

Original article

Knowledge and Awareness of Nursing Students on Blood Transfusion

Amir Shamshirian¹, Zahra Alirahimi², Atiyeh Ghorbanpour¹

Sepideh Motamen¹, Negar Maadi¹, Parvin Zamani¹, Ali Reza Mohseni^{3*}

1. Department of Laboratory Sciences, School of allied medical science, Student Research Committee, Mazandaran University of Medical Sciences, Sari, Iran

2. Department of Laboratory Sciences, School of allied medical science, Student Research Committee, Mazandaran University of Medical Sciences, Amol, Iran

3. Department of Laboratory Sciences, School of allied medical science, Mazandaran University of Medical Sciences, Sari, Iran

*Correspondence: **Ali Reza Mohseni**, Department of Laboratory Sciences, School of allied Medical Science, Mazandaran University of Medical Sciences, Sari, Iran. E-Mail: mohseni2404@gmail.com

Abstract:

Introduction: Today, blood transfusion is one of the most important life-saving measures for people, but in case of individual errors, it can lead to many complications and even death. In health-care centers, different people are involved in blood transfusion process and nurses play one of the most important roles in a safe transfusion. Therefore, the aim of this study is to evaluate nurses' knowledge about the use and effects of blood products in nursing students of Mazandaran University of Medical Sciences in 2017.

Methods: In this descriptive study, knowledge and awareness of 153 nursing student were evaluated by a questionnaire consisted personal socio-demographic questions and specific questions about the blood transfusion. SPSS 16 software was used for data analysis.

Findings: A total of 153 participants in this study, 53 students (34.6%) were males and 100 of them (65.4%) were females by the mean age of 20.79 (± 2.4). Only 33.4% of nursing student answered to general information correctly and in terms of blood usage, transfusion process, and blood transfusion complications, respectively 22.45%, 27.1% and 20.8% of students had good knowledge. Overall, the results of this study showed that only 25.9% of nursing students had good knowledge and awareness about blood transfusion.

Conclusion: Results showed that awareness and knowledge of nursing students about blood transfusion is average downward. In addition to the need for comprehensive studies, theoretical and practical courses on blood transfusion medicine in educational curriculum and holding workshops on blood transfusion medicine may help to increase the awareness of nursing students.

Keywords: Blood transfusion, Nursing students, Knowledge, Awareness

Introduction:

Transfusion of blood and its products is an effective therapeutic process in modern medicine all over the world (1, 2). However, blood transfusion is a common lifesaving treatment for patients, it may responsible for a variety of complications and risks (3). Mistakes that occur in blood transfusion procedure mostly cause no severe issues for blood recipients but acute and fatal reactions are not rare (4, 5). As there is the possibility of error in every step of blood transfusion procedure, close collaboration of clinicians and sufficient knowledge is essential for proper utilization of blood products and safe transfusion (6, 7).

Nurses play an important role in safe blood transfusion procedure (1). Lack of sufficient knowledge of blood and its products transfusion among nurses can lead to many complications in patients (1, 4, 6). Therefore, it's necessary for nurses to be aware of hazards and benefits of blood transfusion (4). Some important issues about blood transfusion that nurses must be aware of them included: blood unit storage, correct blood preparation before transfusion, adverse reactions after transfusion, probable side effects and essential emergency cares in case of acute transfusion reaction occurring (1, 4).

According to statistics, the majority of mistakes occurring in hospitals, include neglect in observation of recipients during transfusion, patient misidentification and transfusion of wrong blood units (4). These errors are associated with inadequate training and lack of experience because of fewer blood transfusions activities in some hospital's wards (8).

Previous studies showed that awareness and knowledge of clinicians especially nurses

about blood transfusion is average (9, 10). For example, a cross-sectional study of nurses' operation and knowledge in Arak hospital showed that 50.9 % of nurses have good awareness, 33.5% have average information and 15.6% have insufficient knowledge (11). Study of Salarvand *et al.* (9) indicated that nurses working at Gonabad educational hospital have an average knowledge and awareness about blood transfusion procedure. Although some studies have shown that nurses' knowledge of blood transfusion is more than other medical staff, more studies are still needed for planning and conducting training programs for nurses and correct the curriculums (12).

Therefore, according to the vital and important role of blood transfusion in preserving the lives of patients and since the safety and efficacy of blood transfusion are dependent on the knowledge and skills of nurses, this study conducted to evaluate nurses' knowledge and awareness of blood transfusion.

Methods:

This study is a descriptive cross-sectional study on knowledge, and awareness of 153 nursing students of Mazandaran University of Medical Sciences was evaluated in 2017. Sampling was randomly and the sample size measured 187 people based on *Cochran* formula with an accuracy of 5% and a confidence level of 95%.

Data were collected by a questionnaire that consisted of 2 parts of 2 pages and 24 questions. The first part was devoted to socio-demographic questions (such as gender, age, marital status, course, *etc.*) and the second part was dedicated to specific

questions about the blood transfusion. The section of specialized questions was divided into four main parts related to blood products transfusion: General information of blood transfusion, Blood and its products usage, Injection process and Transfusion complications. Our team members asked students to fill out anonymous questionnaires completely voluntarily and explained to them that the questionnaire is designed with the purpose of research and also it was done in the classrooms, hospitals, and dormitories. 34 questionnaires for various reasons such as missing and incomplete filling were excluded from the study. To analyze the data, socio-demographic information's percentage, variables of questions part's percentage, mean (M) and standard deviations (SD) were calculated. All analysis conducted using the Statistical Package for the Social Sciences 16.0 (SPSS Inc., Chicago, IL, USA) software.

Findings:

Socio-demographic data revealed that out of 153 participants in this study, 53 students (34.6%) were males and 100 of them (65.4%) were females by the mean age of 20.79 (± 2.4). Regarding marital status, 132 participants (86.2%) were single and 21 of them (13.8%) were married. According to the results, 63 of respondents (41.1%) were living in a dormitory and 90 students (58.9%) were not living in a dormitory. All demographic information was presented in Table 1.

According to Table 2, results showed that 33.4% of nursing student's selected correct answers about general information of blood transfusion. In the questions related to blood and its products usage, 22.45% of participant answered to the questions correctly. In the

group of injection process questions, findings indicated that 27.1% of the respondents answered the questions correctly. The last evaluated section was about blood transfusion complications, with 20.8% correct answers. Overall, the results of this study showed that only 25.9% of nursing students had good knowledge and awareness about blood transfusion.

Discussion:

Results showed that nurses' knowledge about blood and its products was low (22.45%). Data analysis revealed that the lowest level of awareness related to questions about cryoprecipitate and Fresh frozen plasma (FFP), however, usage of whole blood and packed red blood cell is more known among nursing students due to the extreme volume of usage.

The finding showed that the nurses' awareness regarding general information of transfusion-related tests like blood type tests of ABO group and Rh compatibility between donor and recipient, Antibody screening, cross-match process *etc.*, was also average, however, the highest percentage of correct answers belonged to these questions.

The third group of questions was about blood transfusion process, unfortunately, in spite of important role of nurses in transfusion procedure, knowledge and awareness of them was approximately low (27.1%).

In the following, results indicated that nursing students' knowledge about blood transfusion complications is low (20.8%) in Mazandaran University of Medical Sciences and as it's obvious the lowest percentage of right answers belongs to this section. This is a serious warning because play an important role in the survival of the patient in case of

occurring any abnormal and acute transfusion-related reactions. Today, reducing blood transfusion complications is a vital issue and many strategies have been taken to achieve this goal. The training of expert nurses, though not able to bring these risks to zero, will surely be effective and beneficial (13).

Although the results of a study conducted by Payande, *et al.* (14) titled “*Descriptions of Acute Transfusion Reactions in the Teaching Hospitals*”, showed that among 6238 blood unit transfused to the patient 59 cases of blood transfusion reactions occurred since 2010 to 2012, This pattern can be reduced by providing nurses with proper training.

Study of Salarvand, *et al.* (9) indicated that nurses working at Gonabad educational hospital have an average knowledge and awareness about blood transfusion procedure. Results of the mentioned study are in the same line with our study which confirms this statement that there is a severe educational weakness in the nursing student's curriculum. The other study conducted by Aslani, *et al.* (11) (2010) showed that nursing students of Shahrekord University of Medical Sciences have an average information in all investigated areas such as blood and its products usage and effects. Besides, they recommended that blood bank committee of the hospitals can be effective and beneficial to reduce possible complications by holding compulsory or optional workshops on blood transfusion medicine for nurses.

Comparing the results of the present study with other prior studies, clearly showed that the nurses' awareness has not increased in recent years and it seems that nursing students are not well trained in blood transfusion medicine. On the other hand, the

knowledge of nurses on blood transfusion is not up to date according to international standards. Since the inadequate knowledge of nurses can enhance probable risks of blood transfusion for patients, we recommend that blood transfusion medicine course should be added to the nursing student's curriculum.

Knowing the basic sciences of blood banking and blood transfusion is necessary for all nursing students. The safety of patients and a reduction in blood products wastage are the most important issues in blood transfusion process (15, 16).

Training skilled nurses with adequate knowledge about blood and its products and blood transfusion reactions can reduce the potential risks of blood transfusion. Moreover, hospital costs will be significantly reduced, because production and storage of blood products is a very costly process for blood centers and hospitals. In 2006 The World Health Organization (WHO) reported that the problems associated with safe blood transfusion and its barriers are global and are not limited to a specific country (16). It means that more studies are still needed to conduct on behalf of an appropriate and strategic plans for nursing students.

One of the limitations of this study was a small sample size, which would have been more reliable when it came to a larger community.

Conclusion:

Results of this study indicate that awareness and knowledge of nursing students about blood, its products, and blood transfusion is average downward. Given the importance of this issue and the importance of human life, needs to call some comprehensive

nationwide and even global studies in terms of finding the factors which cause this lack of knowledge in all students, especially students who are dealing with human lives to develop the training and preventing the irreversible consequences. Although other studies are still needed to find more effective methods to improve nurses' skills and knowledge but these recommendations can be useful to increase nurses' knowledge on the subject: a) Adding theoretical and practical courses about blood transfusion medicine to educational curriculum, b) Holding workshops on blood transfusion medicine for nurses in hospitals.

Conflicts of Interest

The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper.

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Tables and Charts:

Table 1: Demographic information of respondents (N=153)

Gender (%)		
	Male	53(34.6)
	Female	100(65.4)
Age (year)		
	Min	18
	Max	37
	Mean (SD)	20.79 (± 2.4)
Marital status (%)		
	Single	132 (86.2)
	Married	21 (13.8)

Table 2: Information about questionnaire questions

	Frequency (%)		
	CA	IA	N
General information of blood transfusion	51 (33.4)	78 (51)	24 (15.6)
Usage of Blood and its products	34 (22.45)	55 (36.3)	60 (41.25)
Injection process	40(27.1)	47 (32.4)	58(40.5)
Blood transfusion complications	29 (20.8)	62(43)	49 (36.2)
Total	39(25.9)	61(40.7)	48(33.4)

CA: Correct answer, IA: Incorrect answer, N: Non