



Original Article

Effectiveness of Education on COVID-19 Vaccine Anxiety among Patients at Tertiary Care Hospital Karachi Pakistan

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ABSTRACT

Vaccine anxiety is the term used to describe the fear, worry, or apprehension individuals may feel before taking a vaccine. This fear, worry, or apprehension can frequently be caused by worries about the vaccine's effectiveness, side effects, or safety. **Objective:** To determine the effect of education on COVID-19 vaccine anxiety among patients at a tertiary care hospital in Karachi, Pakistan. **Methods:** A Quasi-experimental study was carried out at a tertiary care hospital in the center of Karachi from September to December 2021. A total of 40 outpatient departments were recruited through a convenient sampling technique utilizing G*power. The intervention was given to the participants on COVID-19 Vaccine Anxiety, and post-data were collected immediately. A valid and reliable tool was used for the data collection. **Results:** Study findings shows that there was a significant difference found in anxiety score. Before the intervention mean score was 12.45±2.29; after the intervention, it was 4.45±2.68 (p-value <0.001). **Conclusion:** The findings indicate a significant reduction in anxiety scores following the intervention. The pre-intervention mean anxiety score was 12.45±2.29, while the post-intervention score decreased to 4.45±2.68 (p-value <0.001). This suggests that the intervention effectively lowered anxiety levels among the participants.

INTRODUCTION

The COVID-19 pandemic has had a profound impact on global health. Moreover, the total number of people globally affected by the coronavirus is 8,939,762, and about 467,146 people died worldwide when fighting a lethal disease [1]. In this regard, Pakistan has been poorly influenced during the COVID-19 pandemic, facing eminent endeavor pressure on physical and psychological health status with fewer resources, illiteracy, myths, and avoid to take proper protection in the general population, which leads to risk for every individual [2]. The COVID-19 pandemic has brought unprecedented challenges to global health, prompting the urgent need for effective preventive measures. The

development and distribution of COVID-19 vaccines have provided a beacon of hope in controlling the spread of the virus and mitigating its devastating impact. However, alongside the availability of vaccines, vaccine hesitancy has become a significant concern, with individuals expressing fears and concerns regarding the safety and efficacy of these newly developed vaccines [3]. In addition, there are several causes of the concern and worry surrounding COVID-19 vaccinations [4]. Some people's hesitation has been influenced by safety worries relating to the rapid development and approval procedure, possible side effects, and long-term implications of the vaccines.

Additionally, vaccine fears have been worsened by incorrect information and its dissemination through social media and other platforms [5]. So far, anxiety related to covid-19 vaccination is more prevalent. Studies also show that covid-19 vaccination is associated with psychological factors of health perception, mistrust, anxiety, fear, and indecision [6]. Moreover, due in part to implementing measures that distance people from one another, the COVID-19 epidemic has worsened public fears and increased loneliness. Changes have also influenced this widespread sentiment in social dynamics, such as losing loved ones, quarantine procedures, worry about pandemic management, vaccine safety, and financial troubles [7]. A study from Canada shows that 96% of the participants have anxiety regarding Covid-19 vaccination. The study concluded that creating public health awareness sessions encourages vaccine uptake among those unwilling to receive them and those with anxiety disorders [8]. Furthermore, a study conducted in Karachi, Pakistan, spotlights psychological problems such as rising anxiety levels and fright and swapping in the bearing to ensure safety [9]. To overcome this problem, a strategy is needed to address vaccination reluctance successfully. Accurate and easily understandable information on the advantages, benefits, and risks of COVID-19 vaccines must be made available through education [10]. Besides, a study from Israel shows the positive effect of education on elevating anxiety [11]. Therefore, this study aims to determine the effect of education interventions on vaccine anxiety among patients at tertiary care Hospitals. The results of this study can help healthcare professionals, policymakers, and public health authorities understand the value of specialized education programs in reducing patient fear about vaccinations and fostering vaccine acceptance at tertiary care facilities.

METHODS

This quasi-experimental study took place at Jinnah Post Graduate Medical Center Karachi, Pakistan, over four months, from September to December 2021. Using a convenient sampling technique, 40 outpatient department patients were recruited for the study. The inclusion criteria included individuals aged 18 years and above who visited the hospital for medical consultation or treatment and expressed concerns or anxiety about COVID-19 vaccination. Moreover, participants with pre-existing psychiatric ailments, such as severe anxiety disorders or phobias, participants having a second visit of vaccination, and who were not willing to participate were excluded from the study because of their potential influence on anxiety levels that is unrelated to the vaccine itself. In addition, data were collected using a valid and reliable tool specifically designed to assess COVID-19 vaccine anxiety.

The tool was adopted from the study conducted by Sorgo et al., (2022) and reviewed by four experts working in the COVID area, and their suggestions are incorporated into the tool and some modifications were done according to the experts' review [12]. The tool consisted of two components. Component one is socio-demographic data with four questions: age, gender, education level, and marital status. The other component is 15 questions related to anxiety levels about COVID-19 vaccination. The tool has a total score of 15 in the form of Yes and No. In addition, the anxiety score was measured through a pre-post mean score. The participants completed the questionnaire before receiving the intervention (pre-assessment) and immediately after the intervention (post-assessment). The intervention involved providing education and information specifically targeting COVID-19 vaccine anxiety. The content of the intervention covered various aspects such as vaccine safety, efficacy, side effects, and benefits. The intervention was delivered through structured sessions and using pamphlets that trained healthcare professionals' conduct. The participants received the intervention immediately after recruitment into the study. Before the data collection, the institute gave its approval. All participants provided informed consent, ensuring their data's confidentiality and voluntary involvement. In addition, the freedom to leave the study at any moment without penalty was guaranteed to the participants. The collected data were analyzed using SPSS version 22.0. G*Power was utilized to estimate the required sample size for the study, which involved a two-sample independent t-test. The effect size, alpha level, power, and the number of groups were inputted into the software-based and expert recommendations. The effect size was estimated based on an alpha level of 0.05 and a desired power of 0.92 was chosen to minimize Type I and Type II errors. Similarly, descriptive statistics, such as means, standard deviations, frequencies, and percentages, were used to summarize the participants' demographic characteristics and anxiety levels before and after the intervention. The paired t-test was used to compare the pre-and post-intervention anxiety scores. Statistical significance was set at a p-value of less than 0.05.

RESULTS

Table 1 shows the demographic data result in the age group of 19-25 consisting of 4 participants (10%). The 26-35 age group includes 10 participants (25%). Moreover, the 36-45 age group has the highest representation, with 14 participants (35%). Lastly, the age group above 46 comprises 12 participants (30%). Regarding gender, the majority of the participants are male, which is 80%. The remaining 20% are females. Concerning their marital

status, 25% of participants are single, while the majority, 75% participants are married. Regarding education level, the participants have a diverse range of backgrounds. There are 7.5% of participants with a primary education level. No participants have a middle education level. There are 17.5% of participants with a matric education level. 25% of participants have an intermediate education level. The largest group comprises 37.5% of participants with a graduate education level. Lastly, 12.5% of participants have a master's education level.

Table 1: Socio-demographic data n=40

Variables	Frequency (%)
Age	
19-25	4 (10)
26-35	10 (25)
36-45	14 (35)
Above 46	12 (30)
Gender	
Male	32 (80)
Female	8 (20)
Marital status	
Single	10 (25)
Married	30 (75)
Education level	
Primary	3 (7.5)
Middle	0 (0)
Matric	7 (17.5)
Inter	10 (25)
Graduate	15 (37.5)
Master	5 (12.5)

Table 2 shows the result of the pre-post anxiety score. There was a significant difference found in anxiety scores. Before the intervention mean score was 12.45 ± 2.29 ; after the intervention, it was 4.45 ± 2.68 (p -value < 0.001).

Table 2: Mean Difference of Pre-Post Anxiety Score

Average Score n=40	Mean \pm SD		p-value
	Pre	Post	
Anxiety related to COVID-19	12.45 ± 2.29	4.45 ± 2.68	< 0.001

Paired t-test has been applied

Figure 1 also shows the mean difference in anxiety score in the pre-assessment, which was 12.45; in the post-assessment, it decreased to 4.45.

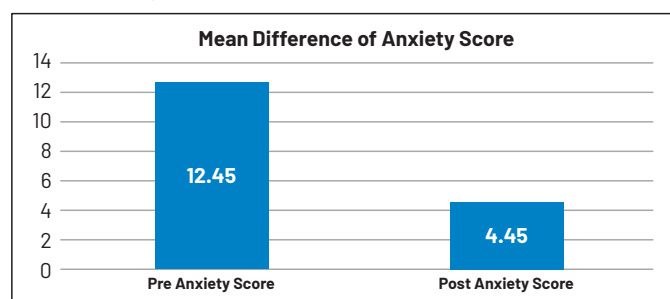


Figure 1: Mean Difference of Anxiety Score

DISCUSSION

The COVID-19 pandemic has greatly influenced world health [13], and vaccination has become essential in halting the virus's spread [14]. Some populations, including hospital patients, have reported vaccine apprehension or hesitation [15]. Therefore, this study aims to investigate the effectiveness of education in reducing COVID-19 vaccine anxiety among patients at a tertiary care hospital in Karachi, Pakistan. Present study findings show that before the intervention, the mean score of anxiety related to COVID-19 was high at 12.45; after the intervention, it decreased to 4.45, and the p -value was < 0.001 . These findings align with the previous study conducted in Spain shows that stress, anxiety, and depression were all markedly reduced ($p < 0.05$) [16]. Another study conducted in Iran shows that after one month of training, the intervention group's anxiety score dramatically decreased ($p = 0.01$). There was no discernible change between the control group's pre- and post-intervention scores ($p > 0.05$) [17]. Similarly, another study conducted in Switzerland supports the present findings that after the training session, the anxiety and depression scores significantly decreased [18]. In this regard, a study from China shows that in the anxiety group, training gradually decreased ($p = 0.047$) [19]. Additionally, previous research findings are similar to present findings and show that high-risk individuals' sadness, anxiety, and stress levels were significantly reduced by training [20]. These results align with earlier research from China, Iran, Spain, and Switzerland, showing decreased anxiety levels after interventions. These findings may be due to the effectiveness of the educational intervention in providing accurate and reliable information about COVID-19 and the associated vaccine anxiety [21]. The intervention may have aided people in comprehending the COVID-19 vaccinations, their safety, and efficacy by giving patients current information, dispelling myths, and addressing concerns. Anxiety may have decreased due to enhanced information and awareness [22]. Present findings revealed that the participant's anxiety mean score was high in the pre-assessment phase. In the same context, another study's findings are almost similar and show that 50.3% of the participants have high anxiety regarding the COVID-19 vaccine [12]. Moreover, a study from Canada shows a high score of 14.26 for anxiety [8]. In addition, other study findings are aligned and show that most participants had high anxiety levels [23]. The results of research done in Canada and another study showing a high level of anxiety among participants confirm that this problem affects various populations. This shows that fear of the COVID-19 vaccine is a general issue that crosses particular regions or nations. Significant disruptions, health issues, and dread

of the unknown have been brought on by the COVID-19 pandemic in people's life. Concerns concerning the safety, effectiveness, side effects, and long-term implications of vaccines have been expressed due to the rapid development and use of vaccines as a preventative measure [23]. The constantly evolving nature of the pandemic, the influx of information, and the rapid dissemination of news through various media channels can also contribute to heightened anxiety levels [24]. As a result, targeted treatments, such as educational programs, providing correct information, resolving concerns, and promoting open communication channels, are needed to manage anxiety connected to COVID-19 immunization [25]. Healthcare professionals and public health officials can help reduce anxiety and encourage vaccine adoption by addressing people's anxieties and giving them evidence-based information, which will eventually help the vaccination program be successful and lessen the pandemic's effects [26].

CONCLUSIONS

It is a remarkable position that distinct forms of pandemic-associated fears display the opposite institutions with vaccine acceptance. The study findings indicate a significant reduction in anxiety scores following the intervention. This suggests that the intervention effectively lowered anxiety levels among the participants. The results highlight the potential of targeted interventions in addressing anxiety related to COVID-19 and promoting mental well-being during the pandemic.

Authors Contribution

Conceptualization: RA, MHA

Methodology: AB

Formal analysis: MHA, AB

Writing-review and editing: HG, ZL

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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