

Evaluation of occupational exposure reasons and experiences of nursing students

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ABSTRACT

Aim: The aim of this study was to describe the occupational exposure reasons and experiences of nursing students.

Material and Method: The qualitative research design was used. The participants were selected using the purposive sampling method. The 20 nursing students included in this study. The data was collected at face-to-face interviews conducted during September 2019 and February 2020.

Results: The mean age of nursing students was 21.65 ± 0.91 . The majority (85%) of nursing students were women, and 15% were men ($n=3$). From the interviews, six key themes were identified regarding the nursing students' experiences of occupational exposure in the last six months: lack of knowledge, inadequate experience, theoretical and practical training loads, inadequate resources, lack of warning and information, and carelessness.

Conclusion: The one of the most important reasons for exposure to occupational hazards is lack of knowledge. Nursing Schools should ensure that nursing students are adequately trained in occupational hazards before their clinical placements.

Keywords: Occupational hazards, nursing students, qualitative research

INTRODUCTION

The nursing profession is an applied discipline, and one of the most important parts of nursing education is clinical training (1,2). It is essential for both the personal development and the practice skills development of nursing students (1,2). Nursing students participate in all patient care activities and are exposed to the same occupational risks as nurses, since practical training is carried out in real clinical environments with patients (2). Previous studies showed that nursing students faced all occupational hazards, including biological, chemical, ergonomic, physical, and psychological, during their practical training (3-7).

Unlike nurses, nursing students are only in clinical environments during their practical training. Even if they are less experienced, they still perform all interventional practices like nurses and work with many sharp devices (needle, lancet, etc.) (8). Previous studies found that the group most exposed to needle-stick injuries was nursing students among healthcare workers (9,10). The study conducted among nursing students by Çakar et al. (11) showed needle-stick injury rate was 27.8%. Doğru et al. (12) found that nursing students' needle-stick injury rate was 31%.

Another occupational exposure experienced by nursing students is musculoskeletal disorders. Literature showed that 66.23% of nursing students felt pain, discomfort and numbness in their neck (13). Abledu et al. (14) reported that 70.1% of nursing students experienced musculoskeletal disorders in the last 12 months, and 56.1% experienced a loss of function (14).

Nursing students face many types of violence, such as physical and verbal abuse, in their clinical environments (15). Almost half of nursing students are exposed to work-related violence (16). Magnavita et al. (17) reported that 43% of nurses and 34% of nursing students were exposed to physical or verbal violence. Amare et al. (18) showed that 66.2% of nursing students were exposed to biological hazards, 66.2% to physical, 84.8% to mechanical and 92.7% to psychological hazards. Many studies show the occupational exposures experienced by nursing students. To prevent this exposure and correctly structure occupational health and safety education programs, the causes of these exposures should be defined. Therefore, the aim of this study was to describe the reasons for occupational exposure and experiences of nursing students.

MATERIAL AND METHOD

In order to carry out the study, approval was obtained from the Ege University Scientific Research and Publication Ethics Committee (Date: 29.08.2019, Decision No: 09/04-341) and the institution where the study was conducted. All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. Written informed consent was taken from the nursing students fulfilling inclusion criteria and accepting to participate in the study.

Study Design and Sampling

This study used a qualitative research design to describe the reasons for occupational exposure and experiences of nursing students. The participants were selected using the purposive sampling method. The 20 nursing students who experienced at least one of biological, physical, musculoskeletal, chemical and psychosocial occupational hazards in last six months and agreed to participate in the study were included in the study.

Data Collection

The data was collected at face-to-face interviews conducted during September 2019 and February 2020, and each lasted between 30 and 60 minutes. In-depth face-to-face interviews were audio recorded. Data collection continued until the same concepts started to appear. To ensure privacy, the interviews were conducted in a quiet, secluded place at the nursing school. Interviews were conducted by a researcher. During the interviews, participants were given the opportunity to talk openly about their experiences. Before the interviews started, the nursing students were informed about the aim of the study and their consent was obtained. The interviewers used a semi-structured framework that was developed based on a literature review.

Semi-structured interview framework

1. What occupational exposure(s) have you experienced during practical trainings in the last six months?
2. What do you think are the reasons for the occupational exposure(s) you experience?
3. What can be done to prevent or reduce occupational exposures?

Place/Time of Study

Study was conducted between September 2019 and February 2020 with nursing students enrolled XXX University, Faculty of Nursing.

Data Analyses

Recorded data was documented through verbatim transcription. A categorization matrix was created based on the data, and all data was examined and coded according to the categories. All steps of the study were

explained in detail; data was described in detail, emerging themes were exemplified by direct quotes, and what the participants said was exactly described.

RESULTS

The mean age of nursing students was 21.65 ± 0.91 . The majority (85%) of nursing students were women, and 15% were men ($n=3$). Of these students, eight (40%) were in the second year, six (30%) were in the third year, and six (30%) were in the fourth year (Table 1). From the interviews, six key themes were identified regarding the nursing students' experiences of occupational exposure in the last six months: lack of knowledge, inadequate experience, theoretical and practical training loads, inadequate resources, lack of warning and information, and carelessness.

Table 1. Nursing students characteristics

Characteristics (N=20)	n	%
Age (Mean \pm SS)	21.65 \pm 0.91	
Gender		
Women	17	85
Men	3	15
Year of Study		
Second year	8	40
Third year	6	30
Fourth year	6	30

Lack of Knowledge

Nursing students stated that they did not have enough information about occupational hazards, use of personal protective equipment, and occupational accident notifications. Some students reported that they were not aware of the occupational exposures they experienced because they did not have enough information about occupational hazards.

"While I was in the oncology clinic, some of the drug was spilled during drug administration. Since I did not know how to clean an antineoplastic drug, I cleaned it with gauze. I would never have done this if I had known it was harmful to my health." (Nursing student, 2)

Some students reported that they did not know they should not recap the needles after using them.

"After applying the patient's treatment, I experienced a needle-stick injury while recapping the needle. Actually, I didn't need to recap the needle while I put it in the sharp box, but I didn't know that. I learned after the accident" (Nursing student, 9)

Some students stated that they did not have enough information about the process of reporting occupational exposures.

"I should have notified the Occupational Health and Safety Unit within three working days of the accident date. But I didn't know this. I have learned after the work accident." (Nursing student, 3)

Inadequate Experience

Some students stated that their occupational exposures were due to their insufficient professional experience. Students stated that they tried to act quickly in order to be able to act together with the team and not miss the parenteral administrations; however, because they did not have enough experience, this situation caused them to be exposed to physical hazards such as falling, tripping, and especially sharps-related injuries. Some students stated that the needle-stick injury they experienced during their first interventional practice was due to their lack of experience.

"We had been applying treatments to the patients along with nurses. The nurses left the room, and I did not want to be left behind. I stuck a needle in my hand while trying to act fast." (Nursing student, 5)

"I was going to do an intramuscular injection for the first time, but I think I got excited. After I injected the drug into the patient, I stuck the needle in my hand." (Nursing student, 1)

Students stated that they experienced musculoskeletal disorders due to lack of experience in situations where appropriate body mechanics such as carrying, lifting and positioning patients should be used.

"While I was lifting the patient from his bed, I felt all the weight of the patient on my body. Then, I suddenly felt a pain in my back. I suffered back pain for two days." (Nursing student, 10)

Theoretical and Practical Training Loads

Students stated that the intensity of the theoretical and practical training caused them to experience occupational exposure. In particular, intern nursing students reported that in addition to working as a clinical nurse four days a week, the final exams and homework loads related to their internship caused them to experience occupational exposure.

"Being an intern nursing student is truly hard. You are like a nurse working in a clinic, but on the other hand, you have lessons to pass. The final exam weeks are especially hard; I stuck a needle in my hand while I was taking blood from the patient." (Nursing student, 20)

"On the one hand, I was trying to do patient's treatment; on the other hand, I was trying to catch up during the nurses' shift change. Normally, when the three-way stopcock is clogged, I do not force the medicine. However, I was so busy that I could not think at that moment. It splashed in my eyes due to the pressure." (Nursing student, 17)

Inadequate Resources

Students stated that they experienced occupational exposures due to the lack of adequate and appropriate personal protective equipment in the clinical settings.

"I know I have to wear gloves when drawing blood, but I cannot use them because the gloves are too big. While I was taking blood, the patient's blood got on my hand. There was an open wound on my hand." (Nursing student, 11)

"I was just watching the surgical procedure. Suddenly, blood from the child splashed in my eyes. If I had worn glasses, I would not have experienced this. However, there were no goggles in the clinic. Unfortunately, we are having difficulties in obtaining some personal protective equipment." (Nursing student, 8)

"There was a patient in contact isolation. We went to the patient's room with the nurse for treatment. As the available personal protective equipment was insufficient, only the nurse wore personal protective equipment. She said to me, 'You do not touch anything. I will do it; you will only help me.' However, this was not possible. I touched everything just like her." (Nursing student, 14)

Lack of Warning and Information

Students stated that they were not adequately informed about occupational hazards in the clinic by nurses during clinical placements

"....., There was the patient who had a diagnosis of scabies in the clinic. Nobody informed us and we took care of the patient all day." (Nursing student, 6)

"I entered the room of the patient diagnosed with tuberculosis without a mask to take his blood pressure. Nurses could have informed me that the patient was with tuberculosis." (Nursing student, 13)

Nursing students stated that when they experienced any work accidents in clinical settings, other members of the health care team did not act sensitively in dealing with them.

"I had a work accident in the clinic and immediately told the nurse. But the nurse didn't care. I was very nervous and stressed because I had had a work accident. The nurse could have directed me to the occupational health and safety unit, but she didn't it." (Nursing student, 4)

Carelessness

Students stated that they were exposed to occupational hazards because they or their friends did not act carefully in clinical settings.

"We were preparing treatment in the treatment room. Someone put the needle there after using it. I didn't even understand how it was. The needle stuck in my hand. I don't know whether it was the needle contaminated. Maybe it only was used for preparing the treatment." (Nursing student, 15)

"I was in public health placement. Two patients came. I administered the intravenous drug to one and dressed the other one. I put the injector there after intravenous medication administration. Unfortunately, When I was collecting the dressing materials that needle stuck in my hand. It was all because of my carelessness. I should have put the needle in the sharp box after using it." (Nursing student, 7)

DISCUSSION

In this study, nursing students reported a lack of knowledge as the reason for exposure to occupational hazards, such as needle-stick injuries, ergonomic hazards, etc. Amare et al. (18) found that most of the nursing students had insufficient knowledge about occupational hazards during clinical practice and experienced needle-stick injuries due to insufficient adherence to standard precautions. Attia et al. (19) found that one of the reasons for occupational hazard exposure is the lack of occupational health and safety education. One of the most common hazards encountered by nursing students is needle-stick injuries, frequently caused by the recapping of needles after use (20,21). Suliman et al. (22) stated that 46.2% of nursing students do not know that they should not recap the needle after use. In this study, nursing students stated that they experienced a needle-stick injury while recapping the needles after use and they experienced exposure to occupational hazards without realizing it because they did not know enough about the risks involved in certain situations. Nursing students are informed about occupational health and safety before clinical placement by their own educational institutions or practice institutions, but they do not have enough awareness about occupational hazards. For this reason, more training about occupational hazards and the use of personal protective equipment should take place in the occupational health and safety training given to nursing students.

Nursing students are vulnerable to occupational hazards due to insufficient manual skills and lack of clinical experiences (19,23). Previous studies showed that nursing students were exposed to needle-stick injuries during invasive procedures because they were stressed and inexperienced (19,24). In this study, nursing students stated that they were exposed to needle-stick injuries and physical and ergonomic hazards due to lack of experience. It is thought that this may be because nursing students do not have sufficient laboratory practice before their clinical placements. It is recommended that students' manual skills be developed with active learning methods, such as simulations, before clinical placement and that they be provided support by clinical instructors, especially in the first year of clinical placement.

In this study, nursing students stated that the intensity of theoretical and practical training caused them to be exposed to occupational hazards. Especially intern nursing students stated that they felt this intensity more. Eyi et al. (1) determined that workload is one of the most important causes of exposure to occupational hazards. Nursing education has a very intensive curriculum that combines theory and practice. In order to reduce exposure to occupational hazards, it is recommended that the intensity of theoretical and practical nursing training should be established in line with the Nursing Core Curriculum.

Personal protective equipment is one of the most important measures in preventing or reducing occupational exposures. Attia et al. (19) found that 57% of nursing students stated the lack of personal protective equipment as one of the risk factors for occupational exposure. Amare et al. (18) stated that 37.7% of nursing students experienced needle-stick injuries, and this may be due to the lack of personal protective equipment. Another reason for occupational exposure expressed by nursing students in this study is the inadequacy of personal protective equipment. It is thought that this situation may be due to the limitation of nursing practice areas and the increase in the number of students in the clinics.

Another reason for occupational exposure expressed by nursing students in this study is insufficient warnings and information. Nursing students who are trying to gain clinical practice skills and create their professional identities in a high-risk working environment are faced with many health hazards and need support. In order to prevent occupational exposures, nursing students, who are part of the healthcare team and participate in all practices in the clinics, should be properly informed about occupational hazards.

Another important point to prevent occupational hazards exposure is timely notification of work accidents. However, previous studies reported that notifications are either not made at all or not timely (22,25). In this study, nursing students stated that they were not properly guided by nurses after experiencing a work accident. It should be ensured that nurses and other members of the healthcare team accept nursing students as part of the healthcare team.

Previous studies showed that carelessness was one of the most important causes of exposure to occupational hazards (26,27). In the study conducted by Eyi et al. (1), carelessness also played a major role in occupational accidents. Al Qadire et al. (20) found that one of the major causes of needle-stick injuries was talking to others. Nursing students, in this study, stated that they experienced occupational hazard exposure due to the

carelessness of their friends or other healthcare team members. The reason for this may be that nursing students and health professionals did not comply with the standard precautions sufficiently.

CONCLUSION

In this study, the experiences of nursing students' occupational exposure were evaluated. The study provided information about the reasons for nursing students' occupational exposures. From the nursing students' points of view, lack of knowledge, inadequate experience, theoretical and practical training loads, lack of warning information, inadequate resources and carelessness were the primary causes of occupational exposure.

Nursing schools play a crucial role in preventing occupational exposure to nursing students. They should ensure that nursing students are adequately trained in occupational hazards before their clinical placements. Additionally, nursing schools should ensure this training is continued by clinical instructors during clinical placements.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Ege University Scientific Research and Publication Ethics Committee (Date: 29.08.2019, Decision No: 09/04-341)

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

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