. Nurses were given 3-month intervention regarding aseptic technique, pre and post data were gathered from nurses regarding sterile techniques in operating rooms. Data were entered and analyzed in SPSS version 24. For quantitative variables mean and SD was computed. For categorical variables frequency and percentages was computed. To compare the effect of CDC guidelines on nurses' knowledge and practices regarding aseptic techniques in an operating room paired sample t t-test/ Wilcoxon signed rank test was applied. p-value $\leq$ 0.05 was considered statistically significant.

RESULTS

Out of 46 participants 32 (69.6%) were between the age group 25-35 years and 14(30.4%) were in the age between 36-50 years. Out of 46 participants, only 87.0% were married and remaining 13.0% were single (Table 1).

Marital Status	Frequency (%)
Married	40(87)
Single	6(13)
Total	46(100)

Table 1: Marital Status of the Study Participants

Table 2 showed the education of the participants, 60.9% of the participants had diploma nursing, 30.4% did BSN while 8.7% did Post RN.

Education	Frequency (%)
Diploma	28(60.9)
BSN	14(30.4)
Post RN	4(8.7)
Total	46(100)

Table 2: Education of the Study Participants

Table 3 shows that in the pre-interventional phase the majority of the participants (65.2%) had poor knowledge while only 34.8% participants had fair knowledge regarding aseptic techniques in operating room. Whereas in the post-intervention phase there were 0(0), 21(45.7%) and 25(54.3%) participants had poor, fair and good knowledge respectively regarding aseptic techniques in operating room. The findings revealed that there was a significant difference between pre and post interventional practice scores as evident by (p-value <0.001).

Knowledge Categories	Pre-Intervention Frequency (%)	Post Intervention Frequency (%)	p-value
Poor	30 (65.2)	0 (0)	0.000
Fair	16 (34.8)	21 (45.7)	
Good	0 (0)	25 (54.3)	

Table 3: Comparison of pre and post Knowledge Categories

DISCUSSION

The operating room is a high-pressure, elevated risk environment that is prone to multiple mistakes. Modern surgery requires the collaboration of a group of highly qualified professionals. Staff in the operating room should be able to cope with the requirements of the job while also providing safe surgical patient care [16]. In currents study 46 nurses were enrolled. 3-month intervention was given to nurses. The majority of nurses were married and female. Before intervention the nurses have poor knowledge regarding aseptic techniques but after intervention their knowledge significantly increased. in the post-intervention phase there were 0(0), 21(45.7%) and 25(54.3%) participants had poor, fair and good knowledge respectively regarding aseptic techniques in operating room. The findings revealed that there was a significant difference between pre and post interventional practice

scores as evident by (p-value <0.001). These findings were comparable with correlational study was conducted to assess the knowledge and practice of operation room nurses. A self-administered questionnaire was used to determine the knowledge and practice of nurses. The results revealed that nurses have excellent knowledge about sterile technique and applied it to some extent. The findings suggest that there was positive association between knowledge and practice among sterile technique among nurses [17]. The current study reported that the nurses have poor knowledge score before the intervention regarding aseptic techniques in operating room. These findings were compared with cross-sectional study by Saggu *et al.*, was conducted to assess the knowledge and practices according to CDC guidelines in Lahore. The study includes all the nurses who provide care to patients. Results revealed that 100% nurses reported that hand hygiene is necessary for infection control. It was reported that nurses have insuffient knowledge (<75%) and practices according to CDC guidelines [18]. Similarly, another study by Dhakal *et al.*, was carried out to explore the knowledge and practice of nurses regarding sterilization in the operation room. Overall, 56 participants were included in the study. According to the data, 62.5 percent of respondents had a high level of knowledge about sterilization, 37.5 percent had an average level of knowledge, and none of the respondents had a low level of knowledge about sterilization [19]. In order to assess nurses' knowledge of sterilization processes, a questionnaire consists of 14 questions regarding sterilization technique was administered. 80% of nurses demonstrated strong knowledge. These findings demonstrate that operating room nurses are adequately knowledgeable about sterilizing procedures [20].

CONCLUSIONS

Educational interventions on operation room nurses were considerably enhanced operating room nurses' knowledge and practices regarding sterile techniques. Moreover, the effectiveness of educational interventions on operating room nurses' knowledge and practices regarding sterile techniques assisted to enhance effective nurses' roles. The nurses who have good knowledge about sterile technique improved the safety of their patients and operating room staff by lowering difficulties caused by poor sterile technique, and this helped to eliminate public misconceptions about operation procedures.

Conflicts of Interest

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Original Article

The Perinatal and Maternal Outcomes of Instrumental Vaginal Delivery

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ABSTRACT

Instrumental vaginal delivery is necessary under special circumstances to facilitate a safer delivery process. **Objective:** To assess the perinatal and maternal outcomes of instrumental vaginal delivery. **Methods:** This retrospective study was conducted at King Abdul-Aziz University Hospital, Jeddah, Saudi Arabia and included patients from July 2018-June 2021. All females with singleton pregnancy who underwent instrumental delivery using vacuum or forceps were included. Data were analyzed using SPSS 19. **Results:** There was a total of 346 instrumental delivery cases during these three years, out of which 337 (97.4%) were vacuum and 9 (2.6%) were forceps. A significant difference was observed between both groups regarding 3rd & 4th-degree tears and hospital stay, where the mean hospitalization and the rate of 3rd & 4th-degree tears were higher among forceps groups than the vacuum group (4.1±2.8 forceps vs 2.1±1.0vacuum, p value<0.0001) and (44.4% forceps vs 9.5% vacuum, p value=0.009) respectively. There was a significant difference between the two groups regarding Apgar score at 1 m and Apgar score at 5 m, where the means of both Apgar scores were higher among the vacuum group than the forceps group (8.1±1.6 vacuum vs 6.4±3.2 forceps, p value=0.002) and (9.5±1.3 vacuum vs 8.3±3.2 forceps, p value=0.006) respectively. **Conclusions:** It is critical to renovate the training and use of operative vaginal delivery to improve these skills which is underutilized today. When it is performed by a skilled provider it is a perfect alternative to Caesarean delivery in the chosen patients.

INTRODUCTION

Vaginal delivery is a normal physiological process that once interrupted might harm the mother and\or the fetus. Physicians should always allow the normal delivery to take place unless there is an indication to facilitate or to help the mother\fetus. In some cases, an instrumental vaginal delivery could be the safest choice [1]. Instrumental delivery is divided into forceps delivery, breech extraction, and vacuum extraction [1]. This mode of delivery has been advocated by the American College of Obstetricians and Gynecologists (ACOG) and the Society for Maternal-Fetal Medicine as a strategy to reduce the cesarean delivery rate [2,3]. Throughout the past years, instrumental delivery has earned a bad reputation due to the possibility of poor maternal and neonatal outcomes in terms of physical health and cognitive development [4,5]. This made some physicians prefer cesarean section over instrumental delivery when indicated, which unfortunately resulted in a lack of enough training for residents [1,6]. It has been known that cesarean section has many implications in both the short and long terms, such as infection, hemorrhage, venous thromboembolism, and risk to subsequent pregnancies. World Health Organization (WHO) has considered 10-15% as the ideal rate for cesarean section [7-9]. A local study in Saudi Arabia done by Ba'aqeel reported that there is an 80.2% overall increase in the cesarean delivery rate during the period from 1997 to 2006 [10]. This alarming finding demonstrated the importance of learning how to decide between unassisted vaginal delivery, instrumental delivery, and cesarean section, to provide adequate care without putting the mother and fetus at avoidable risks. To address all aspects of instrumental delivery, (ACOG) has published a recent guideline in 2015, which included details on the indications of instrumental delivery such as prolonged second stage of labor, suspicion of immediate or potential fetal compromise, and shortening of the second stage of labor

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for maternal benefit [11]. The choice between vacuum or forceps has usually been based on the physician's preference and the current situation [12, 13]. Generally, each instrument has its own maternal and fetal risks, for example, forceps increase the risk of bleeding compared to vacuum, anal sphincter injury, in addition to causing significant harm to the fetus, such as facial lacerations, facial nerve palsy, and skull fractures [14]. However, vacuum extraction can also cause lacerations and subgaleal or intracranial hemorrhages [10-12]. Despite all the adverse effects of instrumental delivery, it is still the safest choice to minimize the rate of caesarean section rate worldwide [15]. A similar study was done in Saudi Arabia in 2001 and concluded that forceps are more likely to be used in primigravida due to the prolonged 2nd stage of labor and less likely to fail, while the vacuum is more likely to be used by registrars [16]. In light of such information, this study aimed to evaluate perinatal and maternal outcomes in instrumental delivery in a tertiary health care center in Saudi Arabia. This study is of particular importance because it will benefit the institution by providing suggested changes to the established protocols, which will ultimately result in better patient care and outcome.

METHODS

A retrospective study was conducted at King Abdul-Aziz University Hospital, Jeddah, Saudi Arabia. In the period between July 2018 to June 2021. Patients' files were reviewed following the hospital's policy and after approval by the biomedical ethics research committee. Ethical approval was granted by Research Office, King Abdullah International Medical Research Centre. Approval Number is RSSJ0713-016. The Inclusion criteria Included all females with singleton pregnancy at term gestation who underwent vacuum or forceps delivery. All deliveries must've been performed by attending physicians or residents under the direct supervision of a senior consultant. Exclusion criteria were patients who had multiple pregnancies, underwent cesarean section, had positions other than cephalic, and had placenta abnormality. A structured form (data collection sheet) was used to collect the data, it included demographic data, an indication of instrument application, and maternal and fetal outcomes. SPSS 19 was used for data analysis. Categorical data were presented using numbers and percentages, while numerical data were presented using mean SD. Comparison between the two ways of instrumental delivery was done using Chi-square for categorical data and by independent t-test for numerical data. P value < 0.05 considered as significant.

RESULTS

Out of 346 instrumental delivery cases, 337 (97.4%) were vacuum and 9 (2.6%) were forceps, with a mean age score of 27.2±5.9. The majority of the cases were prim-parity 238 (68.8%), term 320 (92.5%), and booked 298 (86.1%). There was no significant difference between the two methods of delivery regarding age, parity, (Gestational age) GA, and booking status (p value> 0.05)(Table 1 and Figure 1).

Variable		Instrumental delivery method		Total	p-value
		Vacuum	Forceps		
Maternal age^ (mean± SD)		27.2±5.6	26.1±4.8	27.2±5.9	0.516
Parity # N (%)	Prim Parity	230 (68.2%)	8 (88.9%)	238 (68.8%)	0.418
	Multiparty	107 (31.8%)	1 (11.1%)	108 (31.2%)	
GA # N (%)	Pre-term	24 (7.1%)	2 (22.2%)	26 (7.5%)	0.160
	Term	313 (92.9%)	7 (77.8%)	320 (92.5%)	
Booking status# N (%)	Booked	291 (86.4%)	7 (77.8%)	298 (86.1%)	0.362
	Un-booked	46 (13.6%)	2 (22.2%)	48 (13.9%)	

Table1: Demographic data of participants
Data were presented as N (%) or as Mean± SD
^ Comparison was done using an independent t-test
# Comparison was done using the Chi-square test
* p value < 0.05 considered significant

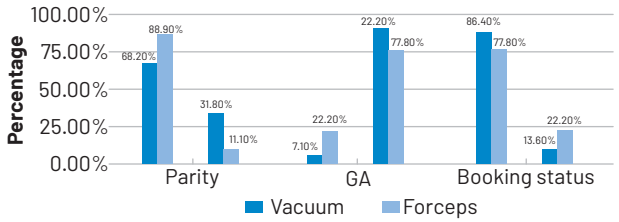

Figure 1: Demographic data of participants in form of bar graph.

Table 2 shows the indications of instrumental delivery where they are as follows; Fetal distress in 182(52.8%) cases, followed by poor maternal efforts in 74(21.4%) cases, then prolonged 2nd stage in 23(6.7%) cases, and lastly, maternal heart disease in 2(0.6%) cases (Figure 2). There was no significant difference between the two methods of delivery regarding the four indicators (p value> 0.05). Even the rates of poor maternal efforts and Prolonged 2nd stage were higher in the forceps group, while the rates of fetal distress and maternal heart disease were higher in the vacuum group (Table 2 and Figure 2).

Variable (indication)		Instrumental delivery method		Total	p-value
		Vacuum	Forceps		
Poor maternal efforts# N(%)	No	265 (78.9%)	6 (66.7%)	271 (78.6%)	0.518
	Yes	71 (21.1%)	3 (33.3%)	74 (21.4%)	
Fetal distress N (%)	No	156 (46.4%)	7 (77.8%)	163 (47.2%)	0.104
	Yes	180 (53.6%)	2 (22.2%)	182 (52.8%)	
Prolonged 2nd stage# N (%)	No	315 (93.7%)	7 (77.8%)	322 (93.3%)	0.127
	Yes	21 (6.3%)	2 (22.2%)	23 (6.7%)	
Maternal heart disease# N (%)	No	335 (99.4%)	9 (100%)	344 (99.4%)	0.970
	Yes	2 (0.6%)	0 (0.0%)	2 (0.6%)	

Table 2: Indications of instrumental delivery
Data were presented as N (%) or as mean± SD
^ Comparison was done using an independent t-test
# Comparison was done using the Chi-square test
* p value < 0.05 considered significant

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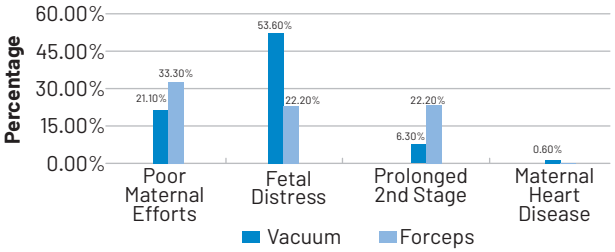

Figure 2: Indications of instrumental delivery in form of bar graph

There was a significant difference between the two groups regarding 3rd & 4th-degree tears and hospital stay, where the mean hospitalization and the rate of 3rd & 4th-degree tears were higher among forceps groups than the vacuum group (4.1±2.8 forceps vs 2.1±1.0vacuum, p value<0.0001) and (44.4% forceps vs 9.5% vacuum, p value=0.009) respectively. On the other hand, there was no significant difference between the two methods of delivery regarding episiotomy and 1st & 2nd-degree tears. Even though the rates of both of them were higher in the forceps group. No cases were reported in both groups for the following; post-partum hemorrhage, blood transfusion after delivery, sphincter damage, and post-partum Hysterectomy (Table 3 and Figure 3).

Variable (Maternal outcome)		Instrumental delivery method		Total	p-value
		Vacuum	Forceps		
Episiotomy# N (%)	No	59 (17.5%)	1 (11.1%)	60 (17.3%)	0.518
	Yes	278 (82.5%)	8 (88.9%)	286 (82.7%)	
1st & 2nd-degree tear# N (%)	No	269 (79.8%)	7 (77.8%)	276 (79.8%)	0.573
	Yes	68 (20.2%)	2 (22.2%)	70 (20.2%)	
3rd & 4th-degree tear# N (%)	No	305 (90.5%)	5 (55.6%)	310 (89.6%)	0.009
	Yes	32 (9.5%)	4 (44.4%)	36 (10.4%)	
Post-partum hemorrhage# N (%)	No	337 (100%)	9 (100%)	346 (100%)	
blood transfusion after delivery# N (%)	No	337 (100%)	9 (100%)	346 (100%)	
Sphincter Damage# N (%)	No	337 (100%)	9 (100%)	346 (100%)	
Post-partum Hysterectomy# N (%)	No	337 (100%)	9 (100%)	346 (100%)	
hospital stay^ (mean± SD)		2.1±1.0	4.1±2.8	2.1±1.0	0.0001**

Table 3: Frequency and percentage of different maternal outcomes by use of instrumental delivery

Data were presented as N (%) or as mean± SD

^ Comparison was done using an independent t-test

Comparison was done using the Chi-square test

* p value < 0.05 considered significant

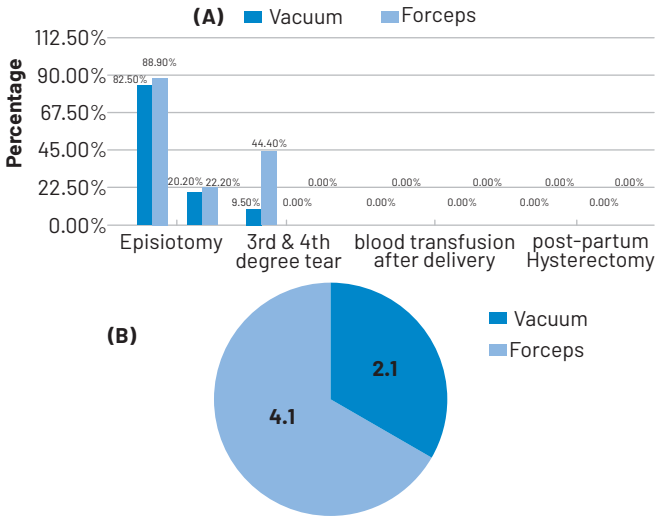

Figure 3: Percentage of different maternal outcomes by use of instrumental delivery in form of bar graph. (B) Hospital stays of forceps and vacuum instrumental delivery

There was a significant difference between the two groups regarding Apgar score at 1 m and Apgar score at 5 m, where the means of both Apgar scores were higher among the vacuum group than the forceps group (8.1±1.6 vacuum vs 6.4±3.2forceps, p value=0.002) and (9.5±1.3 vacuum vs 8.3±3.2 forceps, p value=0.006) respectively. On the other hand, there was no significant difference between the two methods of delivery regarding NICU admission, Cephalohematoma, Neonatal jaundice, Perinatal mortality, Birth weight, and Fetal blood pH. Even though the rates of them were higher in the vacuum group except the rate of Perinatal mortality was higher in the forceps group. No cases were reported in both groups for Brachial plexus injury and subconj hemorrhage (Table 4 and Figure 4).

Variable (Neonatal outcome)		Instrumental delivery method		Total	p-value
		Vacuum	Forceps		
NICU admission# N (%)	No	322 (95.5%)	8 (88.9%)	330 (95.4%)	0.391
	Yes	15 (4.5%)	1 (11.1%)	16 (4.6%)	
Cephalohematoma# N (%)	No	336 (99.7%)	9 (100%)	345 (99.7%)	0.556
	Yes	1 (0.3%)	0 (0.0%)	1 (0.3%)	
Brachial plexus injury# N (%)	No	337 (100%)	9 (100%)	346 (100%)	
Neonatal jaundice# N (%)	No	335 (99.4%)	9 (100)	344 (99.4%)	0.547
	Yes	2 (0.6%)	0 (0.0%)	2 (0.6%)	
subconj hemorrhage# N (%)	No	337 (100%)	9 (100%)	346 (100%)	
Perinatal mortality# N (%)	No	332 (98.5%)	8 (88.9%)	343 (98.3%)	0.073
	Yes	5 (1.5%)	1 (11.1%)	6 (1.7%)	
Birth weight^ (mean± SD)		3.1±0.38	2.9±0.4	3.1±0.38	0.363
Apgar score at 1 m <5^ (mean± SD)		8.1±1.6	6.4±3.2	8.1±1.6	0.002*
Apgar score at 5 m <7^ (mean± SD)		9.5±1.3	8.3±3.2	9.5±1.3	0.006*
Fetal blood pH^ (mean± SD)		7.2±0.4	6.9	7.2±0.2	1.000

Table 4: Frequency and percentages of different neonatal outcomes by using instrumental delivery

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Data were presented as N(%) or as mean± SD
^ Comparison was done using an independent t-test
# Comparison was done using the Chi-square test
p value < 0.05 considered significant

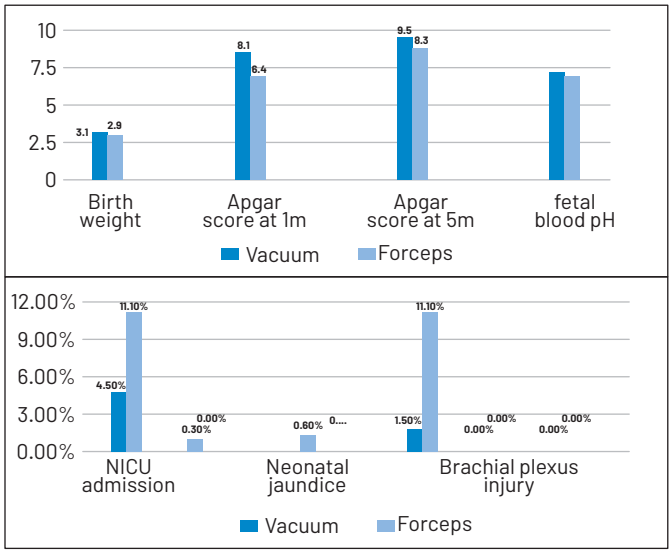

Figure 4: (A) Means of different neonatal outcomes by using instrumental delivery in form of bar graph. (B) Neonatal Outcomes in terms of need of neonatal Intensive care unit, neonatal jaundice and brachial plexus injury

DISCUSSION

Instrumental vaginal delivery is one of the common obstetric interventions to help the delivery of the fetus. It is the use of obstetric forceps or vacuum extractors to rise the forceps along the pelvic curve and expedite delivery [17]. The present study aimed to evaluate perinatal and maternal outcomes in instrumental delivery in a tertiary health care center in Saudi Arabia. Out of 346 instrumental delivery cases, the majority (97.4%) were vacuum and less than a tenth (2.6%) were forceps. The majority of the cases were prim-parity 238 (68.8%), term 320 (92.5%), and booked 298 (86.1%). The result shows that the majority of women were young between 20 to 30 years with a mean age score of 27.2±5.9 without significant difference. In India's study, more than half of women were between 20 to 25 years 53.17% followed by 25 to 30 years 34.78% [18]. Also, in Nigeria's study, almost two third of the women were up to 25 years [19]. More than two-thirds (68.8%) of cases were prim gravida and 31.2% multigravida. This result is consistent with Several studies, where in Nigeria's study, the authors reported prim gravida forming 52% and second gravid 18% cases [19]. Also, in Greece's study, prim gravida formed 84.75 % and multigravida 15% cases [20]. And in India's study, 57.19% of cases were prim gravida followed by the second gravida with 24.41% cases [18]. The main indication of this research was that Fetal distress (52.8%) increases, particularly among the vacuum group, and secondly a poor maternal effort (21.4%) is seen, particularly among the forceps group. Similar results were reported in several studies, where according to research conducted in India, prolonged second stage of labor (70.56%) was the main reason for employing instruments, followed by maternal heart illness (14.38%) and fetal distress (11% of cases) [18]. Another research from India found that the second stage was extended in 16% of instances and that 20.83% of cases showed signs of fetal distress [21]. The most frequent symptoms in the Greek research were prolonged second stage of labor (69.73%) and fetal distress (26.47%) [20]. The American College of Obstetricians and Gynecologists (ACOG) released a guideline for the use of Operative Vaginal Delivery Aid in 2000, then updated it in 2015 and 2020 for both Forceps and vacuum which included a list of accepted indications for such procedures (Prolonged second stage of labor, Suspicion of immediate or potential fetal compromise, Shortening of the second stage of labor for maternal benefit), where operative vaginal delivery should only be performed if there is an appropriate indication [10, 22]. In the current study, the main complication was episiotomy with the highest rate of incidence in pregnancies delivered with forceps. On the other hand, the hospitalization duration was significantly higher among the forceps group than the vacuum group. Also, the rate of 3rd & 4th-degree tears was significantly higher among the forceps group than the vacuum group. In India's study, the maternal complications were cervical tear and lacerations by 12.04% followed by episiotomy extension in 9.03 % of cases, then Atonic post-partum hemorrhage in 4% of cases [18]. In another study from India, the incidence of episiotomy extension was 26.66% [21]. In Miami review of over 50000 vaginal deliveries at the University of Miami, the rate of 3rd/4th perineal lacerations were significantly higher in forceps (20%) and Vacuum (10%) as compared to the Spontaneous vaginal delivery [23]. Also, in Pittsburgh, Pennsylvania study, the rate of severe vaginal lacerations was approximately 32% [24]. The result reveals that 16 cases were admitted to NICU, 6 of Perinatal mortality, and 1 case of cephalhematoma without significant difference between the two groups. On the other hand, there was a significant difference between the two groups regarding Apgar score >5 at 1 m and Apgar score >7 at 5 m, where the means of both Apgar scores were higher among the vacuum group than the forceps group. Where more than two-thirds showed good APGAR scores. 70.56% of the newborns in India's study had good APGAR scores >6 at 1min. 82 newborn infants required NICU care owing to delivery hypoxia, 20 babies suffered neonatal jaundice, 2 newborns experienced convulsions (0.66%), and 1 baby developed a cephalhematoma (0.33%), even though there were 2% incidences of fresh stillbirth [18]. Instrumental vaginal delivery revealed in the second India research that

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14.43% of babies required NICU admission [21]. Although the vacuum extractor was linked to an increase in cephalohematoma and retinal hemorrhage, a comprehensive evaluation of 10 studies comparing vacuum extraction with forceps delivery revealed no significant changes in Apgar ratings at one and five minutes and minimal major injuries in newborns [25]. These differences in the percentage could be due to several factors such as socio-economic factors, geographic areas, sample size, and study nature. Regardless of considerable changes in the management of labor and delivery over the last decades, operative vaginal birth is still an important element of modern labor management. The use of obstetric forceps or vacuum extractors necessitates that an obstetrician or other obstetric care provider be aware of the proper use of the instruments and the risks involved. The current study has some limitations, first, the study's nature (retrospective) leads to losing the information because of the withdrawing of cases. Also, the study depends on the information of one center which prevents generalization of the result. This study is of particular importance because it will benefit the institution by providing suggested changes to the established protocols, which will ultimately result in better patient care and outcome.

CONCLUSIONS

When a spontaneous vaginal birth is not possible, the choice to proceed with an operational vaginal delivery must be founded on understanding of the risks to the mother and the fetus. Operative vaginal births should only be done if it is deemed a safe option. However, the risk and advantages of both ways of delivery (forceps and vacuum) must be adapted in each instance to be more suited. In conclusion, instrumental vaginal delivery using vacuums and forceps can have a significant impact on perinatal and maternal outcomes. It is associated with an increased risk of maternal lacerations and perineal trauma, as well as a higher rate of neonatal cranial and facial injuries. However, it can also be a lifesaving intervention in certain situations, such as when the fetus is in distress, or the mother is unable to push effectively. It is important for healthcare providers to weigh the potential risks and benefits of instrumental delivery and to use these instruments with caution and proper training.

Conflicts of Interest

The authors declare no conflict of interest.

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Original Article

Association of Severity of Diabetic Foot Ulcer with Glycated Hemoglobin A1C Levels

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ABSTRACT

Diabetic foot ulcer is a well-documented complication of uncontrolled diabetes and its association with the variables involved in Diabetes like FBS, RBS and HBA1C has been thoroughly researched. This research aims to identify the association of diabetic foot ulcer under Wagner classification with HBA1C classes. **Objectives:** To determine the severity of diabetic foot ulcer at various level of HBA1C and determine the association. **Methods:** A cross-sectional study with 360 diabetic patients who after giving consent filled questionnaires. The information was analyzed using SPSS v26 (IBM) through Chi Square test. The results were tabulated and inferred from. **Results:** Our work depicts a statistically significant correlation between grades of diabetic foot ulcer and HBA1C levels of the patients (p-value <0.001). Patients with higher levels of HBA1C suffered foot ulcer of higher grades. Specifically, patients with Grade 1 foot ulcers primarily had HBA1C levels of ≤ 11.00 with 6(50%) falling in the group "7.01-9.00" while patients with Grade 5 ulcers had higher HBA1C levels with bulk of patients having levels of >11.00. **Conclusions:** This research further supplemented an already strongly established association between uncontrolled diabetes and diabetic foot ulcer. We focused on specifically HBA1C and how increased lab values are linked with different grades of Diabetic Foot ulcer and found a strong association demanding a proactive approach towards patient care and education.

INTRODUCTION

The chronic state of impaired glucose metabolism can affect immune system [1]. Glycated hemoglobin is a measure of average blood sugar concentration in past few months [2]. Elevated level of glycated hemoglobin is recognized as marker of predicting the severity of diabetes mellitus [3]. Hyperglycemia is also documented with adverse outcomes after surgery. Long term glucose control is being recognized for postoperative complications. In foot and ankle literature, poor glycemic control is not well studied [4]. Diabetic foot has high prevalence, peripheral neuropathy and peripheral vascular disease; the main causes of diabetic foot; are appears to be increasing. A study conducted in Africa showed: 4 -84 % peripheral neuropathy; 2.9 to 78.7 % peripheral vascular disease; frequency of patient presenting with diabetic foot [5]. Diabetic foot infections are common in diabetes mellitus complicated by diabetic foot ulcer and can be classified in different categories based on severity. It

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demands timely actions, close collaboration with different specialty and patient cooperation [6]. Chronic diabetic complication, including diabetic foot complications remain prevalent and challenging to treat. Diabetic foot ulcer recurs, and the importance of routine surveillance and multidisciplinary approach is essential. Diabetic foot ulcer can lead to Charcot foot, if not diagnosed early and treated effectively can lead to mortality and morbidity [7]. Diabetic foot complications occurring throughout the world, resulting in devastating economic crises for the patients, family and society. It has progressive prevalence rate in developing countries. Economic burden may be carefully examined [8]. Pre patient's incremental outcomes (e.g., amputations and medical sources outcomes) and health care cost (2012 US dollars) per 12 months follow-up periods. Increased utilization in diabetic foot patients having $11,710 incremental annual health care cost for Medicare. Privately insured matched diabetic foot patients incurred excess work cost of $ 3,257. Diabetic foot imposes burden public and private payers, ranging from $ 9- 13 billion in addition to the cost associated with diabetes [9]. Studies regarding diabetic foot ulcer with poor glycemic control on basis of various levels of Hba1c are not conducted. Every patient being admitted in tertiary care can have glycated hemoglobin level to asses' glycemic control. The main purpose of this study to find severity of diabetic foot ulcer with different level of glycated hemoglobin.

METHODS

This study was conducted in department of medicine and surgery, Khyber Teaching Hospital Peshawar. This was a cross sectional study of six months duration. A sample of 360 achieves 100 % power to detect an effect size(W) of 0.5000 using a 10 degrees of freedom chi-square with a significance level(alpha) of 0.05000 (10) via nonprobability consecutive sampling technique. All patient with presenting with diabetic foot ulcer with HBA1C level above 6.5% of either gender were included in the study. Non diabetic patients, those with traumatic foot ulcers were also excluded from the study. This study was conducted after approval from ethical and research committee. All patient fulfilling inclusion criteria were enrolled after informed consent. The purpose, benefit of study was explained to the patients. Detailed history was taken, and detail examination of diabetic foot was performed. Diagnosis of diabetes mellitus was made on basis of clinical symptoms plus random blood sugar, fasting blood sugar or HBA1C according to WHO criteria. Diabetes mellitus was diagnosed if diabetic symptoms of polyuria, polydipsia and polyphagia with random blood sugar above 200mg/dl or fasting blood sugar above 110 mg/dl or HBA1C above 6.5% or anyone with preexisting disease. Diabetic foot was examined properly and graded according to WAGNER classifications from 1 to 5. Wagner grade 1 means superficial ulceration, Wagner Grade 2 means ulcer extending to tendons or joints, Wagner grade 3 means ulcer involving bones and deeper tissues causing osteomyelitis or abscess formation, Wagner grade 4 means forefoot gangrene and Wagner 5 means full foot gangrene. The above information was gathered on basis of questionnaire keeping demographic variable of name, age, gender socioeconomic status with strict inclusion and exclusion criteria. Data were analyzed using SPSS 26.0. Mean and SD were calculated from continuous variables. Frequency and percentages were calculated from categorical variables after stratification, Chi square test was applied, value of <0.05 was taken as significant. Results were shown in the form of charts and tables.

RESULTS

A profile of our 360 patients is depicted in table 1 showing that minimum age was 45 and the maximum of 91 with a mean of 66.21 and standard deviation of 11.306. Similarly, the mean for RBS was 313.64, FBS 214.27 and HBA1C 11.32.

Variables	Minimum	Maximum	Mean ± SD
Age (years)	45	91	66.21 ± 11.31
HBA1C (%)	6.99	17.00	11.32 ± 2.48
Random Blood Sugar (mg/dL)	171	480	313.64 ± 2.48
Fasting Blood Sugar (mg/dL)	71	371	214.27 ± 54.729

Table 1: Baseline Profile of Patients

Major portion (43.61%) of our subjects had grade 4 ulcers as delineated, portraying a simple pie distribution of foot ulcer groups according to Wagner classification (Figure 1).

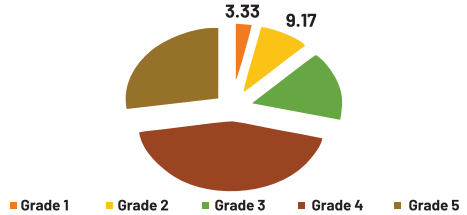

Figure 1: Distribution of Diabetic foot ulcer grades according to Wagner classification

Further investigation depicts a statistically significant correlation between grades of diabetic foot ulcer and HBA1C levels of the patients (p-value <0.001). Patients with higher levels of HBA1C suffered foot ulcer of higher grades.

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Specifically, patients with Grade 1 foot ulcers primarily had HBA1C levels of ≤11.00 with 6(50%) falling in the group "7.01-9.00" while patients with Grade 5 ulcers had higher HBA1C levels with bulk of patients having levels of >11.00. Summarized result is given in Table 2.

Foot ulcer (Wagner Grades)	HBA1C (%)						p-value
	<7.00	7.01-9.00	9.01-11.00	11.01-13.00	13.01-15.00	>15.01	
grade 1	3(25.0%)	6(50.0%)	3(25.0%)	0(0.0%)	0(0.0%)	0(0.0%)	<0.001
grade 2	12(36.4%)	19(57.6%)	2(6.1%)	0(0.0%)	0(0.0%)	0(0.0%)	
grade 3	0(0.0%)	18(30.5%)	25(42.4%)	16(27.1%)	0(0.0%)	0(0.0%)	
grade 4	0(0.0%)	15(9.6%)	40(25.5%)	90(57.3%)	9(5.7%)	3(1.9%)	
grade 5	0(0.0%)	15(15.2%)	6(6.1%)	35(35.4%)	25(25.3%)	18(18.2%)	

Table 2: Correlation of Grades of diabetic foot ulcer with HBAIC

Figure 2 further clarifies the relation between diabetic foot ulcer and HBA1C levels having patients with higher grader ulcers scattered along the higher HBA1C levels as compared to those of lower grades scattered at the lower HBA1C levels.

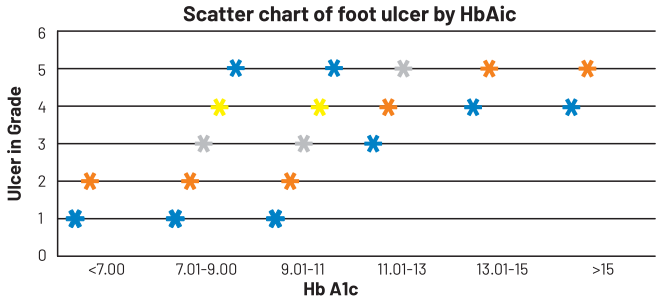

Figure 2: Scatter line graph correlating Diabetic foot ulcer with HBA1C

DISCUSSION

There have been numerous literatures linked to the effect of HBA1C on Diabetic foot ulcer. The scale, we employed for assessing the grade of diabetic foot ulcer was Wagner's classification [11]. The link between Wagner's classification and HBA1C, advancing age and duration of diabetes was studied by Shah *et al.*, in her study [12]. A similar cross-sectional study was carried out in Karachi, Shaheed Benazir Abad Hospital in Karachi in which a total of 88 patients were documented and the correlation between HBA1c and DFU was found statistically significant with a significant p-value (<0.001) which complements our findings with p-value (<0.001) [13]. National Glycohemoglobin Standardization Program (NGSP), which standardizes glycated hemoglobin test results so that values reported by clinical laboratories are comparable to those reported in the two largest clinical trials on the effects of intensive diabetes treatment, namely the Diabetes Control and Complications Trial (DCCT) and United Kingdom Prospective Diabetes Study (UKPDS) [14].

Similar results have been replicated in other studies as well like the one in Rajiv Gandhi Center for Diabetes and Endocrinology, in which diabetic patients who had a raised HBA1c (>6.5%) showed a high risk of development of diabetic foot ulcer along with correlation with variables like ulcer duration, hypertension, smoking and retinopathy [15]. our study has similar finding of progressive increase in severity of ulcers with progressive rise in A1c. Grade 4 and grade 5 ulcers were more common at higher A1c levels and no grade 1 or 2 ulcers and the opposite was true for lower A1c. Another research on the effects of HBA1C was conducted by Sarinnapakorn *et al.*, in which he found no significant correlation between prevalent Diabetic Foot Ulcer in relation to Fasting Blood Glucose and HBA1C but he also stated that a majority of these patients were in high-risk groups of diabetic foot ulcer contrary to our findings [16]. Christman *et al.*, in their work on HBA1C and Diabetic foot ulcers found that among many variables including cholesterol, BMI, BP, Pulse, Temperature, TGL and Peripheral Neuropathy. HbA1c was the only factor having a statistical impact on the wound healing rate of ulcers with a decrease of healing rate by 0.028 for every 1% increase in HBA1C (p=0.027) [17]. As our study was cross sectional, so in this study, we couldn't assess this but it seems to be the case if followed longitudinally. In a retrospective study by Wu *et al.*, involving 296 diabetic patients in a tertiary care hospital in which he underlined risk factors for diabetic foot and reinforced our speculations through establishing trends in risk factors associated in diabetic patients including diabetes duration, diabetes control along with other factors [18]. This emphasize our current study factor, diabetes control, too important in preventing diabetic foot ulcer formation. Our study establishes a clear link and supplements previous literature on the association of HBA1C with diabetic ulcers, thus efforts should be directed at primary and secondary protection of diabetic foot ulcers. Patients should be educated on a Diabetes friendly diet, foot care and regular checkups so any inevitable morbidity is caught in its tracks and the damage is minimized [19, 20].

CONCLUSIONS

Diabetes is a prevailing condition plaguing the public and it is becoming worse in modern times. Diabetic foot ulcer has become one of the most feared complications for both patients and physicians with impending consequences like osteomyelitis, sepsis and amputation of various body parts. This research showed that HBA1C and its control

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plays a vital role in limiting complications specially the severity and progression of a diabetic foot ulcer.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Analysis of Manheim Peritonitis Index Scoring in Predicting Outcome in Patients with Perforation Peritonitis

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ABSTRACT

Scoring systems are essential to calibrate the severity of abdominal sepsis for adequate management. Disease specific scoring system based on easy to handle clinical parameters can help the cause. **Objective:** To study the role of Manheim peritonitis index scoring in predicting outcome and prognosis in patients with perforation peritonitis. **Methods:** This prospective study was carried out in Surgical Unit 1, Nishtar Hospital, Multan from 20th of August 2019 to 31st of December, 2019. It includes both sexes aged 20 years and above diagnosed at laparotomy after confirmation of peritonitis due to perforated viscus regardless of the etiology. Data were analyzed using SPSS version 19.0 Software. The outcome (death vs discharge) was compared separately to different predictors using Chi-square test. Fischer Exact test was used where assumptions of Chi-square were not met. **Results:** Advance age, female gender, colonic perforation, organ failure and fecal contamination were associated with high mortality. The mean MPI Score was 25.06 ± 4.96. The lowest score was 16 and the highest was 37. Overall, the in-hospital mortality rate was 14.3% in patients with MPI ≥26 compared to 6.4% in patients with MPI <26, implying over a twofold higher risk in the former group. For a score of 26 or greater as a predictor of mortality, the sensitivity was 75.0%, specificity was 38.2% at an accuracy of 94%. **Conclusion:** MPI enables us to categorize patients into different groups so as to tailor management according to individual needs.

INTRODUCTION

Peritonitis has been defined as the inflammation of peritoneum [1]. It can be localized or generalized and has been divided into primary, secondary and tertiary peritonitis with regards to the cause of this inflammation. Primary peritonitis is usually due to a bacterial translocation or a hematogenous spread. There is no macroscopic defect in the gastrointestinal tract as compared to the secondary peritonitis which almost always results from the spillage of gastrointestinal contents in the peritoneal cavity. Tertiary peritonitis refers to a secondary peritonitis that has persisted for more than 48 hours even after an attempt has been made to surgically treat it [2, 3]. Peritonitis causes significant morbidity and mortality. It has been the second leading cause of admission to ICU after pneumonia [4]. Perforation of a viscus leading to peritonitis has always been a life-threatening situation despite the recent advances in the field of surgery. The scenario becomes worst in extremes of age. This has put emphasis on the segregation of patients based on their critical condition for a more aggressive approach [5]. Empirical assessment of certain clinical events in the course of disease using various

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scoring systems has been of critical importance in making decisions and planning management [6]. A great number of scoring systems are in use to predict the outcome of patients who present in ER department with a suspected diagnosis of perforation peritonitis. MPI takes into account 8 factors of prognostic significance and gives a very specific score. This not only enables us to assess clinical parameters but also allows us to determine the individual prognosis of patients with peritonitis [7, 8]. Manheim peritonitis index was developed using a data of 1253 patients treated for peritonitis. A total of 17 risk factors were assessed in these patients, with only 8 of them being significant. All the information for these eight factors could be gathered pre operatively and at laparotomy enabling easy classification of patients [9, 10]. In this study we have employed Manheim peritonitis index as to evaluate the severity of peritonitis and to develop a system to assess the prognosis, survival and mortality considering the important risk factors analysed in the index.

METHODS

The study was a prospective, descriptive and observational study that was carried out in Surgical Unit 1 in Nishtar Hospital, Multan from 20th of August 2019 to 31st of December, 2019. Both sexes were included in the study with age more than 20 years and older with diagnosis of peritonitis confirmed during surgery regardless of etiology. Patient was included in the study only once operative findings have confirmed the diagnosis of perforated viscus. MPI score of all the study patients were calculated and categorized into two groups depending upon the score; less than 26 and more than 26. Mortality of patients from each group was calculated and predictive value of each factor was determined. Clearance was taken from Ethical review committee and written consent was obtained from all the patients. All the data obtained were analyzed using SPSS 19.0.

RESULTS

The descriptive statistics of this study are shown in Table 1. 53 patients have been included in this study with a greater proportion of male population. A description of diagnosis, post-operative complications and outcome has been demonstrated.

Variable	N (Percentage)
Age	
≤ 50 years	27 (50.9%)
> 50 years	26 (49.1%)
Gender	
Male	45 (84.9%)
Female	8 (15.1%)
Diagnosis/Site of perforation	
Duodenal	17 (32.1%)
Jejunal/Ileal	17 (32.1%)
Colonic	8 (15.1%)
Appendicular	4 (7.5%)
Miscellaneous causes	7 (13.2%)
Post-op Complications	
None	25 (47.2%)
Overall	26 (51.0%)
Infected wound	12 (23.5%)
Burst abdomen	8 (15.7%)
Atelectasis	6 (11.8%)
Outcome	
Discharged	47 (88.7%)
Expired	6 (11.3%)

Table 1: Descriptive Statistics

Of note in our study, a significantly higher mortality was observed in females with a mortality rate of 50% compared to only 4.4% in males (p=0.003, OR=11.25). Advanced age was also associated with a higher mortality with almost a twofold risk in patients aged >50 years; the mortality rate in this group being15.4%as opposed to 7.4% in patients aged ≤50 years (p=0.41, OR = 2.08). Colonic perforation was associated with over a fivefold higher mortality rate of 28.6%vs. 5.1% in non-colonic perforations (p=0.042, OR = 5.57). No deaths were observed in patients without organ failure while a mortality rate of 42.9% was seen in patients with organ failure (p<0.001). Purulent and faecal exudate was associated with a higher mortality rate, 11.1% and 15.3% respectively, compared to 0% in those with a clear exudate. We note that all patients in our study had delayed presentation to healthcare with >24 hours since the onset of perforation to their attendance at the hospital. We also note that all patients had generalized as opposed to localized peritonitis (Table 2).

Risk Factor	Subgroup	No. of patients	Death (%)	Statistics
Age	>50 years	26	4 (15.4%)	p=0.41
	≤50 years	27	2 (7.4%)	OR=2.08
Gender	Female	8	4 (50%)	p=0.003
	Male	45	2 (4.4%)	OR=11.25
Organ Failure	Yes	14	6 (42.9%)	p=<0.001
	No	39	0 (0%)	OR= N/A*
Malignancy	Yes	4	0 (0%)	p=0.48
	No	49	6 (12.2%)	OR= N/A*
Time	>24 hours	53	6 (11.3%)	p=N/A
	< 24 hours	0	0 (0%)	OR= N/A*
Origin	Non-Colonic	39	2 (5.1%)	p=0.042
	Colonic	14	4 (28.6%)	OR=5.57
Peritonitis	Generalized	53	6 (11.3%)	p=N/A*
	Localized	0	0 (0%)	OR= N/A*
Exudate	Clear	4	0 (0%)	-
	Purulent	36	4 (11.1%)	p=0.50
	Faecal	13	2 15.3%	p=0.44

*N/A refers to incalculable ratios

Table 2: Analysis of the risk factors of Manheim Peritonitis Index

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In our study the mean MPI Score was 25.06 ± 4.96. The lowest score came out to be 16 and the highest was 37. Overall, the mortality rate was 14.3% in patients with MPI ≥26 compared to 6.4% in patients with MPI <26, implying over a twofold higher risk in the former group (p=0.054, OR = 2.55). Table 3 indicates the co relation of MPI score with incidence of mortality. For a score of 26 or greater as a predictor for mortality, the sensitivity was 75.0%, specificity was 38.2% at an accuracy of 94%.

MPI		Outcome	
		Expired	Discharged
≥26	N (%)	4 (14.3%)	24 (85.7%)
<26	N (%)	2 (6.4%)	29 (93.5%)

Table 3: Correlation of MPI score with incidence of mortality

DISCUSSION

Generalized peritonitis has been a commonest clinical presentation in our hospitals for a long time. It places burden not only on the resources but the delayed presentation of patients to the hospital poses a threat to the overall survival [11, 12]. The recognition of risk factors and adequate pre- and post-operative care is of vital importance in these patients. This becomes all the more important in developing countries where the critical care units are less developed due to economic crunch. In our study, age has not been a significant risk factor in predicting mortality. Patients over 50 years of age had twice the mortality than the younger age group. The p-value was however, insignificant. Contrary to the findings of our study, A good amount of literature is available that had shown age as a significant factor in predicting mortality. The researchers indicate that age of 60 years and above plays a vital role in recovery of patients from a major surgery [13-16]. The mortality has been higher in the patients who had to be operated in emergency as opposed to the ones who were stable enough to be operated upon electively [13]. Female gender has been given a score of 5 on the MPI chart. This implies that females presenting with peritonitis are associated with relatively higher risk of mortality than the male patients. This risk factor has been pronounced in our research with females having approximately 11 times high mortality rate than the male patients (p=0.003**).** This result is comparable to the data available in some other studies [14]. In Krishna *et al.*, the mortality of female patients was 5 times as compared to the male patients [15]. Organ failure has been attributed 7 points in the MPI and rightly so. All the 6 patients in our study that passed away suffered from organ failure, amplifying the need of intensive management in patients who present with features of organ failure. This is a finding that is consistent with other studies [16]. Another research showed that the patients without organ failure had an 86% better survival than patients with evidence of organ failure [17, 18]. Timing of presentation has been a critical factor in the management of patients presenting in emergency department. Unfortunately, all the patients in our study presented late and this factor couldn't be assessed for p value. There is no scarcity as to the literature available that enables us to figure out the importance of timing of onset of symptoms of patients presenting in ER. Afridi *et al.*, have emphasized that delayed presentation to the hospital is responsible for an increase in mortality [19, 20]. Kocer *et al.*, reported that patients who presented 24 hours after the onset of symptoms had a 3.4 times higher morbidity risk than patients who presented early [21, 22]. Saravanan *et al.*, have reported that a delay of more than 24 hours increases lethality from sevenfold to eight-fold, complication rate to three-fold, and length of hospital stay to two-fold, compared to a delay of six hours or less. Fecal peritonitis and Colonic perforation have poorer prognosis according to MPI [23, 24]. In our study p value for colonic perforation was significant for prediction of mortality, whereas fecal peritonitis had an insignificant p value. The odds ratio however showed that a patient with colonic perforation had a 5.5 times greater mortality than a patient with a non-colonic perforation. Literature mentioned the high mortality with fecal peritonitis contrary to our observations. In a study carried out in India, it was shown that patients with fecal peritonitis had a hundred percent morbidity rate [25]. Similarly, patients with a purulent peritonitis had a higher morbidity rate than those with clear peritoneal exudate. There were 4 patients with a malignancy in our study but they all survived making the p value insignificant for this factor. We presume that early stage of malignancy may be a contributing factor in their recovery in our study. However, in some studies it had a significant p value making it an important factor to consider in post-operative management of the patient [26]. In our study, people with a MPI score of >26 had a considerable higher mortality than the ones with a score of less than 26. MPI is a peritonitis specific score and all the parameters in this study are the ones that are routinely considered. It enables for an intra operative evaluation of the patient to provide a better assessment of the final prognosis.

CONCLUSIONS

MPI enables us to categorize patients in different groups prompting us to tailor management according to individual needs. Current study showed that MPI has a good predictive value when it comes to predicting prognosis of the patients. However, a large sample size and a variety of patients could endorse the data further. A routine calculation of MPI scoring should be implemented in

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Emergency Room department.

Conflicts of Interest.

The authors declare no conflict of interest.

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Original Article

Frequency and Extent of Multivessel Coronary Artery Disease in Patients with Non St-Segment Elevation Myocardial Infarction (Nstemi)With Raised Cardiac Troponin -T (CTNT)

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ABSTRACT

Myocardial infarction is among the related events in acute coronary syndrome, which also comprise unstable angina pectoris, ST-segment elevation myocardial infarction, and non-ST-segment elevation myocardial infarction**. Objective:** To determine the prevalence of multi-vessel coronary artery disease in non-ST-segment elevation myocardial infarction with observably increased troponin T concentrations. **Methods:** There were 284 patients participated in this research. Patients with cardiac troponin T concentrations above 500 ng/l (the recommended limit is 14 ng/l) who had previously had heart problems, tiredness, or other angina-related indications, regardless of gender, between the ages of 30 and 60, were also included in the research. **Results:** The study group consisted of 95 (33.46%) non-smokers and 189 (66.54%) smokers. Electrocardiogram alterations were detected in 179 (63.02%) participants, whereas no changes were detected in 105 (36.97%) individuals. Additionally, 113 individuals (39.78%) had multi-vessel coronary artery disease, compared to 171 (60.22%) who did not. **Conclusion:** We come to the conclusion that almost any person with elevated troponin T levels, despite the apparent absence of ST-segment elevation, may undergo cardiac catheterization to ascertain the diagnosis of multi-vessel coronary artery disease.

INTRODUCTION

Myocardial infarction (MI) is among the related events in acute coronary syndrome, which also comprise unstable angina pectoris, ST-segment elevation myocardial infarction (STEMI), and non-ST-segment elevation myocardial infarction (NSTEMI) [1, 2]. Coronary artery disease (CAD) is the largest cause of death globally, resulting in the deaths of more over five million individuals annually. NSTEMI has traditionally been much more prevalent than STEMI. Internationally, healthcare fatality rates range from 2 to 5%, with certain countries having rates was high as 72 per 1,000 hospitalized patients annually [3-5]. Despite the fact that STEMI seems to be more deadly since it signifies a breach in the entire myocardial wall, there is compelling evidence that several NSTEMI individuals are actually suffering from a more serious condition [6]. According to new findings by the American College of Cardiology and the National Cardiovascular Data Registry, 41percent of the total of patients with NSTEMI had multi-vessel coronary artery disease (MVD), which required additional hospital

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treatment. A diagnosis of MVD is made when two epicardial coronary arteries have stenosis of at minimum 49% [7, 8]. Compared to patients with single-vessel disease, individuals with MVD performed fine and experienced a decreased death rate. Blood circulation might well be redirected across blocked arteries using both angioplasty and bypass surgery. Additionally, thrombolysis may lessen the risk of thrombi developing in the left ventricle [9-11]. Despite conflicting evidence, troponin T (TropT) is frequently employed as a sign of myocardial wall destruction. It can detect underlying MVD in the overall population [12]. While some studies have linked high TropT concentrations to non-STEMI, other research demonstrates that patients with comparable symptoms are more likely to develop MVD [13, 14]. The purpose of the current research was to assess the prevalence of MVD in NSTEMI having noticeably elevated TropT concentrations. This would make it easier to recognize people who need to be classified as significant risk and sent for coronary revascularization as soon as possible in order to enhance their treatment outcomes.

METHODS

This cross-sectional research was conducted at Hayatabad Medical Complex, Peshawar from March 2022 to September 2022. There were 284 patients participated in this research. Patients with cardiac Troponin T (CTNT) concentrations above 500 ng/l (the recommended limit is 14 ng/l) who had previously had heart problems, tiredness, or other angina-related indications, regardless of gender, between the ages of 30 and 60, were also included in the research. Patients on hemodialysis or having a blood creatinine concentration exceeding 1.4 mg/dl were eliminated. Abnormalities in the ECG, such as left bundle branch block and Q waves, could lead to STEMI. A physician examined the patient, and while doing so, also reviewed their medical history. Eight and 48 hours after the patient's admission to the hospital, CTNT concentrations in their blood were assessed. The COBAS ELECTROSYS 2010 ROCHE analyzer was used to measure the TropT concentrations in the tissues. TropT concentrations greater than 500 ng/l were considered clinically significant. In the first three days of the same hospital stay, the coronary angiography was completed. Before assessing the lesion in line with predefined norms, a senior cardiologist with at least five years of experience above the fellowship concentration assessed coronary angiographic pictures. Variable data on CDMV outcomes were produced using a standard formula. We used SPSS 20.0, a statistical application specifically designed for use by social scientists, to examine the data. For statistical information, mean and standard deviation were calculated; for qualitative data, frequencies and percentages were calculated. Based on the findings of a qualitative test, individuals with multivessel severe CAD were divided into several groups using chi-square analysis. Results that had a p-value below 0.05 were considered important.

RESULTS

Out of the 284 patients, 209 (73.59%) were men and 75 (26.41%) were women (figure 1).

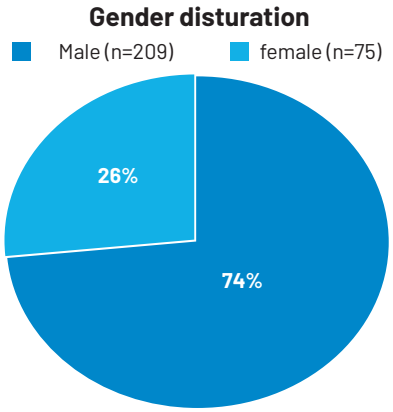

Figure 1: Gender Distribution of Patients

Participants' ages ranged (30 to 60 years), with a 48.54 ± 6.53 average age. Greater parts of the individuals (146, 51.42%) were among age range (51- 60 years) (figure 2).

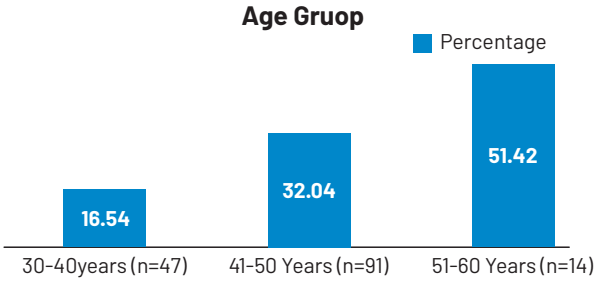

Figure 2: Patients distribution according to age group (Mean age 48.54 ± 6.53)

The study group consisted of 95 (33.46%) non-smokers and 189 (66.54%) smokers. Electrocardiogram (ECG) alterations were detected in 179 (63.02%) participants, whereas no changes were detected in 105 (36.97%) individuals. Additionally, 113 individuals (39.78%) had multi-vessel coronary artery disease, compared to 171 (60.22%) who did not (Figure 3).

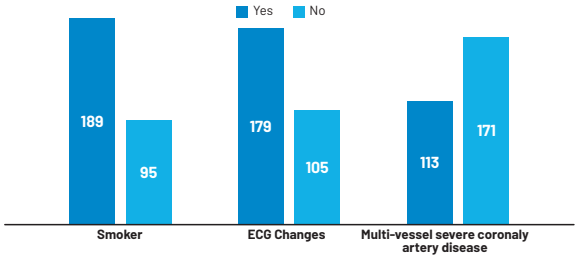

Figure 3: Smoking, MVCAD, and ECG abnormalities were all observed in the research cohort.

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When MVD was stratified according to age groups, it was noted that there was no statistically significant difference in MVD across the various age groups (p value = 0.849), and the same was true for gender stratification (p value = 0.540). Additionally, ECG abnormalities, smoking status, and MVD did not correlate with one another (p value = 0.708, p value = 0.367, res3.452 "ctively). (Table 1).

Basic Characteristics	Multi-vessel severe CAD		p- Value
	Present (n=113)	Absent (n=171)	
Gender			
Male	84	113	0.540
Female	29	58	
Gender			
30-40 year	13	19	0.849
41-50 year	41	56	
51-60 year	59	96	
Smoker			
Yes	83	119	0.367
No	30	52	
ECG changes			
Yes	71	103	0.708
No	42	68	

Table 1: Association among research demographic features and multi-vessel CAD

DISCUSSION

In the present research, we discovered that a significant number of individuals with NSTEMI who also had considerably high TropT concentrations had coronary artery bypass graft (CABG) surgery-related underlying MVD. In addition, there was no connection between MVD and smoking or age. NSTEMI is the least invasive kind of MI, which may be divided into two categories according to their severity. Only a portion of the heart muscle fed by the affected artery experiences ischemia in NSTEMI because the blood clot only partly blocks the artery. As a result, it means that in NSTEMI, the artery is not completely blocked [15-18]. The age group of the research was 30 to 60 years, with a mean age of 48.54 ± 6.53 years. The majority of the participants or 146 (51.42%), were between the ages of 51 and 60. Our average age was noticeably smaller than that of previous remote sensing studies, which may be related to the rising trend of cardiovascular illnesses in younger generations [19]. In our research, 113 individuals (39.78%) had MVCAD, but 171 participants (60.22%) had no MVCAD. In their research, Altmann *et al.*, (2013) found that 52% of participants with NSTEMI had MVCAD on average [20]. Various other studies, which comprised 210 NSTEMI individuals, indicated within 108 individuals with CTNT concentrations ten folds maximum average limit, Considerable CAD was seen in 23 (21.42%) single vessels, 39 (33%) two vessels, and 31 (29.4%) three vessels, but within 129 sick people with CTNT concentrations >ten folds maximum average limit, Significant CAD was seen in 21 (18.2%) single vessels, 35 (32.8%) double vessels, and 59 (47.1%) triple vessels [21]. Further investigations found that between 30% and 55% of NSTEMI patients had MVCAD [22, 23].

CONCLUSIONS

According to our research, many people with NSTEMI and increased troponin values also have MVCAD. Therefore, regardless of the existence or lack of ST-segment elevation on the ECG, we advise cardiac catheterization in all patients with increased troponin concentrations. Such individuals may benefit from early MVCAD diagnosis in terms of their health outcomes.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Living with Epilepsy: Psychosocial and Clinical Determinants of Quality of Life in Patients with Epilepsy

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ABSTRACT

The present study assessed the role psychosocial (social support, resilience and psychological distress) and clinical determinants (duration of disease and number of seizures per month) in predicting quality of life in epileptic patients. Past research findings have established the role of social support and resilience in impacting psychological distress in quality of life in epileptic patients. **Objectives:** To evaluate the psychosocial and clinical determinants of quality of life in epileptic patients and to contribute to the gap in the literature. **Methods:** A quantitative research design was used for the study in which out of 230 progressive patients, 200 were recruited for the study out of which 117 suffered from generalized and 73 suffered from focal epilepsy. In terms of gender differentiation, 110 were male and 90 were females. Kessler Psychological Distress Scale, Brief Resilience Scale and Social Provisions Scale were used. Clinical determinants were assessed through measuring disease duration and number of seizures per month. Data analysis was done using Pearson Product Moment Correlation, MANOVA and Mediation Analysis. **Results:** Results had shown that there is a significant negative predictive association of psychological distress with quality of life, social support and resilience. However, a significant positive predictive association was identified among psychological distress, duration of disease and number of seizures per month. **Conclusion**: Significant differences were identified in epileptic patients with regard to psychological distress (high/low) in terms of social support, resilience and quality of life. Social support and resilience significantly mediated the association between psychological distress and quality of life.

INTRODUCTION

Epilepsy is marked by recurring unprovoked seizures that disrupt an individuals psychophysical functioning [1]. Although in a number of individuals, seizures emerge and are trigged through a number of endogenous as well as exogenous factors including traumatic psychological measures and experiences [2]. Researchers have also reported that exogenous triggers including global emergencies, natural calamities and events can also trigger seizures in such patients. There is also evidence to show that serious psychological distress among epileptic patients who do not have access to social support and are low on resilience [3]. Moreover, experts have reported that while resilience might play a protective role against psychological distress in epileptic patients, lack of social support can have an adverse impact on the quality of life [4]. Moreover, the role of resilience in contributing towards a better understanding about quality of life cannot be undermined has also been confirmed across studies [5]. Social adjustment, a core component of quality of life, is also impacted on the basis of resilience and social support [6]. Research has shown epilepsy affects a significant number of people around the world. The prevalence of this condition in Pakistan has been assessed as being 9.99 per 1000 individuals [7]. Global incidence of the disease shows

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that about 50 million individuals are impacted by this condition globally with almost 90 % individuals with this condition are residing in developing regions [8]. With such high rates of incidence, it is marked for being one of the leading and most common forms of neurological diseases. Severity and frequency of seizures has also been identified as a major risk factor for epileptic patients [9]. Previous studies have highlighted that quality of life is significant associated with seizure frequency and severity [10]. Nonetheless, psychological distress often remains unrecognized in a majority of such patients due to which the adverse psychosocial and clinical effects of this condition might not be documented in individuals where there are limited psychosocial support services [11]. Individuals with epilepsy are prone to experiencing different psychological issues and conditions including psychological distress, stress, anxiety, poor quality of life, reduced resilience and depression [12]. Moreover, to our knowledge, few studies have assessed the role played by different domains of psychological distress along with the protective role of resilience and the correlations of these factors with demographic as well as clinical indicators of epilepsy. In view of the above findings, the purpose of the present study was focused on assessing psychosocial and clinical determinants of quality of life in patients with epilepsy. The study also assesses patients with poor access to social support and low scores on resilience along with analysis of clinical features of high-risk epileptic patients. Moreover, the pattern of increased frequency and severity of seizures and its association with psychological distress, resilience, social support and quality of life will provide an improved understanding about the interplay between neurological and psychosocial factors.

METHODS

The participants for the study were recruited through different outpatient health facilities in Lahore including Mayo Hospital, Bahawal Victoria hospital, Nishter hospital Multan, Punjab Institute of Mental Health Lahore, Ehbab Hospital Lahore, Sir Ganga Ram Hospital and General Hospital. Out of 230 progressive patients, 200 were recruited for the study out of which 117 suffered from generalized and 73 suffered from focal epilepsy. G power analysis with a confidential interval of 95 % showed that this sample size was justified. In terms of gender differentiation, 110 were male and 90 were females. The inclusion criteria for the study included a) adherence to medication i.e. antiepileptic drugs and b) satisfactory scores on global cognitive status. This measure was used to avoid any form of biases with regard to administration of the undermentioned psychological instruments. There were around 30 patients who refused participation in the study. The clinical details including adherence to treatment, usage of any drugs and alcohol, any other chronic condition and current occupational status was assessed through phone interviews. The questionnaires were then sent via a google forms link that was shared with patients via email and via WhatsApp. Two experienced clinical psychologists explained the details of the research project to the participants. The ethical approval for the topic was attained through the Institutional Ethics Review Board of the University of Lahore. To assess psychosocial determinants including psychological distress, social support, quality of and resilience scale were used, different standardized and validated instruments were used. Kessler Psychological Distress Scale (K10) was used to assess psychological distress [13]. The scores on the test range from a level of 0.42 to about -0.74. To measure another psychosocial determinant i.e. social support, Social Provisions Scale was used to assess the social support [14]. Translated version of social provisional scale was used which has Cronbach's alpha reliability of .78 (α = .78). To assess resilience, Brief Resilience was used for examining interpersonal and intrapersonal measures and protectives which are beneficial for individuals in responding and adaption to psychosocial adversities [15]. The scale was developed through guidance by a theoretical categorization of resilience and has an alpha reliability of the scale is .90 [16]. The cross cultural alpha reliability in German and Brazilian samples of the scale ranges from .85 to .90. World health organization QoL Scale developed the WHOQOL-100 assessments was used for assessing quality of life. The alpha reliability of the scale is .83 [17]. For measurement of clinical determinants of epilepsy, duration of disease and number of seizers per month were identified. Research evidence has shown that duration of epilepsy diagnosis along with number of seizures were month are central clinical determinants of the disease [18]. The SPSS 21.0 was used for data analysis. Firstly, descriptive analysis were used to assess frequencies and percentages in association with demographic variables. In the second stage, reliability analysis was performed. In the third stage, correlation, multiple regression and mediation analysis were used. P-values of less than 0.05 were identified as being significant.

RESULTS

The demographic characteristics of the sample used in the study has been presented in Table 1. A majority of the participants were male. Moreover, a majority of the participants were in the age range of 30 to 50 years.

Variables	n (%)
Gender	
Male	110 (55%)
Female	90 (45%)

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Age	
18-30	75 (50.8%)
30-50	125 (49.2%)
Clinical Features	
Generalized	117 (58.5%)
Focal	73 (41.5%)
Number of Seizures	
1 Seizure per month	53 (26.5%)
1-3 Seizures per month	45 (22.5%)
5-10 Seizures per Month	52 (26.0%)
10 or More per Month	50 (25.0%)
Diagnosis	
Generalized	117 (58.5%)
Focal	73 (41.5%)
Disease Duration (Years)	
5 to 10 Years	62 (31%)
10 to 15 years	49 (24.5%)
15 to 20 years	65 (32.5%)
20 years or more	24 (12.0%)

Table 1: Demographic Variables of the Sample

Table 2 depicts significant associations among the study variables including quality of life, psychological distress, resilience, social support and disease duration.

Variable	1	2	3	4	5	6
1. Quality of Life	_	-.84**	.44**	.35**	-.45**	-.54**
2. Psychological Distress		_	-.42**	-.35**	.53**	.65**
3. Resilience			_	.44**	-.53**	-.41**
4. Social Support				_	-.44**	-.33**
5. Disease Duration					-	.42**
6. Number of Seizures per month						-

Table 2: Inter-Correlation among Quality of Life, Psychological Distress, Resilience and Social Support

Note. **p<.01

Table 3 depicts multiple regression analysis showing significant predictive effects of resilience, social support, psychological distress, disease duration and number of seizures per month.

Variable	B	SE	B	95 % CI
Constant	-48.04	10.20		[-68.25, -27.83]
Resilience	.24*	.07	.22	[.09, .39]
Social-Support	.21*	.07	.13	[.06, .29]
Psychological Distress	-1.70*	.18	.58	[1.32, 2.02]
Disease Duration	-.55*	.05	-.51*	[-.09, -.59]
No. of Seizures/Month	-.33*	.12	-.29*	[-.07, -.39]
R2			.59	
F			66.25	
R			.73	

Table 3: Resilience, Social-Support, Psychological Distress, Disease Duration and Number of Seizures per Month as predictors of Quality of Life

*p<.05, CI=Confidence Interval

In terms of the current investigation, Preacher and Hayes bootstrapping method was used. The results showed that social support and resilience significantly mediated the relationship between psychological distress and quality of life as shown in Table 4.

Step 1 (Path c)			
Outcome: QOL			
PD	-1.11**	.04	.000
Step 2 (Path a)			
PD(Path a)	-.47**	.09	.000
Outcome: SS (M2) PD	.-.23**	.10	.021
Step 3 (Path b)			
Outcome: QOL			
Resilience	.35**	.03	.000
Social Support	.21**	.03	.002
(Path c')			
Mediators: Social Support and Resilience			
Predictor: PD	-.001	.006	ns.

Table 4: Two Way Mediating Effect of Social Support and Resilience on the Association between Psychological Distress and Quality of Life Note.

PD=Psychological Distress, QOL=Quality of Life, B=standardized coefficient. *p<.05, **p<.01

DISCUSSION

The study assesses patients with poor access to social support and low scores on resilience along with analysis of clinical features of high-risk epileptic patients. Moreover, the pattern of increased frequency and severity of seizures and its association with psychological distress, resilience, social support and quality of life will provide an improved understanding about the interplay between neurological and psychosocial factors. The findings of the present study offered a confirmation of this hypothesis which is consistent with the relevant literature. Research has shown that seizure frequency, seizure duration and psychological distress are significantly and negatively associated with resilience, social support and quality of life in epileptic patients [19]. Secondly, the results had shown that resilience, social support, disease duration, number of seizures per month and quality were significantly associated with one another. Moreover, it has also been identified a predictive association of social support, resilience and psychological distress with quality of life in epileptic patients [20]. In addition, lack of social support and psychological distress can cause a significant burden of disease in patients with epilepsy [21]. Moreover, the findings established a strong negative predictive association of social support and psychological distress with quality of life. There is also evidence that has categorized psychological distress and duration of disease as having an adverse impact on quality of life in epileptic patients with social support and resilience having a protective effect [22]. Thirdly, it was hypothesized that Social support and resilience would mediate the relationship between psychological distress and quality of

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life in epileptic patients. The literature reported social support and resilience as having a significant mediating influence in quality of life in patients with severe illness including epilepsy [23]. Furthermore, there is evidence to show that social support has a moderating and mediating influence between the association of resilience and quality of life in epileptic patients [24]. Relevant research findings have also shown promoting social support networks and resilience in epileptic patients can improve their quality of life [25].

CONCLUSIONS

It can be concluded that psychological distress, duration of disease and number of seizures per month had an adverse effect on quality of life in epileptic patients. However, the provision of social support and resilience had a protective effect against psychological distress. It has also been established that social support and resilience have a mediating influence on the association between psychological distress and quality of life. This further shows how important it is to ensure social support and promote resilience in epileptic patients in order to enhance their quality of life.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

The Trends of Pharmacological Therapy in one Month Post Myocardial Infarction Patients

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ABSTRACT

Guideline recommended treatment has an important impact on the mortality and morbidity of post myocardial infarction patients. **Objective:** To assess the frequency of appropriate drug with its appropriate dosage of guideline recommended pharmacological therapy, prescribed by physician, in patients with Myocardial Infarction (MI). The cross sectional study conducted at National Institute of Cardiovascular Disease, Karachi from 1st January 2020 to 30th June 2020. **Methods:** Total 160 patients who came to hospital for follow-up after one month of Myocardial infarction were included in the study. Prescription was considered appropriate if the patient has taken at-least 5 out of 6 medications. At least 5 out of 6 along with its goal dose was considered as appropriate dosage. Descriptive statistics were calculated. Stratification was done. Chi-square test was applied post stratification and p-value ≤ 0.05 was considered as significant. **Results:** There were 103 male and 57 female patients. The mean age was 53.36 ± 8.10 years. Number of drugs used was found appropriate in 96.3% patients but the doses of drugs used was found appropriate in only 5.6% patients. **Conclusions:** The present study revealed that the majority of the physicians prescribed the recommended number of the drugs used; however, the doses of drugs used were not always according to the guidelines. It is important for cardiology physicians to understand the importance of guideline recommended pharmacological intervention among patients with a one-month history of MI.

INTRODUCTION

The greatest cause of death and a significant contributor to disability worldwide is coronary heart disease (CHD). In South Asia, where it is anticipated to more than double over the next 20 years, the estimated growth in CHD is anticipated to be significantly bigger than in any other region worldwide [1, 2]. It has been suggested, in particular, that communities in South Asia are prone to cardiometabolic diseases because of a confluence of genetic and lifestyle variables that encourage metabolic dysfunction, but there is a dearth of concrete evidence to support this [3]. Patients with MI carry an increased risk of recurrence of ischemic events. Therefore, active secondary prevention is necessary for long term management [4]. American Heart Association (AHA) has recommended pharmacological management to prevent recurrent ischemia or infarction [5]. Guidelines support the use of drugs in appropriate doses e.g., Beta-Blockers, statin & Influenza vaccine for long term treatment [6]. Four classes of medications that deliver the best results in reducing the burden of the recurrent cardiac events include antiplatelets (such as clopidogrel, aspirin, dual antiplatelet therapy), B-blockers, among others [7].

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According to a recent study that used data from 2012, 4-5 of the recommended medications for ACS were provided to majority of patients from Australia and New Zealand who were discharged from the hospital after developing ACS [8]. Using populations from clinical trial studies, reduced deaths and morbidity have been linked globally with cardiovascular medicine compliance [9]. Implementation of evidence-based medical treatment guideline recommendations are associated with better outcomes [10]. It has been reported that these drugs are not prescribed in appropriate doses by physicians. After 1 year in a study in the US, 77% of doctors were not prescribing optimal medical treatment. The most common reason for not prescribing guideline directed medical therapy was subjective underestimation of a patient's risk. Other reasons were allergy/intolerance of drugs, use of concurrent oral anticoagulants, bleeding complications, asthma/COPD, renal insufficiency, and hypotension [11]. Guideline recommended treatment was reported to have an important impact on the mortality and morbidity of post MI patients. Therefore, the objective of this study was "to assess the trends of guideline recommended pharmacological therapy, prescribed by physician, for one month post MI patients, admitted at tertiary cardiac center. This helped us to assess the implementation of these guideline recommended treatments in post MI patients.

METHODS

A cross-sectional, descriptive study was undertaken at National Institute of Cardiovascular Diseases (NICVD), Karachi between January 2020 and June 2020. Ethical approval was obtained prior to the study. By taking prevalence p = 94%, confidence interval 95%, margin of error 5%, sample size of my study was 160 [11]. A non-randomized consecutive sampling was used for the project. All male and female patients between 18 years to 75 years of age who came to hospital for follow-up after one month of Myocardial infarction in whom revascularization has done or not Who were not discharged against medical advice were included in the study. Cases where myocardial infarction was succeeded by another significant comorbidities such as traumatic injury, low hemoglobin, severe anemia, trauma, recent surgery within 1 week of discharge or if the patient had a bleeding disorder (Idiopathic Thrombocytopenic purpura, Thrombotic thrombocytopenic purpura, myelodysplastic syndrome), CKD (chronic kidney disease), Heart block (sinus block, AV block), Asthma, Drug allergy were excluded from the study. All patients presenting with clinical features of myocardial infarction meeting the inclusion criteria were included in the study. A written informed consent was taken. The patients were enrolled in OPD after 1 month of discharge. Names of all guideline recommended drugs with doses were recorded which were prescribed to the patient by a physician after 1 month of discharge. Data were collected as shown in the proforma. All of the collected data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 16.0. Age is one of the quantitative variables for which mean and standard deviation were determined. According to the advice of the AHA, frequency and percentage were estimated for qualitative variables including gender, diabetes, hypertension, smoking, and medication. Age, gender, comorbidities were effect modifiers that were managed through stratification. The post-stratification chi-square test was used, with p 0.05 being considered significant.

RESULTS

The research involved 160 patients in total. The demographics and clinical parameters are presented (Table 1).

Parameter	Mean ± SD/ N (%)
Age (years)	53.36 ± 8.1
Gender	
Male	103 (64.4%)
Female	57 (35.6%)
Diabetes mellitus	
Yes	44 (27.5%)
No	116 (72.5%)
Hypertension	
Yes	76 (47.5%)
No	84 (52.5%)
Smoking	
Yes	77 (48.13%)
No	83 (51.88%)

Table 1: Clinical characteristics of patients

The results about drugs used showed that aspirin and clopidogrel were each used by 96.9% of patients. Among β-blockers, Metoprolol was used by 63.1% and Carvedilol was used by 36.9% of patients. Among ACE-I, Captopril was used by 33.8%, Ramipril was used by 36.9%, and Lisinopril was used by 29.4% patients. Among use of statins, Atorvastatin was used by 55.0% and Rosuvastatin was used by 45.0% patients. The final outcome, i.e., the number of drugs used was found appropriate in 96.3% of patients, but the doses of drugs were found appropriate in only 55.6% of patients. The frequency distributions are presented (Table 2).

Drugs	N (%)
Aspirin use	
Yes	155 (96.88%)
No	5 (3.13%)

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Clopidogrel use	
Yes	155 (96.88%)
No	5 (3.13%)
Beta-blocker used	
Metoprolol	101 (63.13%)
Carvedilol	59 (36.88%)
Ace-I used	
Captopril	54 (33.75%)
Ramipril	59 (36.88%)
Lisinopril	47 (29.38%)
Statin used	
Atorvastatin	88 (55%)
Rosuvastatin	72 (45%)
Influenza vaccine use	
Yes	13 (8.13%)
No	147 (91.88%)
Appropriateness by number of drugs used	
Appropriate	154 (96.3%)
Inappropriate	6 (3.8%)
Appropriateness by dose of drugs used	
Appropriate	9 (5.6%)
Inappropriate	151 (94.4%)

Table 2: Distribution of Drugs Used by Patients

The frequencies of doses according to the drugs used are presented in table 3 and table 4.

	Goal dose	Not Used
Aspirin use		
Yes	155 (100%)	0 (0%)
No	0 (0%)	5 (100%)
Clopidogrel use		
Yes	155 (100%)	0 (0%)
No	0 (0%)	5 (100%)

Table 3: Drug dose goal of Aspirin and Clopidogrel

Medicine	Goal dose	Moderate intensity	Low intensity
Beta-blocker used			
Metoprolol	10 (55.6%)	5 (55.6%)	86 (64.7%)
Carvedilol	8 (44.4%)	4 (44.4%)	47 (35.3%)
Ace-I used			
Captopril	0 (0%)	32 (59.3%)	22 (40.7%)
Ramipril	52 (100%)	4 (7.4%)	3 (5.6%)
Lisinopril	0 (0%)	18 (33.3%)	29 (53.7%)
Statin used			
Atorvastatin	0 (0%)	18 (21.7%)	70 (90.9%)
Rosuvastatin	0 (0%)	65 (78.3%)	7 (9.1%)

Table 4: Drug dose goal of Beta-blockers, ace-I and statin

It was also observed that no significant association of appropriateness of doses and number of drugs used was found with gender, age, diabetes mellitus, hypertension, and smoking.

DISCUSSION

The detrimental impacts of non-compliance on outcomes associated with MI patients, including as all-cause and CVD-specific mortality, have been emphasized by several sizable longitudinal registry studies [12–14]. Simons et al., study conducted in B-blockers, statins, ACE inhibitors, antiplatelet therapy, and calcium-channel blockers are all associated with poor long-term compliance and endurance in the Australian population. In a representative selection of 48,690 Australians receiving ACEI, ARB, and/or calcium-channel blockers, 81% of individuals had a second prescription filled for ACEI or ARB drugs; after median intervals of about 2 years, the numbers declined to around 45% and 47%, respectively, for ACEIs and ARBs [15]. However, in Roughead et al., study of 9635 military personnel following a hospitalisation for ischemic heart disease, adherence levels of 75% to ACEI/ARBs, 83.9% for lipid-lowering treatments, and 84% for non-aspirin anti-platelets were seen [16]. These results imply that secondary preventive cardiac protective drug non-adherence exists and differs by drug class. Further research is needed to determine the scope of nonadherence's consequences on community costs and health outcomes [15, 16]. Individual secondary preventive drugs have been shown to reduce mortality and morbidity after MI in clinical trials. Mukherjee et al., found that data from registries demonstrate that their concurrent use in individuals in reality is connected to a comparable benefit in outcome [17]. In fact, higher adherence to advice in guidelines is linked to small increases in survival, but stopping medicine is linked to a worse outcome [18]. However, the doses of these medicines that were provided were lower than those that were investigated in clinical trials, with approximately 85% of patients being discharged on beta-blocker doses and 75% of patients being discharged on statin and ACE/ARB doses, respectively [19]. Cumulative adherence to medical therapy advised by guidelines, risk factor management, and lifestyle modifications after myocardial infarction were linked to increased long-term survival in a large community-based population. The largest boost to survival was related with complete adherence [20]. The single-center experience, low female representation, and nonrandomized study design are the primary drawbacks of the present study. Because of the small sample size and urban setting of the study, it is possible that the findings cannot be extrapolated to bigger populations.

CONCLUSIONS

The present study revealed that the majority of the physicians prescribed the recommended number of the drugs used; however, the doses of drugs used were not

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always according to the guidelines. It is important for cardiology physicians to understand the importance of guideline recommended pharmacological intervention among patients with a one-month history of MI.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Assessment of Knowledge and Awareness Regarding Osteopenia Among University Students

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ABSTRACT

Osteopenia is a term that identifies disproportionate bone mass loss. Osteopenia is caused by severe malnutrition and several abnormalities, which include osteomalacia, osteoporosis and cancer. **Objective:** To assess the knowledge toward calcium intake and the level of awareness about osteopenia among university students. **Methods**: For this study, the cross-sectional method was used as a study design. The study was conducted among students at the University of Lahore in which there were 100 students between 18-30 years' old who took part in this study and time duration of study is 4 months. Moreover, probability convenient sampling technique was used, and a questionnaire was used as equipment for this study. For the statistical analysis SPSS version 24.0 for used. **Results**: The result of this study shows out of the sample, 25% were male, and 75% were female. The 50 belonged to the normal BMI, 2 were obese range of BMI, 31 belonged to the underweight category. 73 participants belonged to urban areas whereas 27 participants belonged to rural areas. The frequency distribution showed that 96% of people knew about calcium deficiency, and 4% were unaware. 88% of people knew about the importance of calcium, and 12% people were not aware. **Conclusions**: Chronic calcium deficiency contributes to osteoporosis, poor mineralization of bones and soft bone osteomalacia. According to results, people now a days are more eager to change their dietary patterns to help improve their bone health.

INTRODUCTION

Osteopenia is a metabolic disorder that requires proper treatment. Osteopenia is a bone condition that occurs when BMD is less than the mean value. It occurs mostly due to insufficient vitamin D. In Pakistan, the growing risk of osteopenia is due to low calcium consumption, lack of proper nutrition, dietary intake and physical activity. Malnutrition and obesity can also lead to bone disorders like osteoporosis and osteopenia [1]. Now, 34 million people in America are affected with osteopenia. From 2010 to 2030, the United States population is foreseen to increase from 13% to 20%. By 2020, it was estimated over 47 million Americans will be affected with osteopenia. In the United States, 54% of women postmenopausal are osteopenia, and 30% of women are counted as osteoporotic [2]. In the human body, the most abundant stored nutrient is calcium. In the bones and teeth, it's stored more than 99% and less than 1% in extracellular serum. The average absorption rate is approximately 30% Dietary calcium deficiency affects three major population groups. These include women (female athletes, amenorrhea, postmenopausal), also individuals with lactose intolerance [3]. Female adults are at risk, when growth is most crucial. Both teenage and elderly populations are at higher risk of calcium deficiency due to dietary habits and hormonal changes. Many adolescents decrease their calcium intake by particularly having beverages [4, 5]. Interaction with medication can

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inhibit dietary calcium absorption. (Institute of Medicine (US) Standing Committee on the Scientific Evaluation of Dietary Reference Intakes. [6]. The main calcium sources are milk, milk products, yogurt, and cheese. Leafy greens, legumes, seafood and fruit also contain calcium. Many foods and drinks are fortified with dietary calcium. Clinical implications of dietary calcium include prematurity of metabolic bone disease. Rickets and low bone mass in childhood and adolescence [7]. Inadequate fetal bone mass accrual, other metabolic effects, secondary vitamin D deficiency and osteoporosis in postmenopausal [8]. Calcium deficiency symptoms and signs include muscle cramps, brittle nails, dry skin, dental problems, spot on the skin, nails and teeth, fatigue, pain in limbs, minor bone fracture, shrinking of hands and alopecia. The amount of calcium you require depends on your age and gender. Dietary Allowance of calcium is different in age groups. In Males & Females, 18–70 years (males) 1000, 18–70 years (females) 1200 and, the women above than >70 years need 1200. In Pregnancy/Breastfeeding females age 14–18 years old need 1300, and 19–50 years old need 10.7 [7]. Due to the high prevalence rate of osteopenia worldwide. The research aimed to find out about students' knowledge, attitudes and practices regarding osteopenia. The students had enough knowledge about the disease but lacked in a few factors, which included poor attitude, false behavior towards the disease and false dietary practices of students. Awareness could be created in order to reduce the burden of the disease if these practices and behavior are not addressed in time, the number of students suffering from osteopenia will increase.

METHODS

A cross-sectional method was used as a study design. The study was conducted among students at the University of Lahore, Pakistan. There were 100 students between 18-30 years' old who took part in this study. However, students suffering from chronic diseases and aged above 50 and below 18 were not included in this study. Moreover, the sampling technique used in this study was a non-probability convenient sample, and a questionnaire was used in this study. Data were analyzed by using SPSS 24.0 and Microsoft excel 2016.

RESULTS

According to the Table1, results showed that out of 100 participants, 34 were of age between 18-24 years whereas 66 were between 25-30 years, 50 belong to the normal BMI 2 belong to the obese range of BMI (above 30), 31 belong to the underweight range of BMI (less than 18) and 7 belong to the overweight range of BMI (25-29.9), 76 participants were unmarried whereas 24 participants were married, 68 participants were doing graduate while 11 participants were in pre-graduate and 21 participants were post-graduated, 109 belonged to the middle socio-economic status where 5 belonged to lower and 3 belonged to upper socioeconomic status, 73 participants belonged to urban areas whereas 27 participants belonged to rural areas.

No.	Categories	Ranges	Frequency (%)
1.	Age	18-24 years	34 (34%)
		25-30 years	66 (66%)
2	Gender	Male	25 (25%)
		Female	75 (75%)
3.	BMI	Underweight below 18	31 (31%)
		Normal 18.5-24.9	50 (50%)
		Overweight 25-29.9	7 (7%)
		Obese above 30	2 (2%)
4.	Marital status	Unmarried	76 (76%)
		Married	24 (24%)
5.	Education Level	Pre-graduate	11 (11%)
		Graduate	68 (68%)
		Post-graduate	21 (21%)
6.	Socio-Economic status	Lower Class	5 (5%)
		Middle Class	92 (92%)
		Upper Class	3 (3%)
7.	Residential level	Urban	73 (73%)
		Rural	27 (27%)

Table 1: Frequency Distribution of Age among Participants

According to the Table, 2 frequency distributions showed that 96 participants had knowledge about calcium deficiency, and 4 were unaware. 88 participants agreed that calcium increase the risk of osteoporosis, and 8 participants were unaware. The below results show that 29% of participants have knowledge about osteopenia, and 71% of participants were unaware. 5% of participants had awareness about causes of bone fractures, and 95% were unaware. 57% of the participants realized the importance of Supplements, and a majority of them didn't realize it. 78 % of Participants knew about body needs Vitamin D to Absorb Calcium and 22% were unaware. 88% of participants knew about the importance of calcium, and 12% of participants had no knowledge.

S.No.	Parameters	Frequency (%)
1	**Knowledge about calcium deficiency and Osteoporosis**	
	Yes	96 (96%)
	No	4 (4%)
2	**Knowledge about Osteopenia due to Low Calcium Intake**	
	Yes	88 (88%)
	No	8 (8%)
3	**Knowledge regarding osteopenia affects gender**	
	Yes	29 (29%)
	No	71 (71%)

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4	**Knowledge about the causes of bone Fractures**	
	Yes	95 (95%)
	No	5 (5%)
5	**Awareness regarding the supplement consumption**	
	Yes	43 (43%)
	No	57 (57%)
6	**Awareness regarding body needs Vitamin D to Absorb Calcium**	
	Yes	78 (78%)
	No	22 (22%)
7	**Knowledge about calcium consumption important for health**	
	Yes	88 (88%)
	No	12 (12)

Table 2: Frequency Distribution of Knowledge Regarding Osteopenia among participants.

According to Table 3, 85 % of participants had knowledge about the sources of calcium and its consumption and 15 were unaware. 73% of participants liked to consume fruits and vegetables daily, but 27% of people did not like to consume fruits and vegetables daily. About 74 % of participants liked carbonated beverages and 26% of participants didn't like them, as shown in the below table.

Parameters	Frequency (%)
Knowledge of sources of calcium and its consumption	
Yes	85 (85%)
No	15 (15%)
Fruits and vegetables consumption	
Yes	73 (73%)
No	27 (27%)
Carbonated beverages	
Yes	74 (74%)
No	26 (26%)

Table 3: Frequency Distribution regarding the dietary consumption among participants

According to the results of Figure 1, 8% of participants had awareness about Bone Mineral Density BMD Test and 92% were unaware about it.

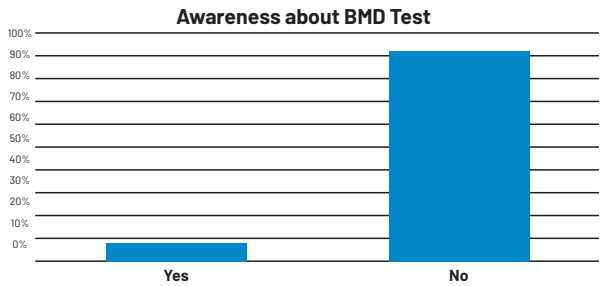

Figure 1: Frequency Distribution regarding awareness about BMD test among participants

According to the Figure 2, 89% of participants knew about the sources and importance of vitamin D, and 11% of the participants didn't knew about it.

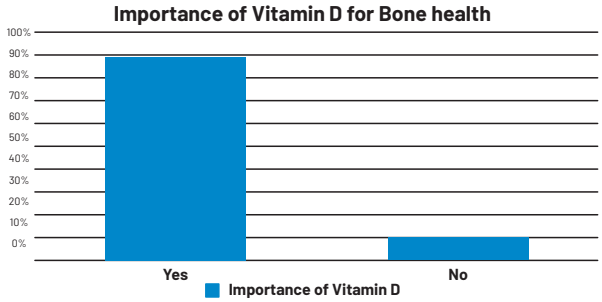

Figure 2: Frequency Distribution about Importance of Vitamin D for Bones Health

DISCUSSION

Osteopenia is a medical condition in which the protein and mineral content of bone tissue is reduced [8]. The prevalence of osteopenia, affecting 200 million people, is 54% in women and 33-47% in men, respectively, based on the criteria [9]. Osteopenia has no symptoms. The current research was conducted to study the knowledge, attitude and practice of osteopenia. Participants were selected through non- probability convenient sampling technique. According to the results of the current study, osteopenia was more in students of having age group above 20, females were suffering more from it, and BMI was above 22kgm^2. Similar results were observed in the previous research. The result of this study showed that BMI played a major role in osteopenia participants according to this study. Fruits and vegetables consumption are universally promoted as healthy. Fruits and vegetables include a diverse group of plant foods that vary greatly in the content of energy and nutrients. Additionally, fruits and vegetables supply dietary fiber, and fiber intake is linked to a lower incidence of cardiovascular disease and obesity [9]. According to this study, 73% of participants consume fruits and vegetables daily, but 27% of people don't consume fruits and vegetables daily. Alternative results were observed in this study. According to previous research, 76.3% of the 13- to 15-year-olds had inadequate fruits and vegetables consumptions (less than five servings per day), 28% reported consuming fruits less than once per day, and 13.8% indicated consuming vegetables less than once per day. Consumption of fruit and vegetables in our study, 73% consume fruits and vegetables, and 27 do not. But according to the article, 50% daily eat fruits and vegetables because of their preferences. Some don't like to eat, and some people cannot afford fruits [10]. Soft drinks are produced around the world, and they are widely available. Carbonated beverages (CBs) make up the bulk of the global soft drink industry. They are not good for health, especially bone health. The result of this study show consumption of carbonated beverages was 73 %, and non- consumption was 23 %; according to the article, 85% man like to drink

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beverages. Similar results were observed in the previous study [11]. Cutting out caffeine may seem like an effective and simple way to improve one's diet, but before people give up that daily cup of tea or coffee, it is worth weighing up the pros and cons. According to this study, 53% of hostel participants take tea, and in a previous study, about 70% of people like to take tea. Alternative result of both the study has been observed [12]. The present results suggested that dairy product intake was linked with less risk of childhood obesity. The totality of available scientific evidence supports that the intake of milk and dairy products contributes to meeting nutrient recommendations and may protect against the most prevalent chronic disease. In this present study, participants took dairy products of severing 3 to 5. About 53%, but according to previous research, 47 % of participants fulfill their dairy products because their choice for fast food is more than dairy products. Similar results have been observed in both researches. 31 Food allergies can result in life-threatening reactions and diminish the quality of life. In the last several decades, the prevalence of food allergies has increased in several regions throughout the world [13]. In this study, 20 % of participants have food allergies, while in previous research perceived prevalence of food hypersensitivity varies from 3.24% to 34.9%.13 Yoga and Pilates contain movements that may increase fracture risk for people with osteopenia. If you have low bone density, it is important to avoid any movements that round or twist the spine and put excessive force upon the vertebrae. Exercise for osteoporosis. According to this study, 5% of participants like to do yoga; an alternative result was observed. In previous research, 30% of people like to do yoga [14]. Swimming is an aerobic activity that is related to increased lean body mass and aerobic capacity. According to this study, 25% think Swimming cause strong bone. But alternative results have been observed in previous research [15]. Food packaging is the cover of any food item which provides protection, resistance and special physical, chemical or biological needs and additional information regarding food. In this study, the results showed that 68% of participants were very much concerned to read food packaging of food items when they purchased, and 32% of them were not even aware of the food packaging and how to read it, and similar results were found in the previous study that was done by Nguyen. After. Diet high in calcium and vitamin D-rich foods helps boost and improve bone health in all groups. Some people follow specific diet plans containing a high percentage of dairy products to prevent and treat their bone problems, and in this current study, it was observed that 42% of people were involved in practicing diet plans having high amounts of dairy products in them to treat their bone problems and other bone diseases such as osteoporosis, arthritis and many other. But the results in previous studies showed that participants are taking low intake of dairy items in their diet on a daily basis [16]. By following diet plans customized to an individual's needs are the best way to improve health and quality of life, and now a day's, people are very concerned about their health, so they target specific diseases by eliminating those food groups which trigger their disease. The present study showed that 67% of people tried to change their food preferences to improve their bone health, and 33% of them were not interested, and same results were seen in previous studies; the people were more eager to change their dietary patterns to help improve their bone health Smoking affects our lungs health and dangerous for all groups of people but still people are addicted to it. Smoking can have negative effects on bone health by suppressing vitamin D-parathyroid hormones and lowering estrogen exposure; it increases risk factors in bone health and speeds up bone damage, specifically at the femur. Smoking today is very common among our youngsters, so it was really very necessary to ask them about its impact on their bone health. Results of this current study showed that 89% of them were aware of the harmful effect of smoking, and 11% were unaware about it. A previous study also concluded that quitting smoking has a favorable impact on bone health [17, 18]. Vitamin D is a basic need of every adult and child, it helps in the absorption of calcium and maintains bone health. This present study indicates that intake of vitamin D in hostel girls is common because it was observed that many girls had knowledge regarding this aspect, 75% were taking supplements to improve their bone health, and 35% of them were not putting any effort to improve their bone diseases. Results of previous studies also showed that vitamin D insufficiency had a strong linkage with increasing body fat and decreasing muscle strength and elasticity. Vitamin D deficiency is also linked to adipose tissue infiltration [19]. Sugar reserve is known as a food additive that gives a sweet taste similar to sugar but has very low energy than that of sugar-based sweeteners, which effectively makes it low calorie. Non-nutritive sweeteners (NNSs) elicit a multitude of endocrine effects in animal models and in humans. In this current study, people were asked about their choices regarding desserts that they preferred mostly desserts made with artificial sweeteners or made with pure dairy products, so 60 % of them preferred to eat desserts made with dairy products, and 40% ate desserts made with artificial sweeteners. In previous studies use of artificial sweeteners was very common due to less awareness 85% of people normally use these sweeteners in their desserts which ultimately affects their health and increases the disease ratio [20,21].

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CONCLUSIONS

Osteopenia can occur due to impaired calcium absorption; vitamin D deficiency is caused by defective absorption of fat-soluble vitamins and also due to the binding of unabsorbed dietary fatty acids. Dietary calcium deficiency affects three essential populations that are at maximum chance. According to results, people nowadays are more eager to change their dietary patterns to help improve their bone health than the ones before us we have seen.

Conflicts of Interest

The authors declare no conflict of interest.

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Original Article

Cross Culture Adaptation of CASP 19 To Assess Quality of Life of Older Adults in Karachi, Pakistan

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ABSTRACT

CASP-19 (Control, Autonomy, Self-realization, and Pleasure) is a well-established and theoretically derived instrument to assess the quality of life, which has been translated into multiple languages for global application. This study provides a cross-cultural validation of CASP-19 in older adults in Karachi, Pakistan. **Objective:** To assess quality of life of 50+ older adults in Karachi, Pakistan. **Methods**: Focus groups were used to pilot-test a translated CASP-19 survey from English to Urdu, with back translation to explore the language, cultural and conceptual similarities of the tool to the original version. A population survey was administered using cluster sampling. The translated version was administered to 100 participants from each low, middle, and high-income areas via door-to-door recruitment. Confirmatory factor analysis was used to test the psychometric validation of the Urdu version. A regression analysis assessed social determinants of quality of life. **Results**: Pilot-testing confirmed that CASP-19 has conceptual relevance to Pakistani culture in a revised CASP-13 with 6 items remove. **Conclusion:** CASP13 is a valid and reliable tool to assess the quality of life of 50+ older adults in Karachi.

INTRODUCTION

CASP is a measure that was theoretically driven and had four domains, namely, Control, Autonomy, Pleasure, and Self-realisation, with 19 items. The development of CASP is a useful scale for measuring the quality of life in old age. Control is "understood as the ability to intervene in one's environment actively. Autonomy is defined as the right of an individual to be free from the unwanted interference of others" [1]. Laslett presented the theory of the third age and defined that the "older adults should be the 'crown of life' in which people are free to develop themselves and their interests" [2]. Moreover, the increasing participation of older adults in leisure activities and foreign trips showed that the older adults are keen to develop new interests, and based on that, the other two domains, pleasure' and 'self-realisation, were developed. By including the other two domains, it showed that to have a good quality of life is not adequate to be "free from undue interference nor simply to have the potential to be able to intervene in one's environment," but that older adult should engage themselves "through those activities that make them happy" [3]. CASP-19 had been extensively used in various studies with the large and small sample size to data such as it had been administered in large population-based samples English Longitudinal Study of Ageing (ELSA) waves 1 to 5 [4]. The psychometric properties of CASP 19 had been performed in a couple of studies; specifically, in West European countries, primarily in the United Kingdom and Ireland but also in Taiwan and Brazil [5, 6].

METHODS

The CASP 19 tool was given to four people who were well known to the researcher from Pakistan, who had a good command of English and Urdu language, to translate the

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CASP 19 instrument. The translators had familiarity with the target population. The four Urdu translated versions of CASP-19 were given to four different people, to back-translate without access to the original English language CASP 19. All these four translators had a good command of both Urdu and English language. All four back-translated versions were shared with two native speakers separately. The natives were academic staff who worked at the University of East London. After consultation with both translators, the 2nd back-translated version was selected to pre-test for the adaptation, selected as the most closely translated version of the original CASP-19. The translated version was pre-tested in the Pakistani community based in London; to understand the tool's language, cultural, and conceptual similarities. The focus group discussion was used to pre-test the measure. The two focus groups, one each for the male and female, were conducted in support of Pakistan Culture Society in Walthamstow, London. All focus group participants were between 55 to 68 years of age. A cross-sectional combination of cluster sampling and purposive sampling was used to select households that were approached as a targeted population. The cluster sampling was done in two stages; i) identifying high, middle and low income strata, and ii) purposive sampling of a sub-population within each strata. Three hundred participants aged 50 or over were selected by purposive sampling, 100 each from low, middle, and high-income areas of Karachi, Pakistan. The sample was designed to replicate in the original study where QoL was measured using CASP 19 (1). To identify a 3-unit difference in CASP-19 with a sample size of 75 people needed in each group (calculated with STATA command samples). In the case of any dropouts from the sample, the sample size was inflated by 33%, so there was 100 people per strata. The quantitative data were entered in the SPSS to check the psychometric properties of the measure CASP 17. CASP 17 has a Likert scale item, numerically coded. 3 was coded to the most positive answer, and 0 was coded most negative answer. The total CASP 17 score was ranging from 0 to 47. A higher CASP-17 score signifies higher quality of life. Furthermore, the two ethics approval for both studies in London and Pakistan was approved by the University Research Ethics Committee at the University of East London.

RESULTS

The reliability tests revealed that the scale has good internal consistency with Cronbach's alpha 0.82. There were both high and low correlations between the CASP 17 items. The Kaiser-Meyer-Olkin (KMO) in this analysis was 0.83. Furthermore, table 1 shows the value of Cronbach's alpha for each item. Only item 16 shows the low Cronbach alpha, but the removal of that item would not show an improvement in the Cronbach alpha. Therefore, none of the items were removed from the scale (Table 1).

CASP 17 items	Cronbach alpha
My age restricts me to do such tasks that I want to do	0.81
I feel that whatever is happening with me I cannot control it	0.81
I feel that I am free to plan for my future	0.81
I can do thing that I want to do	0.80
Family responsibilities stops me to do things that I want to do	0.81
I feel that whatever work I do I can make myself happy from it	0.80
My health stops me to do things, that I want to do	0.81
Lack of money stops me from doing things I want to do	0.80
I wait for all coming days	0.81
I feel that my life has meaning	0.81
Whatever work I do, I enjoy it	0.80
I enjoy other's company	0.81
I look at my past happily	0.82
I feel energetic all the time	0.80
I select things that I have never done before	0.81
I feel satisfied with the way my life is changing	0.79
I feel that life is full of opportunities	0.80

Table 1: CASP 17 Cronbach's alpha for each item

In this study, the single-factor model, the first-order model, and the second-order model were assessed. The analysis demonstrated a measurement model for CASP-17; where all the 17 items have been loaded on a single factor that is QoL. The single factor model of CASP 17 displays a poor model fit as the results of the goodness of fit indices describes that TLI 0.674, CFI 0.714 which is relatively lower than the normal range and RMSEA 0.098, which is higher than its required range. Because the single model seems the worst model fit for CASP 17 therefore, the first order model was performed where the inter-relationship of all the four domains (Autonomy/Agency, Control, Self-realization and Pleasure) was performed. The results of the first-order model of CASP 17 with all four domains do not display a perfect model fit, as TLI 0.827, CFI 0.856 and RMSEA 0.071. As both the single model and the first model did not show a better model fit, a third step was introduced involving the analysis of a second order model for CASP 17. That included all the 17 items with its' domains on one-factor latent variable 'QoL'. The results of the second order model analysis for CASP 17 showed that the values of TLI 0.674 and CFI 0.714 are very low (recommended value >0.90). Moreover, the value of 0.098 for RMSEA was higher than its required range (recommended value <0.05). Thus, the second order factor also does not demonstrate a good model fit between the model and the observed data for CASP 17. Moreover, the modification indices (MI) of covariance were observed. The MI exhibited a high error measurement correlation between (e1, and e2,) that is: 'I feel free to plan for the future', and 'I can do the things that I want to do'. The MI value between the two items (e1 and e2) was 20.99, which is considered high since it is greater than

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15.0 and between (e12 and e9) that is; 'I feel that what happens to me is out of my control' and 'I feel that my life has meaning' MI value 16.67 which was higher than 15. In order to achieve the best model, fit, which showed higher values on e1, e2, e12, e9 all four items were removed from the analysis. Therefore, then the alternative 13-item four-factor model was tested for the population of Karachi Pakistan. The CASP 13 was also evaluated for model fit through CFA. The single factor model of CASP 13 showed the following values: TLI 0.709, CFI 0.757 and RMSEA 0.101. Although these did not demonstrate perfect findings, they provided better model fit than CASP17. The analysis for the first model fit showed the best model fit, with TLI 0.903, CFI 0.927 and RMSEA 0.058. The second model factor analysis for CASP 13 did not exhibit a very good model fit (TLI 0.709, CFI 0.757 and RMSEA 0.101). Finally, as for CASP 13, items redundancy was examined through inspecting the Modification Indexes (MI). The correlated measurement error was between the item e6 and e7: 'my age prevents me doing the things which I want to do' and 'my health stops me doing things which I want to do'. The MI value between the two items was 64.463, which is considered high since it is greater than 15.0. It was assumed that the redundancies between the two items caused the measurement model to record a poor fit. Therefore, these two correlated measurement errors of redundant items were analyzed as a "free parameter" and run the new measurement model II for the second-factor model. The CASP 13-second model fit (II) after unnecessary the two items, illustrated the findings TLI 0.809, CFI 0.843 and RMSEA 0.082. The finding demonstrated that fitness indexes have improved after the two redundant items which were constrained in the model. The overall CFA results propose that the 'single-factor model' and the 'second factor model' for CASP 13 also does not provide an appropriate fit. However, the domain model, which is the first factor model of CASP 13, is recommended as the best model fit to use in a population of Karachi. Therefore, the shorter version of CASP13 was used to assess the quality of life in Karachi, Pakistan. Each item in CASP 13 had scored on a four-point scale ('Often', 'Sometimes', 'Not often' and 'Never'), that could give a possible range of scores of 0–39, higher the score represents a better quality of life. The mean CASP 13 score for the whole sample was 22.39 ± 6.68. The findings from this study also identified differences in the score of quality of life in all three groups. Low Income Group (LIG) mean CASP score was 17.4 ± 6.6, middle income group (MIA) 22.8 ± 4.9, and high-income group (HIA) 26.8 ± 4.5.

DISCUSSION

This study tested the construct validity of the CASP 13 in Karachi and it was found to be an appropriate tool to assess the quality of life. Moreover, it was found to be easily understood by the targeted population. The CASP 13 showed good psychometric properties and good internal consistency in the Pakistani population. In line with other psychometric studies of CASP by Wiggins *et al.*, this study in Karachi had also shown different results in both exploratory and confirmatory factor analysis [7]. As, the population of Karachi Pakistan; was different from the one which the scale was originally developed. It was also able to find out common characteristic of growing older, which was mentioned in Hyde *et al.*, study demonstrated the tool that would be used in the different culture, may able to find the most common universal characteristics of growing older [8]. The exploratory factor analysis had extracted four factors; and the loading of most of the items in factor analysis were the same as other countries like Lithuanian version of CASP-19 [9]. Also, according to its loading, it was named same as it was in the original study (Control, Self-realization, Pleasure and Agency/Autonomy) [10]. However, when it comes to using such a measure in a different culture, the meanings and perceptions of these domains may change because of their cultural values and beliefs. This is what happened with these domains of CASP 17 when used in Karachi. For example, the item asked from the self-realization domain 'I feel satisfied with the way my life has turned out' and some of the participants referred to Allah as one of the participants said, 'It is Allah's will nothing is in our hand'. But few of the participants also said "one wrong decision in life can change the life and one is responsible for their own decisions so we cannot blame anyone or Allah" so there were distinct viewpoints of the participants. Furthermore, performing the CFA item, "I feel that what happens to me is out of my control" had a high redundancy in modification indices; therefore, this item was deleted in model fit. The reason of high redundancy could be the statement be unclear to the participants, or a double meaning statement. Also, it is evident, when this statement was asked to one of the participants she said, "What do you mean by this, nothing is in my hand. God has control over our lives". The similar finding was identified in a study among older Ethiopians population while assessing predictors of QoL. The participants of the study felt the same for the item; "I feel that what happens to me is out of my control". "Because the majority of Ethiopians are strong believers that whatever happens in their life is God's will, and it is possible that they would answer the question that they do not have control, which might be misleading" [6]. Furthermore, the three items loaded in the third factor (Autonomy) in CASP 17 were 'Family responsibilities prevent me from doing the things I want to do', 'shortage of money stops me from doing things I want to do' and 'on balance I look back on my life with a sense of happiness'. Autonomy

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has been discussed for last thirty years by the researchers, but in the recent year, some cross-cultural theorists have suggested that autonomy is only a 'western cultural ideal, and not a universal need' [11]. So, therefore, people who give more preferences to family, values, traditions, and norms can never develop autonomy and seem to be more satisfied when living their will to their group's will. However, autonomy is relevant to 'wellbeing (WB) in cultures that emphasize individualism and independence, but less relevant to WB in cultures that emphasize collectivism or interdependence' [12]. Therefore, it is right to say that people's well-being in different cultures depends on the understanding and perception of autonomy [13]. However, in my study, some subjective data were collected during the survey; showed that both man and woman had the autonomy to live their life as they want. As one of the high-income group participants said, 'family responsibility never stops me from doing what I want to do because all individual in our family has right to do what they want to do so all are responsible for their own life'. On contrary a woman from low income said, 'I cannot take decision as a woman my responsibility is to look after children and take care of home and my husband is the one who takes all decision on behalf of our family'. This was also observed in other two other studies which had found similar findings with respect to items 6 ("family responsibilities") and 9 ("shortage of money") [14]. The subjective findings by Borrat-Besson *et al.*, also show that the perception of autonomy is different in different socio-economic group. Hence it is right to say that people in a different culture like Pakistan apply their autonomy in structural contexts, which include (religion, culture, values, and beliefs) that may promote or restrict autonomous action [15]. The domain pleasure in CASP was contextualized differently in Pakistani culture for example interviewing items from a pleasure domain like 'I feel that my life has the meaning' most of the people commented that 'if Allah has sent us in this world so; there must be some meaning and a reason and so far, we do not have any regrets'. When asked another item; 'I look forward to each day; some of the participants said, 'inshallah yes' means 'if God's will, yes'. Therefore, we wait for the next day that Allah will do well, and we are happy whatever we have in our life'. Similar findings by Hamren *et al.*, were identified in older adults in Persia where participants who had experienced violation scored lower in all dimensions of CASP excluding pleasure [16]. CASP also aimed to show that in old age, people are engaged in a reflexive process of self-realisation through those activities that make them happy [17]. However, in Pakistan, millions of older adults live in poverty and leaves very few with pensions or a reliable income when they reach older age, leaving them dependent on their families who often struggle to provide for them [18]. With this scenario, most older adults cannot fulfill their wish or interest at the old age, but they stay happy and satisfied with what they have in life. QoL is a vague concept that included many factors such as; social, psychological, economic influences, and individuals' experiences, circumstances, health, social well-being, values, and perceptions [19, 20]. Nevertheless, this could be interpreted differently in a different culture based on their socio economic-status, culture and religious ideology.

CONCLUSIONS

It is well known that ageing decreases the quality of life and there could be limiting factors that could be associated with it, like socio-economic background, or health. In Pakistan mainly, research is focused on health-related quality of life on the ageing population or the challenges of the ageing population. Therefore, this research has added to that there is no single dominant which affects the quality of life in old age. But it is evidence that financial situation, opportunities, work satisfaction, not working in old age, lack of social participation, social support, life-course events, health, depression, daily life activities, sense of coherence and optimism are the factors which are positively or negatively associated with quality of life in old age.

Conflicts of Interest

The authors declare no conflict of interest

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Original Article

Evidence-Based Practices of Nurses Regarding Nosocomial Infection in ICU: A Descriptive Study

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ABSTRACT

Nosocomial infections influence patients' lives over lengthy hospitalization, illness, and death, following important costs to both health organizations and society. Evidence-based practice is observed as a system to carry out health care that is additionally effective and important in the current health care setting. **Objective:** To identify the level of evidence-based practices of nurses regarding nosocomial infection in the intensive care units. **Methods:** A cross-sectional descriptive study design was used. The population was the ICU staff nurses of the Tertiary Care Hospital, Lahore. The duration of the study with 09 months after the synopsis approval. The sample size of 72 nurses has calculated a population size 95 confidence interval and a margin of error of 5%. A convenient sampling Technique was used in this study. The questionnaire was consisting of 4 items and 31 questions. Ethical Considerations were maintained. Data were kept confidential and secure by coding. Data were analyzed by SPSS version 21. **Results:** The highest percentage of staff nurses in this study were females (98.6%) and aged between 26-35 years (76.4%) and diploma holder were (69.4%). Nurses who have experience less than 10 years were 45.8%. Most of the participants were performing hand hygiene practicing frequently (59.7%) whereas (16.7%) were performing rarely before contact with patient. Highest percentage of participants (77.8%) were using personal protective equipment's. **Conclusions:** Evidence-Based Knowledge related to nosocomial infection is adequate among nurses. Hand hygiene performance is adequate as compared to international standards.

INTRODUCTION

Evidence-based practices are observed as a technique to carry out health care that is more actual and is important in the current healthcare settings. However, there is frequently little or no evidence to support particular techniques, especially in infection control-related fields of practice, evidence-based practices benefit from representations that regularly rely on empirical data to assess patients and healthcare providers when deciding on the best course of action for a given clinical situation [1]. As stated by Mauldin PD, a number of evidence-based strategies helped to lower the prevalence of healthcare-associated infections (HAI); hand hygiene is by far the best strategy for doing so. Percutaneous injuries brought on by needles and other sharp objects are what causes the infection. Nosocomial infection is an infection that occur48 to 72 hours after admission to supplementary healthcare settings; the contagion does not occur during the period of admission and is not in the development duration [2]. An HAI must occur at least 48–72 hours after being admitted to the hospital, 3 days after being discharged, 30 days after the surgical procedure, or 1 year after the transplant. According to the World Health Organization, 1.7 million nosocomial contagions happen yearly and 1 in 29 individuals develop nosocomial infections [3]. Worldwide, the occurrence of these infections differs from 3.5% to 12% in advanced countries and from 7.4% to 19.1% in middle-

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income and low-income nations [22]. According to the study conducted in the city of Sindh, Hyderabad Pakistan, the occurrence of hospital acquired infection was 97 out of 333 patients who acquired nosocomial contaminations. Out of these 29 were affected by respiratory tract infections, 38 were from urinary tract infections and 23 (23.7%) suffered from bloodstream infections [4]. However, infection is the major challenge in our hospital these infections are most widespread in the ICUs and in older patients with fundamental diseases and repressed immune systems [5, 6]. According to this event kills 99,000 people yearly and levies $20,000,000 on society. Nosocomial infection increases the cost and length in hospital and also increases the chances of resistance against antibiotics [7, 3]. Studies discovered that types of nosocomial infections with different rates of spread in the intensive care unit more than 80% of HAI infections include UTI infections, respiratory infections, bloodstream infections, and surgical site infections [8]. The study was aimed to identify the level of evidence-based practices of nurses regarding nosocomial infection in the intensive care units.

METHODS

A descriptive cross-sectional study design was used. This study was conducted in the Tertiary Care Hospital in Lahore and the study duration was 9 months. All staff nurses who were working in the Intensive Care Unit (ICU) were invited to participate in the study. A purposive study technique was used to select study participants. Registered Nurses involved with patient care, aged between 21 to 40 years with a minimum experience of 1 year who gave their consent to participate in the research study were selected. Nurses with MSN qualifications or previously taken infection control training in the past two months were excluded from this study. Primarily, 85 nurses were selected for the study. Keeping in view, the evidence-based practices of nurses regarding nosocomial infection in the intensive care units, the structured questionnaire was synthesized. To achieve the study objective and for the convenience of study participants, the questionnaire was divided into 5 sections. In Section 1, 4 questions (Table-1) were designed to obtain the demographic characteristics of participants. 6 questions (Table-2) related to the hand hygiene performance of the participants were included in section 2. Personal protective equipment usage by the participants was assessed with the help of 6 questions (Table-3) in section 3 of the structured questionnaire. Section 4, consisting of 14 questions (Table-4) was designed to assess injection safety measures by the participants. Environment cleaning by the participants was determined by 4 questions (Table-5). The questionnaires were distributed during the study period during scheduled meetings. A total of 85 questionnaires were distributed, however, only 72 questionnaires were completed, and therefore, they were included in the final analysis. All parameters in the questionnaire sections 2 to 5 were assessed with "Frequently," "Sometimes," "Rarely," and "Never," options. Data were kept confidential and secure by coding. Data were analyzed by using SPSS version 21.0. Descriptive statistics were used to determine percent and number. A p-value of ≤ 0.05 was applied as statistically significant. Written consent of this study was obtained both from the hospital and all staff nurses before data collection.

RESULTS

The data were collected from 85 participants 13 questionnaires were not filled out correctly. Data were uploaded on SPSS. The data were analyzed by using frequencies and percentages. Data have displayed on the table for interpretation. According to gender, there were 71 females and only one male participant, mostly age of the participants was 26-35 years 55 (76.4%), about 50 (69.4%) were diploma holders and others were BSN/BSN (Post RN), mostly females' experience was less than 20 years 68 (94.4%) as shown in table 1.

Variables	Categories	Frequencies (%)
Gender of the Participants	Male	1(1.4)
	Female	71(98.6)
	Total	72(100)
Age of the Participants	21-25	10(13.9)
	26-30	39(54.2)
	31-35	16(22.2)
	36-40	7(9.7)
	Total	140(100)
Education of the Participants	Diploma	50(69.4)
	BSN/BSN (Post RN)	22(30.6)
	MSN	0(0)
	Others	0(0)
	Total	72(100)
Experience of the Participants	Less than 10 Years	33(45.8)
	11-20	35(48.6)
	21-30	2(2.8)
	31-40	2(2.8)
	Total	72(100)

Table 1: Demographic Characteristics of Participants

There were 6 questions related to the hand hygiene performance of the participants. In the question "before contact with the patient" 43 (59.7%) participants frequently wash their hands before interaction with the patients, 16 (22.2%) sometimes wash their hands before contact with the patients. 12 (16.7%) rarely and 1 (1.4%) never wash their hand before contact with the patients. 44 (61.1%) frequently, 16 (22.2%) sometimes, and 12 (16.7%) rarely use hand hygiene before performing aseptic tasks. 33 (41.7%)

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frequently, 25 (34.7%) sometimes, 16 (22.2%) rarely, and 1 (1.4%) never perform hand hygiene after contact with the patient. In the question of "After contact with objects in the immediate vicinity to the patient" 29 (40.3%) frequently, 17 (23.6%) sometimes, 25 (34.7%) rarely, and 1 (1.4%) never perform hand hygiene. After interaction with blood, fluids, or dirtied surfaces 55 (76.4%) frequently, 14 (19.4%) sometimes, and 3 (4.2%) perform hand hygiene as shown in table 02. and after removing the gloves 22 (30.6%) frequently, 31 (43.1%) sometimes, 17 (23.6%) rarely and 2 (2.8%) never perform hand hygiene, as shown in table 2.

Question	Frequently F (%)	Sometime F (%)	Rarely F (%)	Never F (%)	Total F (%)
Before contact with the patient	43 (59.7)	16 (22.2)	12 (16.7)	1 (1.4)	72(100)
Before performing an aseptic	44 (61.1)	16 (22.2)	12(16.7)	0	72 (100)
After contact with the patient	30 (41.7)	25 (34.7)	16 (22.2)	1 (1.4)	72 (100)
After contact with substances connect with patient	29 (40.3)	17 (23.6)	25 (34.7)	1 (1.4)	72 (100)
After interaction with blood, fluids, or dirtied surfaces	55 (76.4)	14 (19.4)	3 (4.2)	0	72 (100)
After removing gloves	22 (30.6)	31 (43.1)	17 (23.6)	2 (2.8)	72 (100)

Table 2: Hand Hygiene Performance of the Participants

In the section on personal protective equipment usage by the participants, nurses 56 (77.8%) frequently and 14 (19.4%) sometimes wear gloves for possible contact with fluids, as shown in table 03. 31 (43.1%) frequently, 27 (37.5%) sometimes, 10 (13.9%) rarely, and 4 (5.6%) never wear the same pair for the different patient as shown in table 03. There was a mixed response from the participants about the wash gloves for the determination of reuse, 22 (30.6%) frequently, and 34 (47.2%) never wash gloves for the purpose of reuse of gloves.. Nurses wear gowns to protect skin and clothing 42 (58.3%) responded was frequent, 20 (27.8%) responded sometimes, 9 (12.5%) responded was rare, and 1 (1.4%) responded was never as shown in table 03. 15 (20.8%) frequently, 28 (38.9%) sometimes, 19 (26.4%) rarely, and 10 (13.9%) nurses never wear the same gown for different patients as shown in table 03. 35 (48.6%) nurses wear protective equipment to avoid splashes and other body fluids., 25 (34.7%) sometimes, 7 (9.7%) rarely and 5 (6.9%) never wear mouth, eye and nose protection during procedures as shown in table 3.

Question	Frequently F (%)	Sometime F (%)	Rarely F (%)	Never F (%)	Total F (%)
Nurses wear gloves for possible interaction with blood, fluids, non-intact skin, mucous membranes, or contaminated equipment	56 (77.8)	14 (19.4)	2 (2.8)	0	72(100)
Wearing the same pair of gloves	31 (43.1)	27 (37.5)	10(13.9)	4(5.6)	72(100)
Nurses do not wash gloves for the determination of reuse	22 (30.6)	3 (4.2)	13(18.1)	34 (47.2)	72(100)
Nurses wear gowns throughout the interaction with blood or body fluids is expected	42 (58.3)	20 (27.8)	9(12.5)	1(1.4)	72(100)
Nurses do not wear the same gown for the care of more than one patient.	15 (20.8)	28 (38.9)	19(26.4)	10(13.9)	72(100)
Nurses wear nose, mouth, and eye protectors during events that are probable	35 (48.6)	25 (34.7)	7(9.7)	5(6.9)	72(100)

Table 3: Personal Protective Equipment Usage by the Participants

Injection Preparation techniques 48 (66.7%) frequently, and 12 (16.7%) sometimes. Safety measures related to syringes and needles are used for only one patient, 62 (86.1%) frequently, 8 (11.1%), and 2 (2.8%) rarely. The frequent response was 25 (34.7%), the sometimes response was 22 (30.6%), the rare response was 14 (19.4%), and the Never response was 11 (15.3%). Responses of nurses regarding single-dose medicine used for only one patient were 52 (72.2%) frequently, 8 (11.1%) sometimes, and 12 (16.7%) rarely. 63 (87.5%) frequently, 9 (12.5%) sometimes used medication used for only one patient. In the question of multi-dose vials usage, the response was 37 (51.4%) frequently, 31 (43.1%) sometimes, and 4 (5.6%) rarely as shown in table 5.

Question	Frequently F (%)	Sometime F (%)	Rarely F (%)	Never F (%)	Total F (%)
Injection Preparation techniques	48 (66.7)	12(16.7)	11(15.3)	1 (1.4)	72(100)
Syringes and needles are used for only one patient	62 (86.1)	8 (11.1)	2 (2.8)	0	72(100)
The rubber septum on a medicine vial is sterile with alcohol prior to piercing	18 (25)	14 (19.4)	13(18.1)	27 (37.5)	72(100)
Medication containers protocols	25 (34.7)	22 (30.6)	14 (19.4)	11(15.3)	72(100)
Single-dose medication is used for only one patient.	52 (72.2)	8 (11.1)	12 (16.7)	0	72(100)
Medicine management tubing and connections are used for one patient	63 (87.5)	9 (12.5)	0	0	72(100)
Multi-dose vials usage protocols	37 (51.4%)	31(43.1%)	4 (5.6%)	0	72 (100%)
Multi-vial protocols for storage	35 (48.6)	22(30.6)	12(16.7)	3(4.2)	72 (100)
Disposed of all sharps in a puncture-resistant sharps container.	57 (79.2)	12 (16.7)	2 (2.8)	1 (1.4)	72 (100)
All controlled substances are kept locked within a safe area.	27 (37.5)	31 (43.1)	14(19.4)	0	72 (100)

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Nurses wear a face mask when placing a catheter or injecting material into the epidural or subdural space	33 (45.8)	30 (41.7)	9 (12.5)	0	72 (100)
Provides tissues and no-touch containers for disposal of tissues	19 (26.4)	40 (55.6)	13(18.1)	0	72 (100)
Provides resources for execution of hand hygiene in or near waiting areas.	26 (36.1)	26 (36.1)	17(23.6)	3 (4.2)	72 (100)
An auto-disabling lancing device is used for every patient	40 (55.6)	18 (25)	10 13.9)	4 (5.6)	72 (100)

Table 4: Injection Safety Measures Used by the Participant

In the section on environment cleaning by the participants, there were 4 questions. Regarding the question of high-touch surfaces in rooms being cleaned and disinfected after each procedure, the responses were 50 (69.4%) frequently, 19 (26.4%) sometimes, and 3 (4.2%) rarely. 47 (65.3%) frequently, 22 (30.6%) sometimes, and 3 (4.2%) rarely responses High-touch exteriors in rooms wherever surgical or additional invasive actions are cleaned and then sterile after each procedure. The question of cleaners and antiseptics are used in agreement with the producer's instructions, the responses 41 (56.9%) frequently, 26 (36.1%) sometimes, 5 (6.9%) were rarely. Nurses engaged in environmental scrubbing wear suitable Personal protective equipment to prevent contact with infectious agents or chemicals the responses were 42 (58.3%) frequently, 21 (29.2%) sometimes, and 9 (12.5%) rarely as shown in table 5.

Question	Frequently F (%)	Sometime F (%)	Rarely F (%)	Never F (%)	Total F (%)
High-touch surfaces in rooms are cleaned and then disinfected after each procedure	50 (69.4)	19 (26.4)	3 (4.2)	0	72 (100)
High-touch exteriors in rooms wherever surgical or additional invasive actions are cleaned and then sterile after each procedure.	47 (65.3)	22 (30.6)	3 (4.2)	0	72 (100)
Disinfectants and cleaners are used in accordance with the producer's guidelines	41 (56.9)	26 (36.1)	5 (6.9)	0	72 (100)
Nurses betrothed in environmental cleaning wear suitable Personal protective equipment to prevent exposure to chemicals or communicable agents (Personal protective equipment	42 (58.3)	21 (29.2)	9 (12.5)	0	72 (100)

Table 5: Environment Cleaning by the Participants

DISCUSSION

This study purposed to assess the level of evidence-based practices regarding nosocomial infection at tertiary care public sector hospitals. Out of 72 participants, 71 were females. The majority of nurses' experience was 26-35 (Mean 30.5) years. A study was conducted by ZIPPIA in the United States, using a database of more than 30 million profiles of nurses, it is founded that there are 61298 nurses working in a critical care setting in the United States, from these 81.1% are females and other 18.9% are males, Average age of nurses 43 years old. which means still there is low induction of males in public sector hospitals and nurses' age is also low than in the United States [9]. The majority of nurses were diploma holders (69.4%) and 94.4% of nurses had the experience of fewer than 20 years. A study was conducted in the Tshwane region of Gauteng Province in which it was found that the ICU nurses' normal age was 45 years, and 59.1% (n=91) had other qualifications in critical nursing. The majority of the nurses were having a diploma (51.2%; n=79), with a mean working experience of 12.55 years [10]. In the hand hygiene performance of the nurses, most nurses frequently washed their hands (Mean= 37.2). Most nurses frequently wash their hands before contact with patients (59.7%), before performing a sterile technique (61.1%), or after interaction with fluids, blood, or dirtied surfaces (76.4%). But lesser after interaction with the patient (41.7%), After contact with substances in the instant vicinity of the person (40.3%), and after removing gloves (30.6%) and performing hand hygiene in the ICU. A study was conducted in India by Sharma *et al.*, in which overall hand hygiene was 43.2% (394/911) [11]. In a study in Jakarta, Indonesia there was statistical betterment in the median of hand hygiene due to evidence-based practices. Knowledge of nurses related to hand hygiene was also improved (from 15 to 22, $p<0.001$) [12]. Best evidence-based practices related to hand hygiene can reduce the chances of infection among patients [13]. Practices of nurses wearing gloves for potential contact (frequently, 77%) there was a mixed response to nurses regarding wearing the same pair of gloves do not wash the gloves for the purpose of use again, and wear gowns to defend the skin, and clothing throughout the surgical procedure or other activities is 43.1%, 30.6%, and 58.3% frequently respectively. A study was conducted in India, and the response rate was only 25 from 22 states. Personal protective equipment practices varied among states, and private and government hospitals. After training, there were significant improvements regarding Personal protective equipment practices. There was a disinclination to Personal protective equipment reuse. In all, 71% were unaware/hesitant about Personal protective equipment inventory [14]. For the injection safety measures used by the nurses, the mean score was 38.7/72. The response regarding the usage of injections through an aseptic technique was to clean the area from contamination or

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contact with blood, fluids, or contaminated equipment (66.7%). Needles and syringes are used for only one patient (86.1%). The response related to medication administration tubes, and connectors used for only one patient was 87.5%, and related to other injections safety measures was a mixed response. The same study was conducted among Egyptian and Saudi nurses which found that 98.8% of nurses were aware of evidence-based safe injection practices, and 95.2% were conscious about the sharp disposals during the injection procedure. A study was conducted at Jimma University in which they found only 28.7% had good knowledge about injection safety practices and 25.5% had good injection safety practices [15]. One more study was conducted in Egypt in which mean of safe injection practices in two hospitals were 27.13 and 27.39. Evidence-based environment cleaning practices were found to frequently mean 45/71 and sometimes practice mean was found 22/77 [16]. A study was conducted in Australia where it was found that cleaning responsibilities varied and there was some confusion regarding the application of dissimilar disinfectants after the cleaning when patients were discharged with a history of infection. In one more study conducted in India 55.3% of participants were having knowledge related to environmental cleaning practices [17-20]. In one more study evidence-based cleaning and specific guidelines play important role in the environment [21].

CONCLUSIONS

Evidence-Based Knowledge related to nosocomial infection is adequate among nurses. Hand hygiene performance is adequate as compared to international standards. Personal Protective Equipment practice are poor. Injection safety practices were better in some protocol among nurses. Environment cleaning practice were found better. This is highlighted that training ICU nurses according to international standards can improve the evidence-based practices of nurses. Regular interval programs of training for nurses are best for nosocomial infection in patients.

Conflicts of Interest

The authors declare no conflict of interest.

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Original Article

Evaluation of Tracheostomy Care Self-Care Knowledge among Adult Patients with Permanent Tracheostomy

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ABSTRACT

Tracheostomy is a major surgery, to create an opening to provide airway patency at the 3rd or 4th cartilage ring in the anterior wall of the trachea. Tracheostomy has been considered the best life-saving procedure. **Objective:** To determine the impact of tracheostomy care intervention on self-care and assess level of anxiety. **Methods:** A crass sectional study was conducted on 34 patient's takins from ENT and Patients age limit between 18 to 50 years, educational status was primary, metric and above, OPD patients, inpatients were included. Data were gathered using a standardized questionnaire on the evaluation of tracheostomy self-care. The SPSS version used to enter and evaluate the data. 21.0. The Chi-square test was used to determine whether there was a significant relationship between the patients; a p-value of 0.05 was deemed significant. **Results:** Total 34 participants enrolled in current study. 37.1% were 41 -50 years old. 60% of participant's were male. Majority (76.4%) of the patients have poor self-care knowledge regarding tracheostomy care. Only 14.7% patients gave good self-care knowledge. majority of participant's responses haven poor self-care. The older patients 41 to 50 years, female and primary education patients have poor self-care knowledge. **Conclusions:** After tracheostomy procedure it is very important to maintain self-care and avoid to infection. It is concluded from this study that self-care not good on their evaluation, education intervention to enhance on self-care and reduced the level of anxiety for patients with tracheostomy at home.

INTRODUCTION

In order to open up congested airways, a surgical technique called a tracheostomy involves making an incision in the skin and soft tissues that cover the cervical trachea's anterior wall. It is a routine treatment carried out in ENT surgical practice [1]. Tracheostomy is a major surgery, to create an opening to provide airway patency at the 3rd or 4th cartilage ring in the anterior wall of the trachea. Tracheostomy has been considered the best life-saving procedure [2, 3]. In order to preserve patient life and enhance their quality of life, tracheostomy is used most often in older persons [4]. It often refers to the broad utilization and cost-effectiveness of health care as well as triggering the release of elderly patients from inpatient rehabilitation facilities without tracheostomy closure and total rehabilitation [5, 6]. Tracheostomy can be performed in an emergency or elective basis. All healthcare professionals who are directly involved in giving these patients postoperative care so that they can do their self-care effectively [7]. Additionally, they should be knowledgeable of any possible hazards, difficulties, and how to manage them, especially in situations that are potentially life-threatening [8]. This is essential need for patient and caregivers to get education about tracheostomy self-care. Additionally, according to Sherlock *et al.*, the study participants felt they did not receive enough information on their tracheostomy and its side effects that was tailored to their particular needs [9]. Tracheostomy may cause patients much more physical and psychological trauma than professionals are likely to realize. According to studies, people have trouble restoring

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their confidence and living their pre-tracheostomy lives [10]. Participants said that despite initially embracing a tracheostomy as necessary and even desirable for survival, the physical and psychological repercussions were more distressing than they had anticipated, particularly if the treatment was performed without their consent [11]. A patient with a new tracheostomy leaving the hospital would face the issues including secretion control, elevated risk of infection, physical structure changes & reduced physical movement [12]. The patient must be aware to deal all facets of tracheostomy treatment to ensure a smooth transition from the hospital to home and be able to recognize signs and symptoms. Therefore, this study was conducted To assess the tracheotomy self-care among adult patients with permanent tracheostomy.

METHODS

A crass sectional study was conducted from Lahore General Hospital Lahore after the approved from the University of Lahore, in this study 34 patient's takin from ENT and Neurosurgery ward, in this study purposive sampling techniques was used, Patients age limit between 18 to 50 years, educational status was primary, metric and above, OPD patients, inpatients which there are plan for tracheostomy procedure, post tracheostomy patients are excluded from this study. After self-introduction and discussed the purpose study informed consent was taken, validated questionnaire on Evaluation of tracheostomy self-care was used to data collection. Questionnaire haven two parts, Part one demographic data, Part two self-care. the participants responses falling in the ranges of 0-50%, 51-75% and 76-100% recorded as poor, average and good quality of life. Data were gathered using a standardized questionnaire on the evaluation of tracheostomy self-care. The SPSS version used to enter and evaluate the data. 21.0. The Chi-square test was used to determine whether there was a significant relationship between the patients; a p-value of 0.05 was deemed significant.

RESULTS

Total 34 patients were enrolled in current study. 25.7 % participants were 18-30 years old, 34.3 % were 31-40 and 37.1% were 41 -50 years old. Where the majority 60% of total participant's haven male and 37.1 haven Female participates, educational results shows majority of participates qualification haven primary. Majority (76.4%) of the patients have poor self-care knowledge regarding tracheostomy care. Only 14.7% patients gave good self-care knowledge (Table 1).3

Variable	Frequency (%)
Age	
18-30	9(25.7)
31-40	12(34.3)
41-50	13(37.1)
Gender	
Male	21(60)
Female	13(37.1)
Education	
Primary	24(68.6)
Matric, above	10(28.6)
Self-care Knowledge	
Poor Self- Care (<50%)	26(76.4)
Fair Self-Care 51 % to 75%	5(14.7)
Good Self-Care (>75%)	3(8.82)

Table 1: Characteristics of Demographic Data

According to table 2, majority of participant's responses haven poor self-care. The older patients 41-50 years, female and primary education patients have poor self-care knowledge. But in contrast there was insignificant association among age, gender, and education according to self-care knowledge (p-value <0.05).

Variable	Good	Faire	Poor	Pearson Chi-Squared	p-value
Age					
18 to 30 (10)	2	0	8	5.457	0.65
31 to 40 (9)	0	3	6		
41 to 50 (15)	1	1	13		
Gender					
Male	3	2	15	5.568	0.380
Female	0	2	19		
Education					
Primary	0	1	14	9.085	0.335
Matric, above	2	3	4		

Table 2: Association Between Self-care and demographic variables

DISCUSSION

The basic aim of this study was to determine the impact of tracheostomy care intervention on self-care and evaluate the level of anxiety among adult patients with permanent tracheostomy. In this study overall, 34 participants were recruited. Majority of the participants were Male 21(60%) and 13(37.1%) were Female. Out of 34, 9 (25.7 %) from the age group of 18 to 30 years,12 (34.3%) from 31 to 40, and from 41 to 50 years 13(37.1) to this study. The majority of the participants had primary education 24(68.6%) and 10 (28.6%) had secondary education or above. In a study published in 2014, by Jeon *et al.*, investigated the impact of tracheostomy timing on clinical outcome in mechanically ventilated neurosurgery patients admitted to the surgical intensive care unit. They made use of 125 individuals who underwent mechanical ventilation and tracheostomy. They learn that in critically ill patients, early tracheostomy decreased the length of the MV, the time spent in the ICU, and the prevalence of ventilator-associated pneumonia [13]. All healthcare professionals who are directly involved in the postoperative care of patients with tracheostomies must be able to properly care for patients with tracheostomies, be aware of potential tracheostomy-

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related complications, and be able to manage those complications, especially in an immediate life-threatening situation [14, 15]. The majority of patients in the current study (76.4%) had poor understanding of tracheostomy care, which is in line with findings from a study by Qadir done in India that found that most participants (81.67%) had inadequate knowledge [16]. Furthermore, in another study conducted by Dhaliwal *et al.,* in India found that average knowledge was present in more than half of the study participants [17]. Furthermore, only 46.4% of participants in a study by McCormick *et al.,* correctly answered seven questions, indicating a low level of awareness about tracheostomy care [18]. Another study carried out in 2019 highlighted the importance of educational programs to improve the quality of life of patients and caregivers. Out of 220 participants, 48% felt 'very prepared" at the time of discharge from the hospital while some of them didn't show so much willingness to cope due to the lack of training before discharge [19]. However, standardizing tracheostomy care training for routine needs and improving post-discharge assistance and coordination are two possible quality improvement opportunities. And arranging the meeting for the attendants with already tracheostomies patients before surgery may also be helpful [20].

CONCLUSIONS

Finally, the research results showed that the poor self-care knowledge among patients. After tracheostomy procedure it is very important to maintain self-care and avoid to infection. It is concluded from this study that self-care not good on their evaluation, education intervention to enhance on self-care and reduced the level of anxiety for patients with tracheostomy.

Conflicts of Interest

The authors declare no conflict of interest

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