



## EXPERIENCES OF NURSING STUDENTS IN PRACTICING BLOOD TRANSFUSION

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**Abstract:** Healthcare professionals need to know about blood transfusion. The purpose of this study is to determine the experiences of nursing students on blood transfusion and their opinions on the influencing factors. In this qualitative study, the sample of the study consisted of 12 second, third, and fourth-year nursing students who were continuing their education at a state university. In the study, data were collected by conducting in-depth interviews via a semi-structured interview form. In the study, the data were coded under two themes including nursing students' experiences with blood transfusion (three sub-themes: level of theoretical knowledge about transfusion, fear of making mistakes, and inadequate practice) and the factors affecting these experiences (four sub-themes: factors related to patients' relatives, factors related to patients, factors related to the practice and training related factors). As a result of the study, nursing students were observed to have different fears regarding blood transfusion. In the education of nurses, it is recommended to organize training on this subject for nursing educators and manager nurses.

**Keywords:** Nursing student, Blood transfusion, Qualitative research

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Received: October 21, 2022

Accepted: February 26, 2023

Published: April 01, 2023

Cite as: Özel Çakır F, Bulantekin Düzalan Ö. 2023. Experiences of nursing students on practicing blood transfusion. BSJ Health Sci, 6(2): 279-285.

### 1. Introduction

Blood is a living tissue with very specific structures for each of its functions. Blood transfusion is a tissue and organ transplantation procedure. The goal of modern blood transfusion treatment is primarily to replace deficiencies (Ördekçi, 2006). Blood transfusion is aimed at replacing blood volume and missing blood components, increasing the oxygen capacity of blood in patients with anemia, regulating lipoproteinemia, applying blood exchange and extracorporeal circulation, providing oxygen transport to the tissues, and correcting bleeding and coagulation disorders (Sarı and Altuntaş, 2007). Blood transfusion can be a life-saving procedure, but it can also result in life-threatening complications if it is done wrongly. Not performing security checks such as writing the patient's identity wrongly, putting blood into the wrong tube, or wrong procurement, wrong labeling, warming the blood wrongly, not giving it for the right length of time, or with suitable solutions can cause transfusion complications. Wrongly identifying the blood unit or the recipient or not checking the patient's identity at the bedside are among the most important reasons for lethal transfusion reactions. A bedside check before transfusion is stated as the last chance to prevent a wrong transfusion (Whitehead et al., 2003; Çetin, 2013). As nurses are the primary persons to carry out these checks and perform the transfusion, they must be very careful and act in an informed way (Güteryüz, 2015).

Blood transfusion reactions are febrile non-hemolytic reaction, acute hemolytic reaction, allergic and anaphylactic reaction, transfusion-related acute lung injury, transfusion-related circulatory load/fluid loading, septic transfusion reactions, bacterial contamination, post-transfusion purpura and transfusion-related graft versus host disease (Köroğlu and Altuntaş, 2018). Nurses' mistakes concerning blood transfusion are reported to be associated with blood transfusion, insufficient monitoring and assessment of changes in the patients, and not following the current protocols (Çetinkaya-Şardan, 2011). In a study by Baltacı et al. (2015), it was found that the majority of nurses performed the application steps of blood transfusion correctly (Baltacı et al., 2015).

Blood transfusion is a procedure relating to nurses, and nurses are responsible for preparing for the transfusion, and for assessment before, during, and after the transfusion. To prevent possible complications, the patient must be constantly monitored throughout the transfusion (Öğce, 2008). Nursing educators should ensure that student nurses learn how to apply blood products safely. Here, nursing students should be able to recognize transfusion reactions immediately, apply appropriate interventions, and establish effective communication with healthcare providers (Flood and Higbie, 2016). Shamsirian et al. (2017) showed in a study that only 25.9% of nursing students had enough



knowledge and awareness about blood transfusion (Shamshirian et al., 2017). Güneş et al. (2008) determined that 91% of nursing/midwifery students received their information about blood transfusion from theoretical courses and texts during school education and 33% learned it from textbooks, the internet, and seminars (Güneş et al., 2008). When the literature is examined, the number of studies on student nurses and blood transfusion practice is seen to be limited. Therefore, this study was planned to determine nursing students' experiences with blood transfusion and their opinions about the influencing factors.

## 2. Materials and Methods

The research is a qualitative study based on content analysis, which was planned to determine nursing students' experiences related to blood transfusion. The twelve students participating in the study were selected based on the purposeful sampling method and analyzed. The sample was composed of second, third, and fourth-year nursing students who agreed to participate in the study and had previously participated in blood transfusion practice.

In the study, the data were collected with a semi-structured interview form. In the preparation of questions placed in the form, 17 questions prepared as a result of a review of national and international literature related to the research topic were included (Baltacı et al., 2015; Çetin, 2013; Ergin et al., 2018; Flood and Higbie, 2016; Güleriyüz, 2015; Güneş et al., 2008; Köroğlu and Altıntaş, 2018; Ögce, 2008; Ördekçi, 2006; Sarı and Altıntaş, 2007; Shamshirian et al., 2017; Whitehead et al., 2003). These questions are presented in Table 1.

**Table 1.** Semi-structured main interview questions

1. How would you describe the practice of blood transfusion?
2. Have you received information about the blood transfusion application?
3. Does your previous hospital experience change your attitude towards blood transfusion practice?
4. Are you in a team spirit with your colleagues?
5. What is the root cause of our fears about blood transfusion practice?
6. What are your fears about the behavior of patients and their relatives during blood transfusion?
7. What are your fears associated with nurses and teaching staff in blood transfusion practice?
8. What are your fears associated with patients in blood transfusion practice? What kind of patients, such as communication with the patient?
9. What are your fears of malpractice in blood transfusion practice?
10. What are your reasons for not feeling confident in blood transfusion practice?
11. Do you feel ready for blood transfusion practice?
12. Attachments

At the end of the interview form, two closing questions were asked, about whether they had any suggestions for the other students and whether there were other things

they wanted to add. The students were allowed 30-45 minutes for the interview, and the data were collected. Interviews were made by the researchers by face-to-face method. Research data collection continued until saturation was reached (Erdoğan, 2021). After the interviews, the data were converted into Microsoft Word format, and the analysis of the research was carried out. The data of the study were analyzed on the Nvivo 10 program and the concepts, facts, and processes obtained were included in the following data collection stages. First of all, the data obtained were copied, and the copies obtained were checked again against the original save and corrections (Erdoğan, 2021). Themes and subthemes are presented in Table 2.

**Table 2.** Themes and subthemes

Theme 1 - Knowledge and thoughts of nursing students about blood transfusion practice
Subtheme 1- Theoretical knowledge level about transfusion
Subtheme 2-Fear of making mistakes
Subtheme 3-Inadequate practice
Theme 2-Factors affecting the blood transfusion experiences of nursing students
Subtheme 1-Factors related to patients' relatives
Subtheme 2- Factors related to patients
Subtheme 3- Factors related to the practice
Subtheme 4-Factors related to training

## 3. Results

The mean age of the nursing students participating in the study was 23.9±4.2 years (min: 20, max: 36) and the number of men and women was equal. Examining their distribution in terms of classes, it was found that four students were second-year students, three were third-year students, and five were fourth-year students.

### 3.1. Theme 1 - Knowledge and Thoughts of Nursing Students About Blood Transfusion Practice

When the theme of the nursing students' experiences with blood transfusion practice was examined, it was seen to be formed from the sub-themes of theoretical knowledge level about transfusion, fear of making mistakes, and insufficient practice.

#### 3.1.1. Subtheme 1- Theoretical knowledge level about transfusion

*\*I feel ready. I got enough information and training on this subject. The only thing that scares me is the possibility of making mistakes due to my carelessness. Apart from that, I trust myself (Respondent 5).*

*\*I received the necessary information and training from basic principles and practices in nursing, internal medicine nursing courses, and from the nurses in the clinic (Respondent 1).*

#### 3.1.2. Subtheme 2-Fear of making mistakes

*\* I know the mistakes I make may cost the patient's life. In fact, I trust myself, but the fact that I still might make a mistake during the practice scares me (Respondent 5).*

*\*I feel insecure due to the risk of complications developing (Respondent 8).*

*\*Although I know how it is applied and what I can encounter in a general sense, I still do not feel ready since I have not made more than one practice. Since the hospital conditions are limited and the number of students is high, I did not have the chance of making each attempt many times (Respondent 1).*

*\*I cannot feel fully ready (Respondent 1).*

*\*I am afraid of volume loading as a result of rapid administration to the patient while transfusing and the development of an allergic reaction. I am concerned about having a problem with the patient about this (Respondent 6).*

*\*I am afraid of being blamed or taking responsibility associated with complications that can develop in patients because I am a student at the clinic right now. I do not have rights like a full-time nurse. You inevitably feel fear because of this (Respondent 12).*

### **3.1.3. Subtheme 3-Inadequate practice**

*\*To trust myself, I need to repeat many applications several times but I have had only one chance to do the transfusion. Therefore, I do not trust myself very much (Respondent 1).*

*\*I have not been able to practice much about this issue in the hospital yet, so I cannot trust myself (Respondent 4).*

## **3.2. Theme 2-Factors Affecting the Blood Transfusion Experiences of Nursing Students**

This part is composed of subthemes including factors related to patients' relatives, factors related to patients, factors related to practice status, and factors related to training.

### **3.2.1. Subtheme 1-Factors related to patients' relatives**

The student nurses were seen to state that they were affected by panic, aggressive behavior, risk of harm, misperception, anxiety, fear, fear of violence, and confidence of patients' relatives.

*\*Patients and patients' relatives see the nurse as immediately responsible when something happens even if it is a small thing. Their panic and aggressive attitude toward us and the nurses frighten us (Respondent 1).*

*\*My fear is of increasing the concerns of patients' relatives while explaining something. As people's anxiety and concerns increase, they exhibit more aggressive attitudes (Respondent 2).*

*\*I am afraid that patients' relatives will react to an allergic reaction that may develop during transfusion in the patient (Respondent 6).*

*\*I have fears about the development of complications (Respondent 8).*

*\*I am afraid that the patients and patients' relatives do not trust me (Respondent 10).*

*\*Patients and patients' relatives are in a panic in some situations. Therefore, the risks of damaging the environment increase. This situation worries me (Respondent 3).*

### **3.2.2. Subtheme 2- Factors related to patients**

This includes the student nurses' expressions of patients' perspectives and patient anxiety.

*\*My fear about the patients is that the patients may not be able to understand what they are being told. For example, the anxiety and concern level of a very old patient with hearing impairment may increase since he/she cannot understand what is being said (Respondent 2).*

*\*Patients are generally angry. To reduce their temper, I act calmly and make clear explanations (Respondent 3).*

*\*I am afraid of having problems with extremely calm, angry, and nervous patients and patients' relatives. Their attitudes toward us are not nice, like "You are a trainee so do not do it." (Respondent 4).*

*\*Vascular access is problematic in cancer patients, for example. We may have trouble in opening. We may have communication problems. Again, it is possible to get infected by patients with an infectious disease, and I have fears about that (Respondent 7).*

*\*Some patients can be very conservative due to their cultural life. For example, a female patient asks if the blood that will be given to her was taken from a man. If so, she says I do not want this blood (Respondent 8).*

*\*We work as trainee nurses in the hospital. Sometimes patients and patients' relatives do not trust us. They say you are a trainee, let a more experienced nurse come. This kind of thing unnerves you, they believe we will make a mistake (Respondent 9).*

*\*I am afraid of patients with anxiety because they can distract me while I'm practicing. I am afraid of doing something wrong (Respondent 10).*

*\*Some patients become a bit conservative. For example, someone who is not a Muslim gave blood and the patient does not want to have it. They react (Respondent 11).*

### **3.2.3. Subtheme 3- Factors related to the practice**

Student nurses' expressions about their fear of making mistakes about the practice and their inexperience were involved.

*\*The control stage before the transfusion scares me. Incorrect blood groups and uncontrolled transfusion initiation may cause problems in the patient's vital functions (Respondent 2).*

*\*When there are a lot of patients to be transfused in the clinic, I am afraid to give the wrong blood to the wrong person (Respondent 12).*

*\*First of all, I am afraid and concerned due to wrong and careless practices such as not giving the blood to the right patient with the correct blood group, and the inability to see the complications that may develop in the patient (Respondent 5).*

*\*I am afraid something happens to the patient due to a developed allergic reaction (Respondent 8).*

*\*We are afraid of being blamed and taking responsibility due to complications that may develop in the patient. Because we are students at the clinic now. We do not have rights like a full-time nurse. You inevitably fear because of this (Respondent 1).*

*\*Sometimes the clinic is very crowded, we may not be able*

to follow the patient completely, and the problems that will arise at these times scare me (Respondent 12).

#### **3.2.4. Subtheme 4-Factors related to training**

The students' expressions about learning and previous practice are used.

*\*I have no fear about this issue. Our teachers are teaching us in the courses anyway and we are practicing with the nurses and our teachers during the practice process (Respondent 1).*

*\*When the nurses do not perform the necessary controls correctly and the instructors cannot teach the necessary procedures correctly to the students during the practice, the possible problems scare me (Respondent 5).*

*\*Nurses sometimes perform random blood transfusions like administering a serum carelessly and sloppily and then sometimes they do not perform the follow-ups correctly (Respondent 8).*

## **4. Discussion**

### **4.1. Nursing students' experiences concerning blood transfusion**

#### **4.1.1. Theoretical knowledge level about transfusion**

Clinical experience plays an important role in overcoming fear about clinical practice in nursing students. In the literature, it has been observed that there are studies on the level of blood transfusion knowledge of nursing students.

In these studies, as in our study, it was observed that some students thought that they were adequate in the level of knowledge about blood transfusion; some students stated that they had problems in some stages of transfusion. Bayındır-Çevik et al. (2015) found that the least observed mistake by the students was wrong blood transfusion (Bayındır-Çevik et al., 2015). Güneş et al. (2008) determined that nursing and midwifery students had insufficient knowledge about the cross-match test causing the wrong blood transfusion to a patient, but their knowledge about the basic principles of transfusion was sufficient (Güneş et al., 2008).

#### **4.1.2. Fear of making mistakes**

In the study, the nursing students' self-confidence and readiness to receive knowledge were seen to be important about making mistakes in blood transfusion practice (Çam et al., 2017). A new behavioral change in education depends on the student's readiness level. The items shaping the readiness include the individual's attitude toward learning, concepts, and values they have developed, their sense of self, habits, language developments, interests, needs, working methods, decision-making, and fears (Harman and Çelikler, 2012). Managing this process correctly is important for maintaining clinical experience (Demir-Barutçu, 2019). Since nurses face many problems in practice environments, they need to have problem-solving skills. Therefore, it is important to develop the problem-solving skills of nursing students. Nurses with good problem-solving skills cope with negative emotions and thoughts

and produce effective solutions; as a result, they can enhance the quality of the healthcare service provided (Şahiner et al., 2013). Nursing care practices in nursing education are activities requiring continuity and planning to solve problems in patients by conducting analysis and synthesis after acquiring knowledge (Uysal and Manavoğlu, 2019). Demir-Barutçu (2019) found that the problem-solving skills of the nursing students were at quite a good level (Demir-Barutçu, 2019). These results show that nursing students need problem-solving skills in blood transfusion.

#### **4.1.3. Inadequate practice**

Since nurses face many problems in practice environments, they need to have problem-solving skills. Therefore, it is important to develop the problem-solving skills of nursing students (Demir-Barutçu, 2019). Nurses with good problem-solving skills cope with negative emotions and thoughts and produce effective solutions; as a result, they can enhance the quality of the healthcare service provided (Şahiner et al., 2013). Nursing care practices in nursing education are activities requiring continuity and planning to solve problems in patients by conducting analysis and synthesis after acquiring knowledge (Uysal and Manavoğlu, 2019). Demir-Barutçu (2019) found that the problem-solving skills of the nursing students were at quite a good level (Demir-Barutçu, 2019). These results show that nursing students need adequate practice to develop their problem-solving skills in blood transfusion.

### **4.2. Factors affecting the blood transfusion experiences of the nursing students**

#### **4.2.1. Factors related to patients' relatives**

In the study, it was observed that the nursing students were affected by the patient's relatives in the clinical environment. When nurses are providing care to terminally ill patients, they provide care to patients' relatives, as well. Each family member in some families exhibits different emotions and reactions in their grief after the loss of the loved one, and these reactions are dependent on various factors such as their religious beliefs, coping skills, support systems and how they perceive loss, and the change in their own lives and can be experienced at different intensities and severities (Yiğit, 1998). In changing negative perceptions about the hospital or healthcare professionals, the related differences of the patients and their relatives depending on culture and styles of upbringing can be asserted to play an important role (Aydın and Şahin, 2016). In a study conducted in cardiovascular surgery intensive care units, Ölçüm et al. (2018) found that patients' relatives exhibited high symptoms of anxiety and depression (Ölçüm et al., 2018). The literature shows that it is important to develop the therapeutic communication skills of nurses working in the intensive care unit with the patient and the family to establish effective communication centered on the patient and his/her family, especially in healing the intensive care patient and enhancing the quality of his/her life (Aktaş and

Baysan-Arabacı, 2016). Reducing anxiety or worry through oral communication forms an important part of the nursing process. This communication is of great importance for both the patient and the patient's relatives. In particular, the hospital environment, treatments, and other processes, complex procedures relating to the patient, and fear of lack of knowledge increase anxiety and stress levels in patients' relatives. Nursing students in clinical practice are not completely familiar with these procedures, and this sometimes results in problems with patients' relatives. Effective communication and reciprocated feelings can bring this confusion into a more positive state. For these reasons, it is obvious that nursing students have fears about patients' relatives and they should be supported in communicating with them.

#### 4.2.2. Factors related to the patient

In this study, it was observed that the nursing students had some difficulties in the clinical environment due to the patients' levels of perception of them and the anxiety experienced by the patients. It was determined in a study by Gül and Dinç (2018) that the patients saw nurses as respectful to others, as having professional knowledge and skill, and also as being accessible to individuals. Most of the patients were satisfied in terms of nursing care, and the nurses perceived the care they provided to the patient positively (Gül and Dinç, 2018). Karayağız et al. (2011) found that the patients staying in the surgical ward for different reasons had anxiety symptoms (Karayağız et al., 2011). Alaca et al. (2011) determined that anxiety subscale scores in 47% of 100 patients staying in an intensive care unit and depression subscale scores in 72% were above the threshold (Alaca et al., 2011). In a study conducted by Dağ and Baysal (2017) to investigate the causes leading patients and their relatives to apply violence, factors caused by deficiencies in motivation for healthcare professionals, lack of communication with patients and relatives, management problems, and interaction with the patients and relatives were determined during the interviews. The factors triggering the emergence of a tense environment were found to be a lack of information in patients and their relatives about patient priorities and patient rights, being affected by the news and programs containing violence in health in media, requests that did not comply with the rules for their interests, lack of communication or misinterpretations, effects due to the importance of the event for themselves and the speed of development, and factors containing economic and psychological states (Dağ and Baysal, 2017). In this respect, it can be recommended that educators make observations, especially about the nursing students' approaches to the patients in clinical practices, and help them with their deficiencies in this regard.

#### 4.2.3. Factors related to the practice

In the present study, the students stated that they were especially affected by the concern of making mistakes and thoughts of inexperience in the clinics. In the

literature, similar to our study, it was found that students were worried about making mistakes. It is clear that this concern is seen at a higher rate, especially in first-year students. Concern about making mistakes is having a belief that making mistakes has the same meaning as a failure. Being doubtful about behaviors is that a person has the feeling of doing a piece of work slowly and repeatedly with the fear of not doing it right while performing a job (Altun and Yazıcı, 2010). There are many studies in the literature on medical mistakes relating to nurses. Seren İntepeler et al. (2014) found that nurses had low medical error tendencies and that the institution, working shift, and weekly working hours affected the tendency to medical errors (Seren-İntepeler et al., 2014). Nurses' duties and working conditions include the high number of patients per nurse, nurses' roles in duties other than care, a high amount of documentation, insufficient occupational health and safety, work intensity, burnout, and the temporary employment policies of institutions (Göktepe and Baykal, 2012). Alan and Yıldırım (2016) found that nurses evaluated their quality of work life negatively (Alan and Yıldırım, 2016). Öztürk et al. (2016) determined that most nurses experienced problems due to a lack of the necessary number of staff and appropriate materials, tools, and equipment for qualified patient care (Öztürk et al., 2016). Bayındır-Çevik et al. (2015) reported that among the mistakes that students witnessed in practice, lack of communication and information errors were high (Bayındır-Çevik et al., 2015). In the literature, it has been stated that in studies on students that they experience a moderate level of stress during their first clinical experience (Ergin et al., 2018). In a study conducted by Baysan-Arabacı et al. (2015) on the first clinical experiences of first-year nursing students, when the students were asked about their feelings before their first clinical practice, said excitement, curiosity, anxiety, stress, fear, and tension, and when they were asked the reasons for these feelings, answered "learning new things", answered "failure to succeed", answered the idea of "harming the patient", answered "hospital environment", and answered "the possibility of disease infection" (Baysan-Arabacı et al., 2015). Kalender et al. (2016) found that the proportion of nursing school students who had negative experiences with patients or patients' relatives was 5.5% (Kalender et al., 2016).

#### 4.2.4. Factors related to training

The study also included expressions about blood transfusion training. Perception is important in training. Taslak and Işıkyay (2015) determined that nursing students with low training perception were significantly more anxious compared with those with high training perception. In the same study, the development of feelings of unhappiness and pessimism in students with a negative perception of their training can be accepted as a natural result (Taslak and Işıkyay, 2015). In addition, many factors like the education received at school, the characteristics of the patient with whom the student

communicates or their expectations of the student, the student's previous experiences, and the attitude exhibited by the nurses affect the student-patient relationship (Kalender et al., 2016). Another important factor in education is instructors. In a study conducted to evaluate the communication skills of nurse teaching staff, Keçeci and Arslan (2012) found that the communication skills of instructors were assessed more positively by male students than by female students and by third-year students than by students of other years (Keçeci and Arslan, 2012). This can be interpreted as the fact that the factors affecting blood transfusion experiences can be decreased by providing effective education methods.

## 5. Conclusion

In this study, the nursing students' statements about their experiences concerning blood transfusion are similar to the studies in the literature on the practice experiences of nursing students. It is recommended that nursing students be given both theoretical and clinical practical training on blood transfusion, the indications which may be seen in a patient when blood is given by the central venous pathway, rules for storing blood and the length of time for keeping it in the clinic, and blood transfusion reactions and indications. We believe that as a result of this process, positive procedures will be formed for a blood transfusion by students. Awareness can be increased by creating programs that will help nursing students to cope with the stress they experience by assessing behaviors of coping with the types and degrees of stress and the stressful situations they experience during their education. This will help to develop student's skills in the clinic and to increase their self-confidence to decrease stress experienced concerning the clinic. With this in mind, creating education programs to increase their compliance with the clinic by increasing the number of implementations in a laboratory environment that is similar to the clinic and arrange an orientation program with nursing and teaching staff before going on clinical practice are recommended. In particular, students in degree education are not much exposed to the practice of the transfusion of blood and blood products, and for this reason, these results showed that clinical experience for blood transfusion needs to be increased in nursing students.

In accordance with the study results, it can be recommended that the support of nursing educators and clinician nurses is ensured to increase the nursing students' positive experiences concerning blood transfusion.

## Author Contributions

Percentages of the author(s) contributions is present below. All authors reviewed and approved final version of the manuscript.

%	F.Ö.Ç	Ö.B.D.
C	50	50
D	50	50
S	50	50
DCP	50	50
DAI	50	50
L	50	50
W	50	50
CR	50	50
SR	50	50
PM	50	50
FA	50	50

C= concept, D= design, S= supervision, DCP= data collection and/or processing, DAI= data analysis and/or interpretation, L= literature search, W= writing, CR= critical review, SR= submission and revision, PM= project management, FA= funding acquisition.

## Conflict of Interest

The authors declared that there is no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

## Ethical Approval/Informed Consent

To conduct the study, approval from the non-clinical Çankırı Karatekin University Ethics Committee (protocol code: 8.04.2016/02 and date of approval: April 08, 2016) and consent from the nursing students who participated in the study were obtained. The interviews were performed between April and June 2016.

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