

## Nurses Knowledge about correct methods of blood transfusion in Educational Health Centers in Kerman, Iran

### ABSTRACT

**Background and Objective:** Nurses play a critical role in a safe blood transfusion. Therefore, it is crucial for them to have sufficient knowledge and experience. The aim of this study was to evaluate the nurse's knowledge about correct methods of blood transfusion of nursing staff in educational health centers in Kerman, Iran

**Materials and Methods:** This cross-sectional descriptive-analytical study included all nurses (N=351) in health training centers in Kerman city in 2018. The data were collected through a self-administrated questionnaire. Data were analyzed by software SPSS version 20, using descriptive statistical tests including chi-square. Statistically significant value was considered at  $P \leq 0.05$ .

**Results:** In this study 351 nurses, 286 women (5/81%) and 65 men (18.5%), completed the questionnaire. Total mean scores of nurse's knowledge and self-evaluation were  $8.76 \pm 2.3$  and  $37.31 \pm 3.7$ , respectively. A significant relationship was observed between work experience and knowledge. Also, the relationships of self-evaluation with age and workplace was significant at  $P \leq 0.05$ .

**Conclusion:** Our Result showed a moderate level of nurse's knowledge and self-evaluation, suggesting more attempts for increasing the knowledge in healthcare workers about blood transfusion. This can be achieved by holding workshops and training classes.

**Paper Type:** Research Article

**Keywords:** Blood transfusion, Nursing, Knowledge, Educational Health Centers

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## Introduction

Blood is an extremely specialized tissue especially in times of crisis that would save the lives of patients. Blood transfusion is important and requires sufficient knowledge and practice(1-2). Incompatible blood transfusion can cause severe and sometimes fatal reactions. Blood transfusion is of vital importance in many diseases such as thalassemia, hemophilia, open surgical procedures, labor, etc (3). Because of the risk of blood-borne diseases including serious infectious disease, it is necessary to use blood transfusion treatment according to the principles and standard criteria (4). With it, blood transfusions should be performed with great care. The risk of morbidity and mortality usually depend on the speed of injection and blood volume transfused. But it has been observed such threats occurred even by transferring 10 ml of blood (5). Blood transfusion may be associated with non-hemolytic reactions such as pyrogenic reactions, allergic reactions, decreased body temperature, bacterial contamination and poisoning (6-7). Each year, about 3 million blood and its products transfusions are performed in Iran, so it is necessary to completely investigate the necessary standards at all stages of the blood transfusion cycle (8). One of the most important medical procedures is the appropriate blood transfusion method, which is dangerous without adequate and specific skills (9). In effective and standard blood transfusion, some factors such as the level of education, appropriate training method, adequate knowledge and the working experience of blood injector are influential. The most important people who are involved in the hospital's blood transfusion cycle are nursing experts and medical students (10). Scientific supervision and control of the blood transfusion cycle will be effective when individuals have the least necessary knowledge about their tasks.

Awareness of this knowledge is effective in educational planning in the related fields (11). Several studies have been conducted in Iran on the students' and medical staff' knowledge of the appropriate methods of blood transfusion, which indicate the lack of effective curriculum in training transfusion medicine. In Iran, 93% of graduated physicians had less than half of the minimum knowledge required for the appropriate blood transfusion techniques (5, 12). Therefore, healthcare workers should have a defined responsibility of blood transfusion and receive profound theoretical and practical knowledge to achieve appropriate qualification (13). Due to the high incidence of blood transfusion in hospitals and its vital role in saving patients' lives, this study aimed to assess the nursing staff performance and knowledge of the appropriate blood transfusion methods in educational health centers in Kerman in 2018 to help experts for planning in this field.

## Materials and Methods:

This study was a cross-sectional descriptive-analytical study, the study population included all nurses who work in educational and health centers in Kerman city from April to September in 2018. Given that the blood transfusion is less needed in psychiatric centers, these hospitals were not considered. The study population was all nurses in the mentioned hospitals (N= 351). Therefore, 351 nurses completed the questionnaire. After obtaining permission from relevant agents and organizations, the researchers referred to the active wards of the hospitals to complete the questionnaires. After explaining the procedures of the study to nurses, they were asked to complete the questionnaires. There was no specific restriction for the completion of the questionnaire and if a nurse did not have time to complete the questionnaire, the researcher would

coordinate with him/her in order to complete the questionnaire at a later time, so that the questionnaires were thoroughly completed.

Data were collected through a self-administrated questionnaire. The questionnaire contains three components. The first part included demographic characteristics (age, gender, work experience, education level, and the health center's service sector). The second part of the questionnaire contains 14 multiple choices (2-3), questions on nurses' knowledge of safe blood transfusion with 1 point for a correct answer and 0 points for an incorrect answer. So nurses' knowledge was assessed between 0-14. Scores between 0-7 were considered as "bad", scores between 8-10 as "moderate", and scores between 11-14 as "good" knowledge. A five-item Likert scale (0-4) was used in the third part with 10 questions about self-assessment of blood administering practices. With regard to the 10 questions in this part, the score varied between 0-40. Scores between 0-30 were considered as poor performance, scores between 31-36 as average performance and scores between 34-40 as good performance. This questionnaire was used by Pour Farzad and et al to assess the knowledge and practice of blood transfusion in hospitals of Arak in 2010 (14). However, the validity assessment was performed through content validity by 6 instructors (Include: Nurses and Epidemiologist). Reliability was obtained with Cronbach's alpha test on the results of 45 questionnaires,  $r=0.77$ . Data were analyzed by software SPSS version 20, using statistical tests using descriptive statistics, chi-square. The statistical significant value was considered at  $P \leq 0.05$ .

## Result

In this study, 351 nurses completed the questionnaire including 286 women (81.5%) and 65 men (18.5%), respectively. Regarding

the work experience, 125 subjects (35.6%) had less than 10 years of experience, 161 ones had between 10 and 20 years of experience (45.9%) and 65 ones had a history of more than 20 years of experience (18.5%). The mean age was  $27.6 \pm 5.4$  and the mean of work experience was  $14.2 \pm 3.6$  (table 1). The total mean score of nurses' knowledge was  $8.76 \pm 2.3$  and the total mean score of self-evaluation was  $37.31 \pm 3.7$ . There was no significant relationship between the variables of sex, marital status, type of employment and the health center's service sector with knowledge of nursing staff. But the relationship between years of experience with nurses' knowledge was significant so that those with a history of more than 20 years of experience gained the mean of 11.1. Also, there was no significant relationship between marital status, type of employment and job experience with the self-assessment score. But, between the gender and service sector with the self-evaluation score, there was a significant relationship. So that woman with self- evaluation mean score of 38.09 and those working in intensive care units with the mean score of 38.12 gained higher scores of self- evaluations. (Table 1).

## Discussion

The results showed that the total mean scores were  $8.76 \pm 2.3$  for nursing staff knowledge and  $37.3 \pm 3.7$  for self-evaluation, meaning that the level of nursing staff knowledge was of average and self- evaluation was good. Compared to a previous survey that was conducted by Amouzeshi and et al in Birjand University of Medical Sciences on Students mean scores knowledge about blood transfusion, better results were obtained (15). On the other hand, the results of this study were consistent with those of a study conducted on 170 medical personnel of Educational Health Centers of Zahedan in 2011, which reported

**Table 1. Mean and standard deviation Score of knowledge and self- evaluations base on demographics variables**

Demographics variables		N (%)	Knowledge Mean ± SD	p*	self- evaluations Mean ± SD	p*
Gender	Man	286 (81.5)	8.71±2.16	0.3	37.14±3.11	0.03
	Female	65 (18.5)	9.02±2.48		38.09±3.48	
marital status	Married	247 (70.4)	8.11±2.01	0.2	36.82±2.93	0.4
	Single	104 (29.6)	8.41±1.95		37.12±3.14	
contract status	Official	28 (7.9)	9.8±2.14	0.1	8.89±3.78	0.2
	Contractual	106 (30.2)	8.87±2.31		38.26±3.19	
	Contract	186 (53)	8.14±1.8		37.19±4.12	
	Plan	31 (8.9)	8.89±2.1		36.73±3.22	
Work Experience	under 10 years	125 (35.6)	7.87±2.23	0.03	37.01±4.25	0.5
	10-20 years	161 (45.9)	9.9±1.87		37.5±3.98	
	Over 20 years	65 (18.5)	11.1±2.06		38.44±2.83	
Service location	Emergency	116 (33)	8.67±2.12	0.2	37.41±3.30	0.04
	ICUs	68 (19.4)	10.61±1.98		38.12±4.11	
	Other sectors	167 (47.6)	8.03±2.21		36.89±3.61	

\*P≤0.05 was significant, Chi-square test

similar results about the personnel knowledge of the appropriate blood transfusion methods(16). Based on the results obtained in this study there was a significant relationship between work experience and knowledge of the personnel. Research results by Poorfarzad et al in Arak on knowledge of nurses in relation to blood transfusion showed that the majority of them (63.9%) had good performance self- evaluation and there was a significant relationship between knowledge and practice of the nurses(14). Also, compared to the studies that have been carried out abroad, in 2010 in the United Arab Emirates and in 2002 in France, Nursing staff knowledge of blood transfusion practices was moderate (18-17). The results showed that in terms of gender, women had better knowledge of blood transfusion practices than men. Also, a significant relationship between self- evaluations scores were obtained in women compared to men. Singles received better scores of knowledge and self- evaluation than married, but no statistically

significant relationship was found. Regarding the type of employment, the knowledge of official personnel was better than the others, but no statistically significant relationship was found.

In terms of work experience, people with over 20 years of experience achieved higher performance self- evaluation and knowledge. Also, a significant relationship between knowledge and work experience was found, indicating that higher experience will help the employee's performance self- evaluation improve. Regarding the service sector, the results showed that who were working in special care units were more aware than in other sectors.

### Conclusion

The level of knowledge and practice of nursing staff was moderate. The need to increase nursing staff knowledge about various aspects of blood transfusion is necessary. This is achieved through workshops and training courses. In the United States of America, the transfusion medicine

resource committee cares for quality in the transfusion practice (19). Considering the existence of blood transfusion committee in the studied centers that one of its tasks is the training of relevant personnel in blood transfusion practices, it is necessary for the committee to assess personnel training needs and establish a training program for the providers from the beginning of employment and after getting started in the wards.

**Conflict of Interests:** The authors declare that they have no conflicts of interest.

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