Original Article

Nurse's Knowledge Regarding Blood Transfusion in a Tertiary Care Hospital Karachi, Pakistan

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A R T I C L E   I N F O

A B S T R A C T

Transferring blood or blood components from a donor to a recipient is a crucial medical operation known as a blood transfusion. It is a frequent treatment used on individuals with various illnesses, such as anemia, bleeding problems, or those having surgery. **Objective:** To investigate the knowledge of staff nurses of a private tertiary care hospital regarding blood transfusion. **Methods:** This cross-sectional study was conducted in a tertiary hospital in Karachi. Non-probability consecutive sampling technique was used for the approach of the participants' Adopted questionnaire was used for the data collection, which was valid and reliable. **Results:** Study findings revealed that 58.3% of participants were female and 41.7% were male. Furthermore, results show that among 60 participants, 40% had an average level of knowledge, 35% had poor knowledge, and 25% had high knowledge regarding blood transfusion. **Conclusions:** In conclusion, a significant proportion of the sample's nurses have poor knowledge of blood transfusion. To increase nurses' knowledge and guarantee the safe and efficient administration of blood transfusions, this emphasizes the necessity for specific educational interventions and ongoing professional development programs.

I N T R O D U C T I O N

A blood transfusion is a medical operation in which a patient receives blood or blood components. It is frequently used to replace blood lost through operations, accidents, or illnesses that cause anemia or clotting difficulties [1]. Blood transfusions primarily treat recipients' underlying illnesses and replenish lost blood. Though generally thought to be harmless, there is a chance that it could have unfavorable effects. The blood transfusion must be carried out while taking precautions against potential adverse blood transfusion reactions and infectious illnesses that the donor and recipient can get [2]. Furthermore, one of the ninth necessary life-saving interventions named by WHO is blood transfusion. Over nine million patients in 90 different countries receive blood each year, according to the World Health Organization [3].

Red blood cells (RBCs) are transfused in about 85 million units annually. Blood transfusion procedures have been linked to several human error concerns, which make up about 85% of all preventable hazards [4]. Even if there is more understanding about administering blood and blood products today, human error is still largely to blame for the issues associated with safe blood transfusion. The most common reasons for mistakes while using blood in clinical settings are improper blood group transfusions (inappropriate ABO), improper storage procedures, and uncertain patient identities [5]. Lack of cross-checking at the bedside, irregular monitoring of patients throughout and after the transfusion process, and issues with constituent blood transit from the blood bank to the hospital could be significant contributors to these errors

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[6]. The reaction of blood transfusion in adverse reaction to blood transfusion therapy could worsen the mild sign and symptoms of the life-threatening condition [7]. The nurse plays a vital role in blood transfusion. While a nurse's duties mainly involve managing donors, keeping records, and other blood bank-related tasks. Blood components' effectiveness, safety, and purity depend on properly equipped blood banks with knowledgeable staff [8]. For the safety and successful treatment of patients, nursing care quality regarding blood transfusion is essential to prevent the consequences [9]. Additionally, the nurse can help patient education through their knowledge and guarantee that the patient's consent is based on informed consent. Even though there have been significant improvements in the processing and administration of blood products over the years in terms of safety and technology, transfusion is still a dangerous practice [3]. Their knowledge and understanding of blood transfusion procedures, safety measures, and potential complications are essential for quality patient care [10]. Therefore, the administering staff must have enough information regarding the blood components' amount, method, and purpose [11]. Therefore, this study aim was to assess nurses' knowledge regarding blood transfusion. The study's goal was to find any gaps or shortcomings in nurses' knowledge in this area because they could have a significant impact on patient safety. Enhancing nurses' expertise can help them deliver competent and safe care during blood transfusion procedures, lowering the likelihood of adverse events and guaranteeing improved patient outcomes.

METHODS

This research employed a quantitative, cross-sectional study design to assess nurses' knowledge regarding blood transfusion in a tertiary care hospital in Karachi, Pakistan, from September 2022 to January 2023. The non-probability consecutive sampling method was used in this study. The sample size was calculated through the Slovin formula with a 95% confidence interval and a total population of 70; the calculated sample was 60. The data were collected from the different departments of the hospital, such as the Medical Ward, Surgical ward, medical ICU, surgical ICU, and Emergency Department. Data were collected using a Routine Blood Transfusion Knowledge Questionnaire (RBTKQ) adopted from the study [12]. The questionnaire consisted of two components. The 1st component is demographic information, and the other component is knowledge regarding blood transfusion, which consists of 32 items these 32 items (true-false and multiple-choice questions) that assess the nurses' knowledge regarding blood transfusion and related reactions. These questions were formulated to cover various aspects of blood transfusion, such as nurses" knowledge aspects of blood bag collection from the blood bank and patient preparation before, pre-transfusion initiation nursing responsibilities, post-transfusion initiation nursing responsibilities, and complications related to blood transfusion. The total tool score was converted into a percentage of those participants who scored below 50%, were considered poor knowledge, 50% to 70% considered average knowledge, and above 70% were considered a high level of knowledge regarding blood transfusion. Furthermore, the reliability of the tool is 6.83 [12]. Ethical considerations were given due importance in this research. Study approval was taken from the institute. Informed consent was obtained from all participants before their inclusion in the study. The researchers ensured that the participants understood the study's purpose, procedures, and potential risks or benefits. Confidentiality of the collected data were maintained, ensuring that participants' personal information remained anonymous and was not disclosed to unauthorized individuals. The participants were assured that their participation was voluntary and they had the right to withdraw from the study without facing any negative consequences. The data collected from the questionnaire were analyzed using the Statistical Package for the Social Sciences (SPSS) software, specifically version-26. The percentage and frequency were calculated for the demographic information and knowledge assessment.
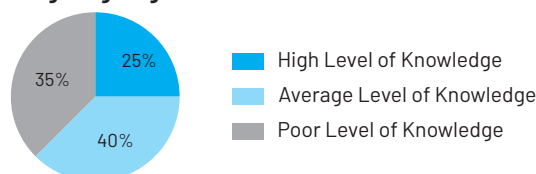
RESULTS

The participant's demographic details are shown in detail in Table 1. Regarding nurse's qualifications, the majority of participants, 66.7%, had a diploma, while 33.3% had a bachelor's degree in nursing. Regarding age categories, 70.0% of participants were between the ages of 20 and 25, 16.7% of individuals were between the ages of 26 and 30, and 13.3% of participants were beyond 30. According to the gender distribution, 58.3% of participants were female, and 41.7% were male. 33.3% of individuals had more than three years of experience, compared to 66.7% with less than three years. The majority (71.7%) of those questioned about their blood transfusion experience said they had done it, while 28.3% had not. Only 16.7% of participants reported receiving service training for blood transfusions, with the majority (83.3%) saying they hadn't. All participants (100%) agreed that there was a need for training in several areas regarding particular topics for additional education and training. These included testing, blood bag collection, administration, unfavorable reactions, and significant risks related to blood transfusion.

Table 1: Demographic Information of the Participants

Variables	Frequency (%)
Nurses Qualification	
Diploma in General Nursing	40(66.7)
Bachelor of Science in Nursing	20(33.3)
Age Group	
20-25 years	42(70)
26-30 years	10(16.7)
Above 30 years	8(13.3)
Gender	
Male	25(41.7)
Female	35(58.3)
Years of Work Experience	
Less than 3 years	40(66.7)
Above 3 years	20(33.3)
Experience with Blood Transfusion	
Yes	43(71.7)
No	17(28.3)
Received Service Training on Blood Transfusion	
Yes	10(16.7)
No	50(83.3)
Specific Areas for Further Training/Education	
Sampling	60(100)
Collection of blood bag	60(100)
Administration	60(100)
Adverse reactions	60(100)
Serious hazards	60(100)

Figure 1 shows that among 60 participants, 40% had an average level of knowledge, 35% had poor knowledge, and 25% had high knowledge regarding blood transfusion.

Knowledge Regrding Blood Transfusion

- High Level of Knowledge
- Average Level of Knowledge
- Poor Level of Knowledge

Figure 1: Knowledge of all the Participants

DISCUSSION

A vital medical procedure called a blood transfusion has risks and consequences that could arise [13]. Nurses are essential when giving blood products to patients and guaranteeing their safety. However, a lack of expertise among nurses in blood transfusion procedures might result in mistakes, unfavorable occurrences, and poor patient outcomes [14]. Despite the significance of nurses' expertise in this field, a thorough study on nurses' level of knowledge and any knowledge gaps surrounding blood transfusion techniques in the particular setting of a tertiary care hospital in Karachi, Pakistan, is lacking. To inform focused training efforts and improve patient safety, it is necessary to evaluate nurses' knowledge of blood transfusion and pinpoint any gaps or misunderstandings. The present findings revealed that 35% of the nurses had

poor blood transfusion knowledge. Another study conducted in Iran shows that most nurses lacked expertise in pre-transfusion procedures [15]. Another study conducted in India found a slightly different result that 58.00% of the participants had poor knowledge of knowledge base questions regarding blood transfusion [11]. In addition, another study from Malaysia found that 49.0% had poor knowledge of blood transfusion [16]. According to a related study by Elhy and Kasemy the nurses also showed low comprehension of their ability to apply their abilities throughout their job. As a result, as people deal with problems and obligations, knowledge and abilities get stronger [17]. Moreover, the current findings revealed that 40% of nurses had average knowledge of blood transfusion. A study from Malaysia supports the present findings and shows that 41% had average knowledge of blood transfusion [16]. In this regard, another study conducted in Iran revealed that the knowledge score range was between 3 and 12, with a mean of 9.58 [14]. Additionally, another study conducted in Malaysia found that the scores for the individual questions on prior knowledge of blood transfusion, pre-transfusion, post-transfusion, complications, and transfusion policy were 81.0%, 45.4%, 49.2%, 63.0%, and 90.0%, respectively. According to the study's findings, most nurses had an acceptable level of general knowledge about blood transfusion; as a result, training programs and ongoing medical education are necessary to enhance the nurses' expertise and ensure safe blood transfusion procedures [1]. The awareness and knowledge of blood transfusions are moderate, according to earlier research by Shamshirian et al., [18]. Present findings show that 25% had high knowledge of blood transfusion. A study from Malaysia found that 41.4% had good knowledge of blood transfusion [16]. In contrast, a study found higher levels of knowledge among nurses (43.1%) who had undergone training on the hemovigilance system [19]. In addition, another study from Eritrea found different results and showed that the majority of study participants, 93.7% had a good understanding of blood types, blood groups, and Rh [20]. The responders' grasp of blood transfusions is low and requires constant hands-on practice to improve their knowledge of human life. Due to their heavy workload, nurses do not seek out information and rely only on what they have learned via practice [16].

CONCLUSIONS

In conclusion, a significant proportion of the sample's nurses have poor knowledge of blood transfusion. To increase nurses' knowledge and guarantee the safe and efficient administration of blood transfusions, this emphasizes the necessity for specific educational interventions and ongoing professional development

programs.

Authors Contribution

Conceptualization: MHS
Methodology: AB
Formal analysis: RA
Writing-review and editing: RA, AB

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

Conflicts of Interest

The authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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