



The Study of Nurses Knowledge and Performance Quality of Qazvin Hospitals about the Process of Blood Transfusion

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Abstract

Introduction: Supplying blood and blood products, maintenance, transfer and injection of each component have its own specific process. Therefore, those responsible must at least have the awareness that relates to the transfusion medicine. The safety and effectiveness of blood transfusion depend on the knowledge and skills of nurses, who have taken the responsibility. The aim of this study is to assess the educational needs of nurses in the field of blood transfusion that leads to creating a good medical process for nurses in clinical departments of hospitals.

Methods: In this cross-sectional study, 124 nurses who participated in, were selected through random sampling in Qazvin hospitals in 1396. A questionnaire including 25 questions was used to evaluate the knowledge and performance of their awareness of different aspects of blood medicine, including maintenance, transferring, injection and post blood transfusion reactions. The scores of knowledge and performance encoded in three levels: low, medium, and good. Data analysis and correlation of variance were performed by using the software SPSS version 20.

Results: Research results showed that most of the subjects are in the age group 20-30 years (68.7%) and females (93%) and have a bachelor's degree in nursing (95.6%). Results showed that the mean score of knowledge was 9.58 ± 2.13 , and score range was 9 (between 3 to 12). The mean score of performance was 38.96 ± 2.17 , with range 10 (scores were between 30 to 40). The analysis of variance used to examine the relationship. The results suggested that there was a significant relationship between performance and knowledge of subjects ($P < 0.05$).

Conclusions: According to this study, nurse's knowledge level and awareness of blood transfusion are the media. Therefore, training, managers controlling and supervision programs seem to be necessary due to the great importance of the blood transfusion process and threaten the safety of patients. So, we recommend that this issue must be seriously included in academic courses and retraining in the field of blood transfusion, according to the latest available standards at the time of the nurse's employment.

INTRODUCTION

Blood has a valuable role in saving the lives of patients and is vital if used properly. The rapid growth of human knowledge in the medical field has saved the lives of millions of people all over the world and blood transfusions have played a crucial role in this field. The correct blood transmission is a complex issue and it is very dangerous without the use of special skills. The medical staff should be aware of roles and responsibilities of blood transfusion and should be familiar with policies of the countries in this field in order to reduce the risks associated with blood transfusion and receive related training and to be evaluated until they reach the necessary competence. Nurses are responsible for Blood Transfusion as part of a series of medical staff [1]. The safety and effectiveness of this process will depend on their knowledge and skills. Without appropriate provisions during a blood transfusion, it could have followed with fatal reactions. Acute hemolytic reactions, febrile reactions, and allergic reactions are the most important acute reactions that appear immediately after the beginning of blood transfusion. In addition to, these reactions incidence is higher in comparison to other complications, and are associated with significant mortality and morbidity [2]. Efforts to recognition and remove the complications associated with blood transfusions and reform their causes reduce: infection and disability, On the other hand, increase the services to hospitals, patient satisfaction, improve output hospitals and ultimately cause improvement in social health. Hemovijulans (the blood maintenance) in whole blood transfusion chain (from the time of blood collection to injection) is done in order to avoid potential complications in the receiver caused by blood transfusion and its products, to prevent them again if its possible [3, 4].

The studies conducted in the country and abroad show low to the moderate knowledge level of nurses and performance to blood transfusion [5]. While this can be a serious threat to the patient's life. Therefore, training programs, control, and supervision seem to be necessary to ensure safe transfusions, to correct the patient at the right time [6, 7]. Studies between 1997 and 2000, show that the most common error of blood transfusion is the wrong blood product administration [8]. Among the factors contributing to these human errors, incomplete control or lack of patient's identity control of the prior to injection, the patient profile records, the mistakes on the label units of blood or blood request form and lack of proper care during blood transfusion, is according to The high incidence of blood transfusion and the importance of this step in saving the lives of patients and its interconnected efficacy with knowledge and skills of blood transfusion, knowledge and excellent performance, of nurses seem to be necessary. Regarding the items listed above as well as the ultimate goal of health care provider organizations such as accessing

public health; And due to the lack of research on the process of blood transfusion in the study and needs to know the current state of knowledge and practice of nurses. As an introduction of health care quality improvement programs, we do this study with the aim of assessing the knowledge and performance nurses in the process of blood transfusion in hospitals of Qazvin [9].

METHODS

This cross-sectional study conducted in 1396. The population under study contains the nurses from hospitals of Qazvin city which are available samples from different departments. A total of 124 nurses were selected due to their desire to participate in the study. 7 hospitals (hospitals under the supervision of the Qazvin University of Medical Sciences) were selected randomly of all Qazvin hospitals to keep the random selection. Data collection was through questionnaires. Face and content validity of the questionnaire was confirmed by experts in the field of transfusion medicine. Its reliability was calculated using Cronbach's alpha. The questionnaire was composed of three parts. The first part includes questions about demographic characteristics like (age, sex, level of education, duration of employment). The second part consisted of 15 questions related to the mentioned topics; Indications for transfusion of blood and blood products, storage and transfusion of them, transfusion reactions, the maximum duration of a complete injection of a blood unit, the dilution during injection if necessary, the method of response the potential hemolytic transfusion reaction, the transmission conditions of blood packs and blood products in terms of temperature, the name of anemia therapy products, the blood heating procedure as well as changes in the maintenance of blood. Score one and zero was awarded to each correct and incorrect answer respectively and the maximum score of knowledge was 15. The score 0 to 7 as a poor, 8 to 12 as a medium, 13 to 15 as a good knowledge level was considered. The second part of the questionnaire contains 10 questions about the function of the blood transfusion which was a five-item Likert scale from never to always evaluated and rated from 0 to 4. The Maximum performance score was 40. The point (0 to 30) define as a poor performance, (31 to 36) as average performance and (37 to 40) was considered as good performance. Data analyzed by analysis of variance and Pearson correlation was performed using the software SPSS ver.20.

RESULTS

This study confirmed on 124 nurses (93% female and 7% male), while most subjects contained young people with updated academic knowledge to make the most accurate assessment possible (68.7% of involved subjects categorized in 20 to 30 years old group). 4.4%

of Nurses had with a master's degree and the remaining had a bachelor's degree in nursing. The average age was 31 ± 5 , and the average of work experience was 5.5 ± 3 . The mean score of knowledge was 9.58 ± 2.13 , that were between 3 to 12 and its range was 9. The mean performance score was also 38.96 ± 2.17 and that scores were between 30 to 40 and its range was 10. The results of nurses' performance showed that 68.54% of them assessed their performance in blood and blood product transfusion at a good level and the rest in medium (Table 1). The analysis of

variance used to examine the relationship. The results suggested that there was a relationship between performance and knowledge of subjects ($P < 0.05$).

The mean performance of all nurses in the process of blood transfusion and its products was higher than 3.4 (maximum score is 4). The analysis of variance was used to examine the relationship. The results suggested that there is a relationship between the performance and knowledge of the subjects ($P < 0.05$) (Table 2).

Table 1: The Relationship between Performance and Accepted Nurses

	Sum of squares	Mean squares	F-statistics	Meaningful level
Among the groups	27.43	27.43	---	---
Within the groups	556.43	4.56	6.01	0.016

Table 2: The Percentage of Nurses' Performance of Qazvin Hospitals due to Blood Transfusion and Blood Products in 1396

Row	Statements	Always	often	Sometimes	rarely	never
1	patient's history Review	93.1	12.1	0.8	0	4
2	Post and implement of adaptation	96	4	0	0	0
3	control of blood product specifications with physicians and blood application form	100	0	0	0	0
4	Examination of the blood bags quality	98.4	1.6	0	0	0
5	The patient identification	94.4	5.6	0	0	0
6	The patients training about the reaction to blood transfusion	84.7	10.5	1.6	3.2	0
7	beginning of slow blood transfusions	90.3	5.6	1.6	0	2.4
8	Patient observation during blood transfusions	93.5	5.6	0.8	0	0
9	Checking patients for the adverse reactions occurrence	93.5	6.5	0	0	0
10	Monitoring and record vital signs before, during and after	93.5	6.5	0	0	0

DISCUSSION

Obtaining sufficient information about the use of blood and its products is necessary to achieve the best clinical outcome. In the present study, the performance quality and knowledge of nurses about blood transfusion are in the medium level, so it is necessary to increase knowledge and improve the caring performance in this field. The defect in this field can lead to incorrect blood or blood products injection, imposing costs on patients, increasing the likelihood of errors when administering blood and increased complications in blood recipients. An overview of studies showed that there were different results for nurses' knowledge [10]. For example, in a study conducted in France between 2002 and 2005 showed that the state of knowledge in the field of blood transfusion has been reported very weak and poor. 47.1% of nurses in teaching hospital of Birjand in 1381, has had poor knowledge of blood transfusion. Aslani et al. study in 2010 have described that nurse's information of Saints centers affiliated to University of Shahrekord Medical Sciences in the field of blood transfusion is an intermediate level [11, 12]. Another study showed that the knowledge of physicians and nurses depend on years of employment [13]. In another study also was shown that the knowledge in the field of transfusion medicine will be increased, by increasing the duration of employment. In this study, the knowledge of physicians and nurses after training is significantly increased and it shows the importance

of education in raising awareness of doctors and nurses [14, 15]. Another study showed that 97.1% of nurses believed that they didn't train enough in the field of transfusion medicine and 98.6% believed to need more education in this filed [16, 17]. in another study, showed that medical and nursing graduates have to know and be aware of the amount and type of blood products and blood substitutes in patients who need [18]. As a result of another study showed that more than half of the participating nurses in the study have the right knowledge about blood transfusion. It seems that design algorithmic training courses in the field of blood transfusion medicine, can lead to improving awareness of hospital staff about blood transfusion and blood products [19]. Previous results of the studies comparing with the present study show that nurses' knowledge has improved over time, but still, it is incomplete. The educational systems and academic medical centers should be planned to increase the level of nurse's knowledge because of the great importance of the blood transfusion process and threaten the safety of patients. Monitoring by standards about the blood transfusion is recommended in the nurse's employment. Allergic reactions, febrile, hemolytic and septic are among acute reactions of transfusion and adverse unwanted effects resulting from it [20]. Medical staff should be familiar with the symptoms of these reactions and know how to manage them to prevent

further adverse consequences, Graaf et al, have seen that difficult access and poor oversight over the process of blood transfusion guidelines, including the causes of unwanted reactions transfusion in Uganda [6]. in the study of Silver about "recognize abnormal post-transfusion reactions", 47.1% of nurses' knowledge was poor. Kaplan pointed out the importance of the nurse's protective role in safe blood transfusion, and believed that patient monitoring during a blood transfusion can be effective to prevent the risk of complications [6].

In Hijji et al study, in 2010 in the United Arab Emirates, the performance of 49 nurses in two hospitals was observed, which 75% of them have received low scores. the Most performance defect was including incorrect patient identification and unprincipled methods of blood heating [3].

The results of Flood et al study in 2016 showed that nursing students didn't have appropriate knowledge and practice of the importance of blood transfusion before training [21].

The present study result about the nurse performance and blood transfusion showed that most of them (68.54%) are at a good level and only about 31.46% are in intermediate level. Burnett in 2016 has mentioned such function like checking vital signs before, during and after blood transfusion, record the observation during any blood unit's injection, as "good performance in Blood transfusion". He has expressed that repeating and recording vital signs, help to identify adverse reactions caused by blood transfusion [22].

CONCLUSIONS

The result of this study generally showed that the quality and performance of most nurses were at the medium level. So, having more knowledge about the blood transfusion complication and improving the protective performance base on nurse's duty, due to their important role, are necessary. Knowing the complication of each blood product and their incidence, increase the nurse and other health staff preparations to face and deal with the effects and will reduce the adverse consequences resulting from these lifesaving treatments, because the nurse's mistakes in blood transfusion cause damage, not only to the patient, but also to the nursing profession. Finally, the results of this study require retraining programs and seminars to raise awareness of the staff in the field of transfusion medicine, and inclusion transfusion medicine unit in the Curriculum of Students, activation blood transfusion committee and control and supervision in this field.

ETHICAL CONSIDERATION

This article approved in Qazvin University of medical science by the Ethics Approval Code no. IR.QUMS.REC.1394.263.

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CONFLICT OF INTEREST

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AUTHOR'S CONTRIBUTION

Z.T., H.R. and H.P. carried out the experiment. F.N. wrote the manuscript with support from AH.M. M.A. and MH.A. helped supervise the project and conceived the original idea.

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