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Original Article

Knowledge, Attitude and Practice among Nurses Regarding Prevention of Central Line Associated Bloodstream Infection in Tertiary Care Hospital of Peshawar

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ABSTRACT

Healthcare Associated Infections (HAIs), particularly Central Line-Associated Bloodstream Infections (CLABSIs), remain a significant global public health concern. CLABSIs, associated with catheter use, pose critical challenges in critical care and cancer treatment settings, necessitating evidence-based measures for prevention. **Objective:** To assess the knowledge, attitude and practice of nurses regarding prevention of central line associated bloodstream infection in tertiary care hospital of Peshawar. **Methods:** This conducted study possessed a cross sectional study design with a random sample of 173 nurses who were presently working or had worked in ICUs of the hospital. Data were collected through a self-administered questionnaire. Data analysis was performed on SPSS version 22.0. **Results:** 45% of nurses demonstrated good knowledge with mean score of 12.35 and standard deviation of ± 1.45, positive attitudes were observed in 74% with mean score of 33.7 and standard deviation of ±2.1 and good practices in 80% of participants with mean score of 40.5 and standard deviation of 1.45 observe. **Conclusions:** This study clearly indicated that majority of the nurses (54.9%) have poor knowledge regarding CLABSI. Despite of the poor knowledge level most nurses (74%) followed standard practice. Interestingly, greater number of nurses (85%) were found to have positive attitude towards CLABSI.

INTRODUCTION

Central line associated bloodstream infection is a concern in healthcare settings in critical care units as it jeopardizes patient safety. These infections can lead to rates of illness and mortality well as increased healthcare costs and a negative impact, on patient's quality of life. The ultimate goal is to prevent these infections [1, 2]. Central line associated bloodstream infections refer to bloodstream infections that are confirmed through laboratory tests and occur in patients who have had a line in place for at least 48 hours [3, 4]. Developing countries exhibit a incidence of central line associated bloodstream infections compared to developed nations as reported by the International Nosocomial Infection Control Consortium in 2016 [5-7]. By implementing measures we can substantially reduce the occurrence of central line associated bloodstream infections and enhance patient outcomes. Central line-associated bloodstream infections (CLABSIs) are the furthermost prevalent complication of central venous catheters (CVCs), happening at a rate of 4.1 per 1000 central line days. CLABSIs are associated with raised morbidity, mortality, and medical expenditures. Patients suffering with CLABSI face a 2.75-fold greater likelihood of yielding to their ailments within the confines of the hospital, as compared to those who do not suffer from CLABSI [8]. CLABSIs are largely viewed as preventable if healthcare practitioners follow the evidence-based directives for the

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insertion and maintenance of CVCs. Furthermore it is crucial to adhere to infection control practices like hand hygiene using sterile techniques during insertion and maintenance of the central line and regularly evaluating both the line and dressing [9-11]. Healthcare providers should also use barrier precautions when placing the catheter and utilize alcohol based 2% Chlorhexidine skin preparation [12, 13]. It is vital for healthcare providers to receive training and education on these measures as well as understand their importance, in reducing central line associated bloodstream infections [14, 15].

The aim of this study was to assess the knowledge, attitude and practice of nurses working in tertiary care hospital of Peshawar regarding prevention of central line associated bloodstream infections (CLABSIs) and to identify areas of improvement in their infection control practices

METHODS

For this study, cross-sectional study design was selected. The study was conducted at Khyber Teaching Hospital, Peshawar after taking ethical approval from Ethical Review Board vide letter KMU/INS/6203, dated September 25, 2023. 173 Nurses who were presently working or had worked in the ICUs of KTH were included in the study. Student nurses, nurses on leave and those nurses who did not want to participate were excluded in this study. To determine the sample size, we considered a 95% confidence interval, a margin of error 5%, assumed distribution of responses at 50% with population size of 312. Data were collected through modified adapted self-administered questionnaire. The questionnaire has been divided into four sections; demographic data such as gender, age and the number of years each participant has worked in clinical area; Knowledge section consisting of 9 questions regarding knowledge of CLABSI; a section a consisting of 9 questions regarding participant's attitude toward CLABSI prevention; and Practices related to CLABSI section had 10 questions. Score of 75 % and above categorize as to have good attitude and practice regarding CLABSI. To ensure confidentiality the completed questionnaires are collected anonymously. Participants are encouraged to provide honest responses. Prior to participation, all individuals provide consent. SPSS version 22.0 was used for data analysis. Descriptive statistics was used for demographic information. Cross table were generated to show the result and score with each demographic variable i.e. gender, qualification, years of experience and age of the participants.

RESULTS

The results are presented in form of tables. A total of 173 nurses (N=173) for participation. Among these, 86 (49.7%) were male and 86 (50.3%) were female. Majority of the participants i.e., 102 (59%) were Post-RN qualified, 65 participants (37.6%) were BSN and only 6 participants (3.5%) were qualified up to diploma level. The details have been given in the table 1.

Table 1: Demographic Variables of the Participants

Variables	Frequency (%)
Age	
25-30 Years	30 (17.3)
31-35 Years	115 (66.5)
35 and Above	28 (16.2)
Gender	
Male	86 (49.7)
Female	87 (50.3)
Qualification	
Diploma	06 (3.5)
Post RN	102 (59.0)
Generic BSN	65 (37.6)
Professional Experience of the Participants in Years	
<2 Years	41 (23.7)
<5 Years	73 (42.2)
>5 Years	59 (34.1)

45.1% of the nurses had good knowledge and 54.9% had poor knowledge regarding central line associated blood stream infection. Majority of the female were good knowledge. Moreover, Post-RN nurses were good in knowledge as compared to Diploma and BSN nurses. Attitude of nurses toward CLABSI was also measured. 84% of nurses observed as they had positive attitude while the remaining 15% had negative attitude. In addition to knowledge and attitude, practice investigation of nurses regarding CLABSI showed the score of 74% for practice according to the standard while 26 % were recorded against below standard practice (Table 2).

Table 2: Knowledge, Practice and Attitude Level of the Participants

Variables	Frequency (%)
Knowledge of the Participants	
Good Knowledge	78 (45.1)
Poor Knowledge	95 (54.9)
Total	173 (100.0)
Practice of Nurses regarding CLABSI	
Standard Practice	128 (74.0)
Below Standard Practice	45 (26.0)
Total	173 (100.0)
Attitude towards CLABSI	
Positive Attitude	147 (85.0)
Negative Attitude	26 (15.0)
Total	173 (100.0)

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DISCUSSION

According to this study results, 45% of the nurses were having good knowledge regarding central line associated blood stream infection. This study findings were in congruence with a study conducted at Egypt that showed 49% had good knowledge regarding CLABSIs [16]. Contrary to this, another study showed that only 22.1% of the nurses had good knowledge regarding CLASSBSIs [17]. Another study contradicted this study findings that showed 92% of the nurses had unsatisfactory knowledge level [18]. This study found that most of the nurses (74%) were excellent at maintaining sterility during CVC manipulation. This is in contrast to studies 37% of the nurses pointed out a lack of experience and training as reasons for noncompliance [19]. The study findings showed that 87% of the nurses changes the IV sets every seventy two hourly. These findings were in congruence to a study conducted in Bahrain that shows 89% of the nurses do similar practice [20]. According to this study findings, 80% of the nurses had positive attitude towards CLABSI. Similarly, a study conducted at Jeddah showed that 58% had positive attitude towards CLABSI prevention [14]. Another study conducted in Italy found that nurses had positive attitude toward the prevention guidelines of CLABSI [21]. Based on this study findings, 67% of the nurses revealed that nurses with 2 4 years of experience have an understanding of preventing Central Line Associated Bloodstream Infections (CLABSI). This aligns with findings from a study suggesting that more experience and regular training improves knowledge and practices of the nurses 32.9% related to CLABSI prevention [22]. According to this study results, majority of the nurses 74% consistently follow standard practices for preventing CLABSI. This study findings were similar to another study findings that showed 70% of the nurses follow guidelines of CLABSI prevention [6]. This study found that 87% of the nurses wash hands prior to changing the dressing on CVC insertion site. Similar findings were also found in a study conducted in Portugal in which 83.5% of the nurses wash hand before performing any dressing to the insertion site [23].

CONCLUSIONS

In conclusion, the results of this study clearly indicated that majority of the nurses (54.9%) have poor knowledge regarding CLABSI. Despite of the poor knowledge level most nurses (74%) followed standard practice. Interestingly, greater number of nurses (85%) in this study were found to have positive attitude towards CLABSI.

Authors Contribution

Conceptualization: MK, IWA
Methodology: MK, MW
Formal analysis: MK
Writing-review and editing: IWA, KH, M

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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