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Evaluation of Needlestick and Sharp Injuries, Contributing Factors, and Preventive Measures Among Nursing Students

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ABSTRACT

Objective: This study evaluates the frequency of needlestick and sharp injuries (NSI), the contributing factors, and the preventive measures among nursing students.
Material and Methods: This descriptive study's population consisted of all second, third, and fourth-year students enrolled in the nursing department of a health sciences faculty during the 2018-2019 academic year (N=577), while the sample consisted of 280 students who volunteered to participate. The ethics committee and institutional approvals were obtained. Data were collected using the "Student Information Form' and analysed with the SPSS 29.0 programme.
Results: It was found that 95.4% of the students who participated in the study received education related to NSI, mostly from school orientation programmes (88.2%) and various courses given at school (43.6%). It was determined that 16.8% (n=47) of the students were exposed to NSI during their undergraduate education, and injuries mainly occurred during clinical practise (95.7%) and in internal medicine clinics (57.4%). It was found that 48.9% of the students were injured in their first year, and 63.8% had been exposed to needlestick and sharps injuries at least once. The most common device causing injury was a syringe needle (63.8%), and 68.1% had taken protective measures before the injury, with the most common precaution being gloves (59.6%). Injuries frequently occurred while breaking the ampoules (55.3%) and when trying to remove the needle cap (34.0%). The most common response after injury was washing the area with soap/water or disinfectant, and students often reported the injury to a friend or nurse. The leading causes of the injuries were carelessness (51.1%) and rushing (27.7%).
Conclusion: This study highlights that needlestick and sharps injuries among nursing student injuries, which require attention. Based on these results, it is recommended that education on the importance and prevention of needlestick and sharps injuries be emphasised.
Keywords: Needlestick and sharp injuries, nursing students, nursing training

INTRODUCTION

Injuries caused by needlestick and sharp devices are among the leading occupational accidents and risks faced by healthcare workers healthcare workers face (1-4). Because needlestick and sharps injuries pose a high risk and can lead to occupational injuries, serious complications, and fatalities, ensuring occupational safety for healthcare personnel is of great importance. The monitoring of treating needlestick and sharps injuries is also economically costly, and complications can cause stress in affected individuals (5-7). Of the 35 million healthcare workers worldwide, 3 million experiences percutaneous exposure to blood-borne pathogens yearly (6,7). Healthcare workers can be exposed to more than 20 pathogens, including Hepatitis B, Hepatitis C, and HIV, through needlestick and sharp injuries (4). According to the World Health Organisation's 2002 reports, 37.6% of healthcare workers are occupationally exposed to Hepatitis B, 39% to Hepatitis C, and 4.4% to HIV/AIDS (8). Although nurses are a high-risk subgroup for needlestick and sharps injuries, nursing students may be at similar or even greater risk due to their limited clinical skills and experience (2,5,9). Nursing is a practise-based profession, so nursing education includes both classroom and clinical learning. To apply theoretical knowledge,

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students must perform various skills and procedures involving sharps and subcutaneous, intramuscular, and intravenous needles (10,11). Nursing students in clinical practise at hospitals are particularly vulnerable to accidental exposures to blood-borne pathogens due to their limited clinical experience, lack of skills in handling needles and sharps safely, lack of knowledge and attention to safety measures, anxiety, and fear of making mistakes (2-4,5,9,10,12-15). Global studies show that the rate of needlestick and sharps injuries among nursing students varies between 16.20% and 88.60% (10,16-20). Various studies conducted in Turkey have found that 25-83.9% of nursing students experienced needlestick and sharp injuries, with most injuries involving needle tips and ampoules (3,9,15,21-23). Furthermore, it was determined that 50.3-68.6% of injured students did not report their injuries (3,21,22). These data indicate that the frequency of injuries among nursing students is high, putting them at risk of blood-borne infections. This study determines the frequency of needlestick and sharp injuries among nursing students, the contributing factors, and the preventive measures taken. The results of this study could be used to raise awareness about needlestick and sharps injuries among nursing students and help identify strategies to reduce the frequency of such injuries.

MATERIAL AND METHODS

Study Design: This descriptive study aimed to evaluate the frequency of needlestick and sharp injuries among nursing students, the factors influencing these injuries, and the preventive measures taken by the students. The research questions for this study were as follows:

1. What are the socio-demographic characteristics of nursing students?

2. What is the frequency of needlestick and sharp injuries among nursing students?

3. What factors influence needlestick and sharp injuries among nursing students?

4. What preventive measures nursing students take in the event of an injury?

Population and sampling: The study population consisted of all second-, third-, and fourth-year nursing students (N=577) enrolled in the Nursing Department of the Faculty of Health Sciences during the 2018-2019 academic year. The sample consisted of 280 nursing students randomly selected using a non-probability sampling method and volunteered to participate in the study. First-year students who were excluded from the study did not need to gain laboratory or clinical practise experience or exposure to needlestick or sharp instruments during the period when the research was conducted.

Data Collection: Data were collected through interviews conducted by researchers in the classroom. Completing the research form took an average of 15 min.

Data Collection Tools: The researchers prepared this form based on the relevant literature (4,9,14-17,22-24). It consisted of 30 questions aimed at evaluating students, including the frequency of needlestick and sharp injuries they experienced, the factors influencing these injuries, and the preventive measures taken by the students.

Ethics Committee Approval: To conduct the research, written permission was obtained from Bursa Uludağ University Health Research and Publication Ethics Committee (Ethics Committee Date/Number: 05.02.2019 / 2019-02-13) and from the institution where the data was collected (Research Commission Date/Number: 22.03.2019/ 2-518/59). The research was conducted according to the Helsinki Declaration. All participants provided written informed consent.

Statistical Analysis

The Statistical Package for Social Science (SPSS), version 29.0, was used for data analysis. In the descriptive statistics, the numerical data were presented as the mean and standard deviation, whereas the categorical variables were expressed as frequencies and percentages. The Pearson chi-square test was used to analyse the categorical data.

RESULTS

Sociodemographic Characteristics of the Students

The average age of the study participants was 20.93±1.7 years, with 81.8% being female. Among the students, 83.9% graduated from a high school outside the health field. Additionally, 49.6% were second-year students, 31.1% were third-year students, and 19.3% were fourth-year students. The overall average academic score of the students was 2.87±0.481, with 56.1% perceiving their academic performance as “average.” It was found that 86.8% of the students were not employed. In contrast, those who were primarily employed worked in different part-time jobs outside of nursing (such as cafes/restaurants/shopping centres or in various units within the university), with 89.3% having health insurance. A statistically significant relationship was found between the type of high school graduate and the incidence of needlestick and sharp injuries ($p<0.05$). The distribution of the sociodemographic characteristics of nursing students and the comparison of these characteristics with the incidence of needlestick and sharp injuries are presented in Table 1.

Characteristics Related to Needlestick and Sharp Injuries

Ninety-five point four percent (n=267) of the students reported having received training related to needlestick and sharp injuries, primarily through school orientation programmes (88.2%), various mandatory and elective courses offered at school (43.6%), and hospital orientation programmes (31.1%). It was found that 16.8% (n=47) of the students experienced a needlestick or sharp injury during their undergraduate education, with 100% of the injured students (n=47) sustaining their injuries before performing procedures on patients and

Table 1: Distribution of Socio-Demographic Characteristics of Nursing Students and Comparison with the Incidence of Needlestick and Sharps Injuries (n=280)

Variables		n	%	Exposure to needlestick and sharps injuries
Age (X+SD)	20.93±1.7 years			r_s=-0.005 p=0.935
Gender	Woman Man	229 51	81.8 18.2	*X2*=0.033 p=0.856
High school graduated from	Health Vocational High School Other High Schools	45 235	16.1 83.9	***X2*=3.930** **p=0.047**
Class	2nd Grade 3rd Grade 4th Grade	139 87 54	49.6 31.1 19.3	*X2*=0.557 p=0.757
Cumulative Grade Point Average (X+SD)	2.87±0.481			r_s=-0.037 p=0.539
Perceived academic success	Excellent Good Average Poor Very Poor	14 76 157 27 6	5.0 27.1 56.1 9.6 2.1	*X2*=1.782 p=0.878
Employment status	Employed Unemployed	243 37	86.8 13.2	*X2*=1.315 p=0.518
Workplace	As a nurse in a hospital As a part-time student at the university In a café/restaurant/shopping centre, etc. outside classes	7 5 25	2.5 1.8 9.0	
Existence of health insurance	There is There is not	250 30	89.3 10.7	*X2*=2.463 p=0.117

X=Mean, **S**D = Standard Deviation, *X2*= Chi-Square Test, r_s= Spearman Correlation

Table 2: Characteristics Related to Needlestick and Sharp Injuries (n=280).

Variables		n	%
Receiving training on sharps injuries	Educated Not Educated	267 13	95.4 4.6
Place of training*	In school orientation programmes In various compulsory and elective courses Before clinical practise from the hospital From various articles on the internet Other	247 122 87 21 4	88.2 43.6 31.1 7.5 1.4
Exposure to needlestick and sharps injuries	Yes No	47 233	16.8 83.2
The time of occurrence of sharp injury (n=47)*	Before performing the procedure on the patient During/after the procedure on the patient	47 15	100.0 31.9
Distribution of injuries by cases (n=47)*	1st Grade 2nd Grade 3rd Grade 4th Grade	23 19 6 7	48.9 40.4 12.8 14.9
Injury frequency (n=47).	Once Twice Three Times Four Times Five Times	30 9 6 0 2	63.8 19.1 12.8 0.0 4.3
Devices that most frequently cause ınjuries (n=47)*	Injector needle Sterile glass fragments Iv cannula needle Scalpel Lancet Suture needle Other	30 20 0 0 3 1 0	63.8 42.6 0.0 0.0 6.3 2.1 0.0

How the ınjury occurred (n=47)*		26	55.3
		16	34.0
	While breaking an ampoule	7	14.9
	While attempting to open the needle cap	5	10.6
	While drawing medication from an ampoule/vial	3	6.4
	While attempting to close the needle cap		6.4
	While trying to dispose of the waste in the sharp-object waste bin	3	6.4
	While attempting to separate the needle from the syringe		
	Due to the anxiety experienced during clinical practise	3	4.3
	While ınjecting medication into an ınfusion	2	4.3
	While trying to open the vial	2	4.3
	While administering the IV medication	2	4.3
	While measuring the blood sugar levels	2	4.3
	Because of leaving a needle in the patient's bed	2	2.1
	While ınflating the balloon of a urinary catheter	1	2.1
	While taking a blood sample	1	2.1
	While attempting to establish an ıntravenous line	1	2.1
	While trying to catch a fallen syringe	1	2.1
	Due to used sharps disposed in a treatment tray containing clean equipment	1	2.1
	Due to the anxiety experienced during laboratory practise	1	2.1
	Because of colliding with someone working with a sharp object		
	While trying to transfer blood from the syringe to the tube	1	2.1
Area where the ınjury occurred (n=47)*		1	2.1
	Laboratory	4	8.5
	Clinical Practise	45	95.7
Field where the ınjury occurred (n=47)*	Internal Medicine Clinics	27	57.4
	Surgical Clinics	14	27.7
	Paediatric Clinics	3	6.4
	Obstetrics and Gynaecology Clinics	3	6.4
	Emergency Department	1	2.1
	Public Health Application Area	0	0.0
	Psychiatry Clinics	0	0.0
	Other (Laboratory, etc.)	9	19.1
Emotions experienced after the ınjury (n=47)*	I Didn't Care	10	21.3
	Excitement	18	38.3
	Fear	26	55.3
	Unhappiness	8	17.0
	Helplessness	8	17.0
	Horror	3	6.4
	Hopeless	1	2.1
	I Hesitated to Seek Help	1	2.1
	Insecure	4	8.5
	Other	2	4.3

* Multiple choices were selected

31.9% during or after performing procedures on patients. When examining the distribution of injuries by class, it was observed that injuries frequently occurred in the first (48.9%) and second (40.4%) years, with 63.8% of the students having been exposed to needlestick or sharp injuries at least once. The most common devices responsible for the injuries were found to be syringe needles (63.8%) and glass shards (42.6%). Injuries primarily occurred during clinical practise (95.7%), most frequently in internal medicine clinics (57.4%) and surgical clinics (27.7%). Students felt fear (55.3%) and

Table 3: Factors Affecting the Frequency of Needlestick and Sharp Injuries and Preventive Measures Taken by Students (n=47)

Verables		n	%
Reasons for needlestick and sharp ınjuries	Carelessness	24	51.1
	Rushing	13	27.7
	Inadequacy of protective equipment	5	10.6
	Getting excited while practicing with the instructor/nurse	5	10.6
	Lack of knowledge	4	8.5
	Practice alone	1	2.1
	Not using safe products	1	2.1
	Other	2	4.3
Use of protective equipment while working with sharp devices	Yes	32	68.1
	No	15	31.9
Protective measures taken when working with sharp devices	Wearing gloves	28	59.6
	Receiving hepatitis B vaccination	9	19.1
	Having a waste bin readily available	7	14.9
	Other	4	8.5
If the injury occurred before the procedure was performed on the patient			
To whom the injury was reported	I hid it	2	4.3
	I shared it with a friend	19	40.4
	I shared it with a faculty member	12	25.5
	I shared it with a nurse	22	46.8
	I shared it with a doctor	2	4.3
	I shared it with my family	3	6.4
	Other	1	2.1
Actions taken after the injury*	I did nothing	7	14.9
	I washed the injured area with soap and water.	24	51.1
	I cleansed the injured area with an antiseptic solution.	22	46.8
	I informed the responsible faculty member about the situation.	8	17.0
	I have reported the incident.	3	6.4
	I provided a blood sample (HBsAg, Anti HCV, Anti HBs VE Anti HIV)	4	8.6
	I informed the infectious diseases specialist about immunisation with the tetanus vaccine	2	4.3
	Other	1	2.1
If the injury occurred during/after the procedure on the patient			
To whom the injury was reported	I hid it	0	0.0
	I shared it with a friend	4	8.5
	I shared it with a faculty member	8	17.0
	I shared it with a nurse	11	23.4
	I shared it with a doctor	3	6.4
	I shared it with my family	2	4.3
	Other	0	0.0
Actions taken after the injury*	I did nothing	0	0.0
	I washed the injured area with soap and water.	9	19.1
	I cleansed the injured area with an antiseptic solution.	10	21.3
	I informed the responsible faculty member about the situation.	7	14.9
	I have reported the incident.	10	21.3
	I provided a blood sample (HBsAg, Anti HCV, Anti HBs VE Anti HIV)	10	21.3
	A blood sample was taken from the patient.	10	21.3
	I informed the infectious diseases specialist about immunisation with the tetanus vaccine	3	6.4
	I initiated a forensic case record.	2	4.3
	Other	1	2.1

* Multiple choices were selected

excitement (38.3%) after sustaining an injury. The distribution of characteristics related to needlestick and sharp injuries among the students is presented in Table 2.

Factors Affecting the Frequency of Needlestick and Sharp Injuries and Preventive Measures Taken by Students

The students' most significant causes of needlesticks and sharp injuries were inattention (51.1%) and hasty behaviour (27.7%). It was found that 68.1% of the students used protective equipment before working with needles and sharp instruments, with the most commonly adopted preventive measures being wearing gloves (59.6%) and receiving the Hepatitis B vaccine (19.1%). Injuries occurring before performing procedures on patients were reported to be shared with nurses (46.8%) and peers (40.4%). The injured area was frequently washed with soap and water (51.1%) and cleaned with an antiseptic solution (46.8%). Injuries that occurred during or after procedures on patients were reported to be shared with nurses (23.4%) and faculty members (17.0%). After such injuries, the area was cleaned with an antiseptic solution (21.3%), the student reported the incident (21.3%), and blood samples were taken from both the student (21.3%) and the patient (21.3%). The findings related to the factors affecting the frequency of needlestick and sharp injuries and the preventive measures taken by students are presented in Table 3.

DISCUSSION

Needlesticks and sharp injuries are among the healthcare services' most common occupational accidents. Injuries from contaminated needles, scalpels, ampoules, broken glass, and other sharp materials can lead to infections that are transmitted through the blood, resulting in significant morbidity and mortality (23). Although nurses are a high-risk subgroup for needlestick and sharp injuries, nursing students may be at similar or greater risk due to their limited clinical experience. In clinical practise, students are particularly vulnerable to accidental exposure to blood-borne pathogens (2,5,9). Student nurses are at a significant risk of occupationally acquired infections, as many of their needlestick and sharp injuries involve devices that have been used on a patient. While in their clinical training, students encounter sharp instruments and infections daily; therefore, they must be trained on handling sharps and infection control before and during their ward training (17). Studies have shown that students who learned about sharp and infection control were less likely to sustain sharp/needlestick injuries than those who did not receive such training (10,14,17,25). In this study, 95.4% of the students reported having knowledge and training regarding needlestick injuries. They indicated that they often received their education from school orientation programmes (88.2%), various compulsory and elective courses offered at school (43.6%), and hospital orientation programmes (31.1%). Studies conducted in Turkey have shown that most students are aware of needlestick injuries (15,26). In this study and other studies conducted in Turkey, although the percentage of students who stated they received education was high, the sharp/needlestick injuries rate was also high (9,15,22,26). Before clinical training in hospitals begins, risks related to needlestick injury protective measures and what to do after exposure are taught through various mandatory and elective courses included in the curriculum, pre-clinical occupational safety training, and hospital orientation programmes. However, behavioural change in students regarding the implementation of preventive measures for needlestick and sharp injuries can take time through the training provided. This result shows that education alone is not sufficient to prevent sharp/needlestick injuries.

As a result of the research, it was determined that there were 47 (16.8%) cases of needlestick and sharp injuries among the nursing students who participated in the study period the four years from 2015 to 2019. The four-year prevalence was calculated to be 8.15 cases per 100 nursing student. Different studies conducted with nursing students also indicate high rates of injuries (4,9,10,14-17,22-24). In a systematic review study conducted by Xu et al. (2022) to determine the rates of needlestick injuries among nursing students worldwide, the results showed that 35% of nursing students had experienced needlestick injuries (27). Bouya et al. (2020) analysed 11 studies and found a prevalence rate of 45.3% for needlestick injuries among nursing students (28). A recent systematic review and meta-analysis investigated occupational injuries among nursing interns and found that the prevalence of needlestick injuries in this group was 27% (29). These results demonstrate that nursing students are at high risk for occupational exposure to bloodborne pathogens due to needlestick and sharp injuries, indicating that preventive measures must be taken.

This study determined that students had been injured at least once (63.8%). Studies have indicated that students generally sustain injuries only once (1,24). In a study by Bagnasco et al. (2020), more than one-third of the students (39%) reported they had been injured at least once with a sharp or a needlestick, and nearly half of these (48.9%) experienced more than one injury (range: 2–6) (2). In a study by El Bouazzi et al. (2023), data analysis showed that 43.75% of the students had experienced at least one accidental exposure to blood and body fluids (16).

Nursing students are exposed to these risks daily when administering drugs in the healthcare setting and when practising in the clinical skill laboratory (9). In this study, it was determined that injuries frequently occurred in the first (48.9%) and second (40.4%) years, and our findings are consistent with studies conducted on nursing students (1-3,15,30). It is thought that first- and second-year nursing students are more exposed to sharp injuries due to their manual skills needing to be fully developed, limited clinical experience, and a lack of knowledge and attention regarding personal safety measures. Students are gradually exposed to fewer needle and sharp injuries as their competency improves and their clinical skills develop. Contrary to the results obtained from this research, some studies indicate that sharp injuries are more prevalent

among upper-class students. The study by Doğru and Akyol (2018) found that fourth-year students had a higher injury rate than other classes (3). Similarly, in the studies by Ünver et al. (2012) and Kurşun and Arslan (2014), it was determined that the number of injuries among nursing students increased with each academic year (15,31). In these relevant studies, this situation has been associated with more clinical practise, medical interventions, and taking on more responsibilities in patient follow-up.

Despite training on occupational health and safety, needlestick and sharps injuries occur in healthcare institutions and are most commonly caused by syringes (12). In this study, it was found that injuries frequently occurred during contact with sterile glass shards while breaking ampoules (42.6%) or due to syringe needles during drug applications (63.8%). In the study by Öztürk-Menteşe and Karaca (2021), 64.2% of the injured students reported being injured by needle tips, while 31.2% reported injuries from ampoules (23). In the study by Doğru and Akyol (2018), it was determined that among students, needlestick and sharps injuries were mainly caused by syringe needles (72.1%) and sterile glass shards (44.1%) (3). Similar results have been found in studies conducted with nursing students (4,9,10,15,22,24,32,33). In a study by Bagnasco et al. (2020), the devices that mainly caused injury were vials (68.5%) and infusion syringes (15.8%) (2). In Çakar et al. (2019), 9.8% of students (n=33) indicated that the injury occurred while preparing medication (24). Therefore, it is important that students are trained to develop their hand skills before clinical practise. This study determined that most injuries (n=45) occurred before performing the procedures on patients. Similarly, Yurdakoş's study found that the injury instruments were clean (91.4%) (1). This research found that a large portion of the injuries caused by syringe needles occurred while attempting to open the needle cap. Similarly, in the study by Yang et al. (2004), 23.7% of students were injured while opening needle caps, and in the study by Cheung et al. (2010), 27.9% of students reported injuries while opening needle caps (4,33). In the study by Yurdakoş (2023), it was found that students were mostly injured while opening/closing the needle cap with the syringe (75.9%). Using force to remove the needle cap with screwing threads is likely to cause students' needlestick injuries. Various studies have reported that injuries occur during drug administration (2,14) and due to sudden movements by the patient during procedures (14). The causes of needlestick and sharps injuries vary. Identifying the practises that lead to sharp injuries will help determine the necessary precautions to reduce occupational risk.

This study determined that 45 injuries occurred during clinical practise, primarily in internal medicine and surgical clinics. Upon reviewing studies on this topic, it has been observed that the frequency of injuries is higher in units where internal and surgical interventions are performed (2,3,33). This situation is thought to be related to the higher frequency of parenteral drug administration in clinical areas, thus increasing the likelihood of sustaining sharp/needlestick injuries. In a study by Elisa et al. (2023), it was found that injuries occurred in all wards, with the majority happening in the emergency/casualty ward (30%), followed by the surgical ward (21.9%) (17).

In a systematic review by Hambridge et al. (2016), psychological and physical impacts of sharps injuries on student nurses were reported, such as fear, anxiety, and depression (34). In this study, students also expressed that they frequently experienced fear and excitement after an injury. Given that the impact of sharps injuries can be severe, it is essential to evaluate the physical, psychological, and social effects of injuries on nursing students. However, the fact that 10 students indicated they did not take the injury seriously indicates that they do not understand the significance of exposure to needlestick injuries. In a study by Bagnasco et al. (2020), of the 147 injuries reported by the students, 8.8% occurred with a contaminated device: 15.4% of these participants did not access the emergency department because "not deemed necessary"(55.6%) or because "I considered the risk was low or none" (44.4%) (2).

In this study, students stated that the most important causes of injury were carelessness, rushing, lack of protective equipment, and getting excited while practising with a faculty member or nurse. In studies conducted among nursing students in Turkey, the factors affecting the rate of exposure to needlestick and sharps injuries were hurrying, inattentiveness, heavy workload (15) and carelessness (22). In other studies, the factors affecting the rate of exposure to needlestick and sharps injuries included carelessness, stress, lack of practise, lack of familiarity with the devices, and lack of training (11); inattention, tiredness, and heavy workload (32); rushing while performing procedures, and the patient being uncooperative (17).

To prevent contamination stemming from blood-borne pathogens via needlestick and sharps injuries, it is essential to prevent such injuries. Because contact with infected materials is unlikely to be avoided, appropriate measures should be taken immediately after exposure to injuries (15). The Centres for Disease Control and Prevention (CDC) has developed "universal precautions" to prevent transmission from infected blood and body fluids. Under this guideline, all individuals receiving health services are considered potentially infected with blood and other body fluids, making it mandatory to take necessary precautions. These precautions include washing hands before and after all procedures, removing gloves, and using protective barriers (gloves, gowns, masks, goggles) to prevent transmission from the skin and mucous membranes (3). Implementing the measures recommended by the CDC can reduce the incidence of sharps injuries (3,23). Zhang et al. (2018) showed that nursing students who did not use protective equipment experienced more injuries (10). In the studies by Kurşun et al. (2014), it was found that 67.5% of nursing students and in Zhang et al. (2018), 78.7% of students did not use protective equipment (10,15). In a study performed in Turkey, it was stated that among students experiencing needlestick and sharp injuries, 65.2% were found not to wear gloves (26). In this study, 15 injured students (31.9%) indicated that they did not use protective equipment, showing that their awareness of preventive measures was low. In this study, the protective measures taken while working with

sharp instruments were found to be wearing gloves (59.6%) and receiving the Hepatitis B vaccine (19.1%). Doğru and Akyol (2018) found that 86.4% of students had received the Hepatitis B vaccine, 68.1% used gloves, 2.6% wore masks, and 29.3% did not take any protective measures (3).

The following needlestick and sharps injuries, students must promptly inform their practise teacher or hospital staff and complete the relevant needlestick and sharps injury reports (33). In instances where injuries occurred without direct patient treatment, it was found that hospital staff or classmates often were the first to be notified. When needlestick and sharps injuries involved contaminated needles, students reported these incidents to hospital personnel or their practise teachers. Injuries occurring before procedures on the patient made students feel less at risk. In contrast, those occurring after such procedures were reported differently due to concerns about blood-borne diseases. The reporting rate for injuries sustained before patient procedures was low (6.4%), whereas 21.3% of students injured after performing procedures reported the incident. Various studies involving nursing students have indicated that incident reporting rates are generally low (3,10,15,23,24,30). The most common reasons provided by students for not reporting incidents included a belief that it was not essential to report (53.5%) and a lack of awareness regarding the reporting system (18.5%), as noted in a study by Yeshitila et al. (2015) (14). In the research conducted by Zhang et al. (2018), it was found that 86.9% of students did not report the incidents, with reasons including the use of devices not applied to patients (35.4%), a subjective assessment that the patient was not infectious (35.0%), and a belief that reporting was unnecessary (24.5%) (10). These findings indicate that students do not perceive injuries caused by sharp instruments that did not come into contact with patients as risks and may lack the necessary knowledge about the importance of reporting all injuries. The results indicate that nursing students require education on the significance of reporting needlestick and sharps injuries.

To prevent the transmission of bloodborne pathogens to healthcare professionals via needlestick and sharps injuries, it is essential to avoid such injuries. However, if an injury occurs despite all precautions, immediate appropriate measures should be taken after exposure to infected materials. The affected area is recommended to be cleaned with water, soap, or an antiseptic solution, the incident be reported, a risk assessment be conducted for both the source and the exposed healthcare worker, and a monitoring/treatment programme be established (15). This study found that students who sustained injuries from sharp instruments frequently cleaned the affected area with antiseptic solutions and washed it with soap and water. Similar results have been reported in various nursing student studies (14,15,23,24).

CONCLUSION AND RECOMMENDATIONS

Needlestick and sharps injuries represent a significant occupational hazard for nursing students. It was determined that 16.8% of the students experienced needlestick and sharps injuries during their undergraduate education, with injuries most commonly occurring during clinical practise in internal medicine and surgical clinics, where invasive procedures are frequent. The findings indicated that injuries predominantly occurred among first-year students, with the most common cause being the injection needle. The injuries frequently happened while breaking the ampoules and attempting to remove the needle cap. The reporting rates for injuries were low, and the most common action taken after an injury was washing the affected area with soap and water or disinfectant. It was observed that students most often reported injuries to their classmates and nurses. Students indicated that the injuries resulted from carelessness and rushing. Occupational safety training targeting nursing students should be enhanced before they begin their clinical practise in Turkey. Further studies are needed to develop and evaluate effective interventions to prevent needlestick and sharps injuries among Turkish nursing students.

Ethics Committee Approval: To conduct the research, written permission was obtained from Bursa Uludağ University Health Research and Publication Ethics Committee (Ethics Committee Date/Number: 05.02.2019 / 2019-02-13) and from the institution where the data was collected (Research Commission Date/Number: 22.03.2019/ 2-518/59).

Informed Consent: Written consent was obtained from the participants.

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