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Health Discipline Students' Sensitivity to the Threat of Infection

Sağlık Disiplini Öğrencilerinin Enfeksiyon Tehdidine Karşı Duyarlılıkları

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ABSTRACT

Objective: The aim of this study was to determine the sensitivity of health discipline students practising in clinics to the threat of infection.

Methods: It is a descriptive study. A total of 316 participants were reached. The data were collected between 01.02.2024-01.04.2024 using the Personal Information Form and the Sensitivity to Infection Threat Scale. Mann-Whitney U test, Kruskal-Wallis test and descriptive statistics were used to analyse the data. Significance was accepted as $p<0.05$.

Results: In the study, it was found that 62.7% of the participants were between the ages of 18-21 years, 27.2% were nursing students, 57% had not been in clinical practice before, and 63% had not received any training on infection. The median score of the Susceptibility to Infection Threat Scale used in the study was found to be 24 (0-80). In the study, a statistically significant relationship was found between the median score of the scale and age, gender and the department of the students ($p<0.05$).

Conclusion: As a result, it was determined that students studying in the department of nursing had a higher sensitivity to the threat of infection. The fact that nursing students have more contact with patients and perform more invasive interventions increases their susceptibility to infection.

Keywords: Infection threat, clinical practice, health discipline students

ÖZ

Amaç: Bu çalışmanın amacı, kliniklerde uygulamaya çıkan sağlık disiplini öğrencilerinin enfeksiyon tehdidine karşı duyarlılıklarını belirlemektir.

Yöntem: Tanımlayıcı türde bir araştırmadır. Toplamda 316 katılımcıya ulaşılmıştır. Veriler, 01.02.2024-01.04.2024 tarihleri arasında Kişisel Bilgi Formu ve Enfeksiyon Tehdidine Karşı Duyarlılık Ölçeği kullanılarak toplanmıştır. Verilerin analizinde, Mann-Whitney U testi, Kruskal-Wallis testi ve tanımlayıcı istatistikler kullanılmıştır. Anlamlılık $p<0,05$ olarak kabul edilmiştir.

Bulgular: Çalışmada, katılımcıların %62,7'sinin 18-21 yaş aralığında olduğu, %27,2'sinin hemşirelik bölümü öğrencisi olduğu, %57'sinin daha önce klinik uygulamaya çıkmadığı, %63'ünün enfeksiyon ile ilgili herhangi bir eğitim almadığı saptanmıştır. Çalışmada kullanılan Enfeksiyon Tehdidine Karşı Duyarlılık Ölçeği puan ortancası 24 (0-80) olarak saptanmıştır. Araştırmada ölçek puan ortancası ile yaş, cinsiyet ve öğrencilerin okudukları bölüm arasında istatistiksel olarak anlamlı ilişki saptanmıştır ($p<0,05$).

Sonuç: Sonuç olarak, hemşirelik bölümünde okuyan öğrencilerin enfeksiyon tehdidine karşı daha yüksek duyarlılığının olduğu belirlenmiştir. Hemşirelik öğrencilerinin hastalarla daha fazla temasta olması ve daha çok invaziv girişimlerde bulunmaları enfeksiyona karşı duyarlılıklarını arttırmaktadır.

Anahtar kelimeler: Enfeksiyon tehdidi, klinik uygulama, sağlık disiplini öğrencileri

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INTRODUCTION

Infections have been a threat to human health throughout history, and the number of deaths due to infections in recent years cannot be underestimated [1]. In our country and around the world, healthcare workers in particular are at risk from their working environment [2-4]. Studies have shown that healthcare workers are more exposed to infectious diseases than workers in other sectors [5]. Hospitals in particular are high-risk sites for the transmission of infections [6]. There are many routes of infection transmission for hospital workers and trainees. Some are through respiration, some through the skin and some through invasive procedures (needlesticks, sharps injuries or splashes) [7,8]. This situation leads to exposure to infections such as human immunodeficiency virus (HIV), hepatitis B/C, tuberculosis, coronavirus disease-2019 (COVID-19), which can have serious health consequences for healthcare workers and students [9-11]. Infections acquired during the provision of healthcare services are known as healthcare-associated infections and can be acquired anywhere along the healthcare continuum [1,12]. These infections pose a major risk not only to patients, but also to healthcare workers and students on hospital placements [13,14]. Adherence to standard precautions and isolation rules has been reported to be highly effective in preventing infection in healthcare settings [15]. These standard precautions include adherence to hand hygiene, protection from blood and body fluids, use of personal protective equipment, adherence to principles of environmental cleaning and disinfection, intelligent waste management and infection control in support units [16,17].

In particular, health students entering clinical practice should have a high level of knowledge about infections, transmission routes and prevention methods. It is important that these students, as future health workers, have sufficient knowledge and skills not only for themselves but also for the protection of other members of society [14]. A study conducted in our country found that 80.9% of students were exposed to penetrating sharps injuries [18], and another study found that most penetrating sharps injuries occurred among interns and nurses, and infections such as hepatitis B in 9.9%, hepatitis C in 9.5%, HIV in 3.2%, and Crimean-Congo haemorrhagic fever in 0.9% of patients [19]. A study of nursing students found that nursing students had a high level of fear of infection transmission [20]. In a study conducted in Spain, health students were found to be more fearful of COVID-19 infection than students in other undergraduate programmes [21]. Similarly, Döner and Efe [22] found that nursing students experienced anxiety in clinical practice during the pandemic period. All these studies show that students in health disciplines experience anxiety and fear when faced with the threat of infection. This is the first study to reveal the susceptibility of health discipline students to the threat of infection in clinical practice.

MATERIAL AND METHOD

Type of Research

This study was designed as a descriptive study.

Place and Time of the Study

This study was conducted between 01.02.2024-01.04.2024 with all health students who came to clinical practice in University of Health Sciences Türkiye, Samsun Training and Research Hospital.

Population/Sample of the Study

The population of the study consisted of all health students who came to the hospital for clinical placements in the spring semester of 2024. There was no sampling in the study and students who volunteered to take part in the study were included. The study was completed with a total of 316 health students.

Data Collection

After obtaining ethics committee approval was obtained from Samsun University Non-Interventional Clinical Research Ethics Committee (approval no.: 2024/2/13, date: 17.01.2024), data were collected using the face-to-face questionnaire method from the students who came to the hospital for clinical placements before the start of clinical placements. The Personal Information Form and Sensitivity to Infection Threat Scale were used to collect the data. Verbal and written consent was obtained from the students who volunteered to participate in the study.

Data Collection Tools

Personal Information Form: The form was prepared by the researchers in line with the literature [2,5] and consisted of a total of 12 questions including age, gender, the department the students were studying in and the grade they were in, preference and satisfaction with the department, feeling suitable for the department and being ready for internship, confidence in theoretical knowledge, previous infection education, and whether the students had any chronic disease and which chronic disease they had.

Susceptibility to Infection Threat Scale: The scale was developed by Turan and Tekin [1] in 2023. It consists of a total of 20 questions. It is a five-point Likert scale. Each item is scored from never (0) to always (4). The total scale score varies between 0 and 80 points. A score of 80 indicates the highest susceptibility to infection, while a score of 0 indicates no susceptibility to infection [1]. While the Cronbach's alpha value of the scale was 0.94, it was found to be 0.964 in this study.

Statistical Analysis

Statistical analyses were performed using SPSS version 21.0. The socio-demographic characteristics of the students were presented in numbers and percentages. Comparison of scale median scores of paired groups was analysed using the Mann-Whitney U test. The Kruskal-Wallis test was used to compare the medians of the total scale scores of more than two groups. The level of statistical significance was accepted as $p<0.05$.

RESULTS

A total of 316 health students took part in the study. It was found that 62.7% of all participants were aged 18-21 years and were

female (81.6%). It was found that 27.2% of the participants were nursing students and 31% of the students were first year students. It was found that 90.2% of the students preferred the department, 96.2% were satisfied with the department they studied, 97.2% felt suitable for the department they studied, 95.9% felt ready for clinical practice and 76.6% felt their knowledge was sufficient for clinical practice. It was found that 63.3% of the students had not received any training in infectious diseases and 93% of them did not have any disease (Table 1).

The median scale score for the study was 24 (0-80). When the median scale scores and age groups were compared, it was found that participants in the 18-21 age group had a significantly higher susceptibility to infection than participants in the 22-25 age group. When looking at gender groups, women had a higher susceptibility to infection than men and there was a significant difference between them ($p<0.05$). When comparing the median score on the Infection Susceptibility Scale with the department of the students, it was found that the infection susceptibility of nursing students was higher and significant than the infection susceptibility of students in other departments ($p<0.05$). No significant correlation was found between the mean score of the Infection Susceptibility Scale and the year in which the health students were enrolled, their choice of department, their satisfaction with studying in the department, their feeling suitable for the department, their feeling ready for clinical practice, their feeling that their level of knowledge was sufficient for clinical practice, whether they had received infection education, whether they had any illnesses and whether they had existing illnesses ($p>0.05$) (Table 2).

DISCUSSION

This study revealed that students studying in the field of health have a low level of sensitivity to the threat of infection. However, it was found that the sensitivity of nursing and elderly care students was higher than other groups. In a study, it was found that female students studying in the department of nursing had a higher fear of getting COVID-19, disease, an infectious disease [23].

In the study, when comparing the age groups and the median score of the sensitivity to the threat of infection scale, it was found that the sensitivity to the threat of infection of students in the 18-21 age group was significantly higher. When the median scale score was compared with the gender groups, it was found that the sensitivity to the threat of infection of female students was higher than that of male students. In a study conducted by Kecojevic et al. [24] it was reported that the level of anxiety against the risk of COVID-19 infection was higher in female students.

In similar studies in the literature, it was reported that the rate of reporting perceived stress levels of female students was higher than that of male students [25,26]. It is considered that men and women are more likely to express stress in life-threatening situations such as infection due to the differences in their attitudes, feelings and experiences towards life.

It was found that there was a high level of significance when the students' department of study was compared with their sensitivity to the threat of infection, and this was found to be due to nursing department students. In a review of the literature, a study conducted by Bulut and Taşkıran [27] with nursing students in clinical

Table 1. Socio-demographic Data of Health Discipline Students

Features		n	%
Age group	18-21	198	62.7
	22-25	118	37.3
Gender	Woman	258	81.6
	Male	58	18.4
Section	Nursing	86	27.2
	Biomedical	56	17.7
	Health management	25	7.9
	First and emergency aid	24	7.6
	Medical laboratory	42	13.3
	Audiology	7	2.2
	Nutrition and dietetics	19	6.0
	Aged care	14	4.4
	Pharmacy	21	6.6
	Operating theatre	22	7.0
Classroom	1	98	31.0
	2	80	25.3
	3	74	23.4
	4	64	20.3
To prefer the department willingly	Yes	285	90.2
	No	31	9.8
Satisfaction with studying the department	Yes	304	96.2
	No	12	3.8
Feeling suitable for the department	Yes	307	97.2
	No	9	2.8
Feeling ready for an internship	Yes	303	95.9
	No	13	4.1
Thinking that theoretical knowledge is sufficient for internship	Yes	242	76.6
	No	74	23.4
Infection training status	Yes	116	36.7
	No	200	63.3
The presence of any disease	Yes	22	7
	No	294	93
Existing disease	Migraine	4	1.3
	Tachycardia	8	2.5
	FMF	2	0.6
	Asthma	8	2.5

FMF: Familial Mediterranean Fever

Table 2. Comparison of Socio-demographic Data and Scale Scores of Students			
Features		**Med (min-max)**	**p/test value**
Scale total score		24 (0-80)	
Age group	18-21	26 (0-80)	**p=0.008** U=9613.0
	22-25	23 (2-80)	
Gender	Woman	26 (0-80)	**p=0.040**
	Male	23 (2-80)	U=6193.0
Section	Nursing	29 (5-80)	**p=0.001** χ^2=35.049
	Biomedical	23 (0-53)	
	Health management	20 (0-55)	
	First and mergency aid	23 (6-52)	
	Medical laboratory	19 (0-50)	
	Audiology	18 (12-44)	
	Nutrition and dietetics	18 (2-45)	
	Aged care	28 (5-48)	
	Pharmacy	23 (8-45)	
	Operating theatre	25 (4-46)	
Classroom	1	25 (0-80)	p=0.931 χ^2=0.443
	2	23 (2-80)	
	3	24 (2-80)	
	4	23.5 (6-80)	
To prefer the department willingly	Yes	24 (0-80)	p=0.409
	No	27 (4-80)	U=4816.0
Satisfaction with studying the department	Yes	24 (0-80)	p=0.180
	No	34 (12-80)	U=2239.50
Feeling suitable for the department	Yes	24 (0-80)	p=0.422
	No	32 (10-55)	U=1598.50
Feeling ready for an internship	Yes	24 (0-80)	p=0.855
	No	27 (10-39)	U=2028.50
Thinking that theoretical knowledge is sufficient for internship	Yes	23 (0-80)	p=0.496
	No	27 (0-80)	U=9421.50
Infection training status	Yes	27 (4-80)	p=0.086
	No	23 (0-80)	U=10256.0
The presence of any disease	Yes	26.5 (4-80)	p=0.807
	No	24 (0-80)	U=3133.0
Existing disease	Migraine	25 (14-38)	p=0.772
	Tachycardia	21 (4-38)	χ^2=1.122
	FMF	24 (13-35)	p=0.772
	Asthma	30.5 (8-80)	χ^2=1.122
FMF: Familial Mediterranean Fever			

practice found that students were afraid of the risk of contracting an infectious disease (COVID-19). In a study conducted by Birimoğlu Okuyan et al. [28] with nursing students, it was reported that students had high levels of health anxiety due to fear of contracting a virus and fear of death. Many studies have found that nursing students are sensitive to the risk of infection transmission in clinical practice and experience anxiety and fear [29-31]. One study analysed 6 years of data from 143 healthcare workers exposed to sharps injuries [32]. Another study reported that healthcare workers in particular experienced high levels of fear of infection and transmission [33].

A study of midwifery and nursing students reported that almost half of the students (43.6%) had been exposed to sharps injuries and that these students had only received theoretical training on the use of sharps (83.3%) [34]. Another study reported that 18.2% of nursing students who went into clinical practice were injected with contaminated needles during treatment [35]. A study conducted in China reported that 60.3% of 442 nursing students were exposed to a sharps injury [36], and a meta-analysis study investigating another sharps injury reported that 35% of nursing students experienced a contaminated needle stick [37]. The nursing curriculum exposes students to direct patient contact through invasive procedures such as venipuncture, injection and dressing [38]. This shows that students may be exposed to various risks of infection if they do not take the necessary precautions during clinical practice [39]. Although there are requirements for the implementation of protective measures according to hospital quality standards, factors such as the intensity of the clinic, student carelessness, inadequate staffing or poor implementation of protective measures can cause injury and lead to serious health problems related to infection [32]. This finding suggests that nursing students may be more sensitive to the threat of infection because they are at risk of being exposed to any infection in the hospital environment.

Study Limitations

The fact that the results of the research can be generalised only to the group of students who have clinical practice in the hospital where the research was conducted is considered as the limitation of this research.

CONCLUSION

The hospital is a complex, intense and confusing environment for clinical students. In order to reduce the risk of exposure to infection, it is recommended that clinical students receive orientation in the hospital in addition to their theoretical education. Clinical students should also be observed taking and implementing the necessary precautions against the risk of infection. Protective measures will prevent skin and respiratory contact with blood and body fluids and minimise the risk of infection.

It is also important to strengthen the curricula of nursing students and students who are engaged in clinical practice in other health fields to meet the knowledge and skills required in professional practice and to develop new educational strategies that can sensitise students to this problem.

Ethics

Ethics Committee Approval: Ethics committee approval was obtained from Samsun University Non-Interventional Clinical Research Ethics Committee (approval no.: 2024/2/13, date: 17.01.2024).

Informed Consent: Verbal and written consent was obtained from the students who volunteered to participate in the study.

Footnotes

Author Contributions

Surgical and Medical Practices: ÜK, DK, ES; Concept: ÜK, DK; Design: ÜK, DK, ES; Data Collection or Processing: DK, ES; Analysis or Interpretation: ÜK, DK, ES; Literature Search: ÜK, DK, ES; Writing: ÜK, DK, ES.

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REFERENCES

1. Turan N, Tekin I. Development and validation of the sensitivity to infection threats scale (SITS). IJPES. 2023; 10(1): 22-33. [Crossref]
2. Çakar M, Yıldırım Şişman N, Oruç D. Health risks in nursing students' clinical applications. DEUHEFED. 2019; 12(2): 116-25. [Crossref]
3. Çetin İ, Alptekin HM. The situations to determine the factors affecting the infection risk for nursing students' internship in surgical clinics. KOU Sag Bil Derg. 2021; 7(3): 269-74. [Crossref]
4. Ağuş M, Akbel E. Assessment of physical risk factors in healthcare professionals. Journal of Occupational Health and Safety Academy Open Access. 2020; 3(3): 230-7. [Crossref]
5. Ateş FM, Albayrak M, Bayır Y. Levels of knowledge of protection from infectious infections, particularly covid, of medical worker prospective students. Journal of Midwifery and Health Sciences. 2023; 6(1): 37-48. [Crossref]
6. Yanık A, Kurul N. Risk management perception of health workers: an application in hospital. Usaysad Derg. 2020; 6(2): 287-302. [Crossref]
7. Öztürk F, Sarıcaoğlu H. Ektoparaziter veneral hastalıklar; skabies, pedikülozis pubis. In: Aydoğan K, editor. Venereolojide Güncel Yaklaşımlar. 1. baskı. Ankara: Türkiye Klinikleri; 2021. p. 49-55. [Crossref]
8. Ceylan MR, Çelik M. Sharp and cutting tool injuries in healthcare workers: a second stage hospital experience. Abant Med J. 2022; 11(1): 37-44. [Crossref]
9. Olgun S, Khorshıd L, Eşer İ. The examination of frequency of needle-stick and sharps injury and the effecting factors in nurses. Ege Üniversitesi Hemşirelik Fakültesi Dergisi. 2014; 30(2): 34-48. [Crossref]
10. Bişkin Çetin S, Sözel H. Death anxiety levels of healthcare professionals in the COVID-19 period. Eskisehir Med J. 2021; 2(2): 74-81. [Crossref]
11. Yüce A, Eren Kutsoylu OÖ. Airborne transmitted infections and prevention: tuberculosis. Turkiye Klinikleri J Inf Dis-Special Topics. 2015; 8(1): 5-10. [Crossref]
12. World Health Organization (WHO). COVID-19 healthcare [Internet]. Geneva: WHO; 2024 [cited 2024 Apr 1]. Available from: https://www.who.int/home/search-results?indexCatalogue=genericsearchindex1&searchQuery=covid-19%20healtcare&wordsMode= AnyWord [Crossref]
13. Orhan Z, Kayış A, Sönmez M, İnal Ş, Kaya E, Aral M. Nurses' knowledge levels and practices regarding their occupational risks and nosocomial infections. TÜSBAD. 2021; 4(1): 18-30. [Crossref]
14. Şen S, Aydın Ç, Bayraktar HN, Demir S. Investigation of knowledge, attitude, practice, and affecting factors of health sciences students on COVID-19. SHYD. 2022; 9(1): 79-88. [Crossref]
15. Çelik Bekleviç A. COVID-19 and infection control measures in health care centers. Med J West Black Sea. 2021; 5(2): 125-31. [Crossref]
16. Çelik B, İbrahimoğlu Ö, Mersin S. The effect of burnout on health care associated infections in health professionals. TÜSBAD. 2020; 3(1): 61-8. [Crossref]
17. Sönmez A, Öztürk ŞB, Abacıgil F. Health care related infection epidemiology and surveillance. Journal of Nursing Science. 2021; 4(1): 41-5. [Crossref]
18. Savcı C, Şerbetçi G, Kılıç Ü. Status of health discipline students to receive training on occupational health and safety and exposure to occupational accident. SHYD. 2018; 5(1): 36-47. [Crossref]
19. Çiçek E, Uçar MT, Küçükkendirci H. Evaluation of sharps injury notifications in a medical faculty hospital. Journal of Midwifery and Health Sciences. 2024; 7(3): 506-15. [Crossref]
20. Akutay S, Yüceler Kaçmaz H, Yiğit Ş. Determination of nursing students' adaptation to isolation preventions and fear of contagion levels: a cross-sectional study. EGEHFD. 2024; 40(2): 261-72. [Crossref]

21. Martínez-Lorca M, Martínez-Lorca A, Criado-Álvarez JJ, Armesilla MDC, Latorre JM. The fear of COVID-19 scale: validation in Spanish University students. Psychiatry Res. 2020; 293: 113350. [Crossref]
22. Döner S, Efe YS. Anxiety levels and affecting factors of nursing students regarding clinical practice in the Covid-19 outbreak: a multicentral web-based study. YOBÜ Faculty of Health Sciences Journal. 2023; 4(2): 170-85. [Crossref]
23. Nehir S, Güngör Tavşanlı N. The effect of Covid-19 pandemic on the nursing and midwifery students' perception of fear and control. Medical Sciences. 2021; 16(2): 141-50. [Crossref]
24. Kecojevic A, Basch CH, Sullivan M, Davi NK. The impact of the COVID-19 epidemic on mental health of undergraduate students in New Jersey, cross-sectional study. PLoS One. 2020; 15(9): e0239696. [Crossref]
25. Brougham R, Zail CM, Mendoza CM, Miller JR. Stress, sex differences, and coping strategies among college students. Curr Psychol. 2009; 28(2): 85-97. [Crossref]
26. Olfert MD, Barr ML, Charlier CC, Greene GW, Zhou W, Colby SE. Sex differences in lifestyle behaviors among U.S. college freshmen. Int J Environ Res Public Health. 2019; 16(3): 482. [Crossref]
27. Bulut S, Taşkıran N. Hemşirelik öğrencilerinin mesleğe yönelik tutumu ile COVID-19 enfeksiyonu korkusu arasındaki ilişki. Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi. 2023; 10(3): 207-13. [Crossref]
28. Birimoğlu Okuyan C, Karasu F, Polat F. The effect of COVID-19 on health anxiety levels of nursing students. Van Sag Bil Derg. 2020; 13: 45-52. [Crossref]
29. Baluwa MA, Konyani A, Chipeta MC, Munthali G, Mhango L, Chimbe E, et al. Coping with fears of Covid-19 pandemic among nursing students during clinical practice: Malawi's perspective. Adv Med Educ Pract. 2021; 12: 1389-96. [Crossref]
30. Yazici HGN, Ökten Ç. Nursing students' clinical practices during the COVID-19 pandemic: fear of COVID-19 and anxiety levels. Nurs Forum. 2022; 57(2): 298-304. [Crossref]
31. Rana N, Kalal N, Sharma SK. Fear and challenges of nursing students being in hospital for clinical posting during the COVID-19 pandemic: an exploratory survey. Front Psychol. 2022; 13: 867606. [Crossref]
32. Akyıldız Ö. Evaluation of sharp injuries among health care workers in a private hospital. Journal of Harran University Medical Faculty. 2022; 19(3): 551-5. [Crossref]
33. Yapar D, Demir Avcı Y, Tokur Sonuvar E, Karakaya İ, İlhan MN. The Covid-19 experience as a learning opportunity for future outbreaks: a qualitative study on infection anxiety of health workers at a university hospital. Turk J Clin Lab. 2023; 14(2): 370-9. [Crossref]
34. Menteşe HÖ, Karaca A. Knowledge levels of needlestick and sharps injuries about nursing and midwifery students. Klimik Derg. 2021; 34(3): 156-63. [Crossref]
35. Al Qadire M, Ballad CAC, Al Omari O, Aldiabat KM, Shindi YA, Khalaf A. Prevalence, student nurses' knowledge and practices of needle stick injuries during clinical training: a cross-sectional survey. BMC Nurs. 2021; 20(1): 187. [Crossref]
36. Zhang X, Chen Y, Li Y, Hu J, Zhang C, Li Z, et al. Needlestick and sharps injuries among nursing students in Nanjing, China. Workplace Health Saf. 2018; 66(6): 276-84. [Crossref]
37. Xu X, Yin Y, Wang H, Wang F. Prevalence of needle-stick injury among nursing students: a systematic review and meta-analysis. Front Public Health. 2022; 10: 937887. [Crossref]
38. İlaslan N, Demiray A. Two different teaching methods using in nursing education: how does reflected on standardized patient practice? Türkiye Klinikleri Journal of Nursing Sciences. 2020; 12(4): 552-64. [Crossref]
39. Suliman M, Al Qadire M, Alazzam M, Aloush S, Alsaraireh A, Alsaraireh FA. Students nurses' knowledge and prevalence of needle stick injury in Jordan. Nurse Educ Today. 2018; 60: 23-7. [Crossref]