

WCES 2013

Needlestick injuries during education period in nursing students in Turkey

Zeynep Canli Ozer ^a*, Hicran Aydin Bektas ^a

^aAssoc Prpf., Akdeniz University Antalya Health School, Antalya-07050, TURKEY

Abstract

Needlestick and sharp injuries are important problems for nursing students as they increase the risk of spread of infection. The aims of this study were to investigate the prevalence of needlestick and sharps injuries (NSI) of work-related in Turkish nursing students. A questionnaire-based methodology adapted from other international investigations was conducted among 285 nursing students in Turkey in 2007, and analysed needlestick and sharps events as a percentage of all students and as a proportion of all cases. A total of 33.0% students reported a NSI. By causative item, 43.6% of students had been injured by a glass item, 39.4% by a normal injector syringe needle. Regarding prior usage, 79.5% of all injuring items were unused, 17.8% had been used on a patient. The NSI occurred in the medical clinic (33%). This study has shown that NSI occur among Turkish nursing students at reasonably high rates when compared internationally. We recommend that student nurses require targeted education for injection practices, and information about the existence of formalized reporting mechanisms.

© 2012 Published by Elsevier Ltd. Selection and/or peer review under responsibility of Prof. Dr. Hüseyin Uzunboylu

Open access under [CC BY-NC-ND license](https://creativecommons.org/licenses/by-nc-nd/4.0/).

Keywords: Needlestick, nurses, prevalence, student, sharps, education.

1. Introduction

Needlestick and sharps injuries represent a major occupational hazard in the healthcare industry, with nurses incurring a large proportion of the total burden. Student nurses are also at significant risk from occupationally acquired infections, as many of their NSIs involve devices that have been used on a patient prior to the NSIs (Whitby & McLaws, 2002). Nursing students are exposed to these risks on a daily basis, when administering drugs in the healthcare setting and also when practising in the clinical skills laboratory (Hambridge, 2011). Although nurses are a high-risk subgroup for NSIs, nursing students may be at similar or greater risk due to their limited clinical experience (Shiao et al., 2002). Students, in clinical practice in hospitals, are particularly vulnerable to accidental exposures to blood-borne pathogens. Their manual skills are underdeveloped, and their clinical experience is limited, but they are eager to learn new procedures.

* PhD Zeynep Canlı Özer

E-mailing address: zeynepcanli@akdeniz.edu.tr

Job Phone: 0090 3106126

Fax Number: 0242 226 14 69

Akdeniz University School of Health 07058 Turkey /Antalya

An incidence of needle stick injuries in medical students of 0.3 per student per year has been reported (Choudhury & Cleater, 1992). Moreover, in cross-sectional surveys using questionnaires, 12–41% of medical students reported needlestick injuries (Sullivan et al., 2000; Patterson et al., 2003; Deisenhammer et al., 2006).

Aims of the present study

The aims of this study were to investigate the prevalence and nature of NSI among Turkish nursing students, to estimate the number of vaccinations administered, to investigate type of needlestick and sharps injuries, and to provide data about circumstances of NSI.

Methods

A cross-sectional study was carried out with nursing students at Akdeniz University School of Health in 2007 at a university school in the Mediterranean region in Turkey. A total of 285 student nurses were in this research. The percentage of the population reached and included was 89.3 %. The questionnaire was developed from related (Sullivan et al., 2000; Patterson et al., 2003; Deisenhammer et al., 2006) by the researcher. Two nurse educators revised and validated it and the questionnaire consisted of 18 items. The questionnaire included five items that anonymously queried students on the following: demographics, including age, sex, class, graduated middle school, HBV vaccination status, NSI, practice done when receive a NSI to hand in students. The instrument's reliability and validity were also confirmed in the pilot study before using it.

A 12-month recall period was used throughout the questionnaire. The survey instrument was distributed and collected at the end of a suitable lecture or practical session for each of the 4 years of the programme following a verbal briefing by one of the investigators. The questionnaire form was completed in face-to-face interviews. The time taken to complete each questionnaire was 10-15 minutes. Permission to conduct the study was obtained from the Director of School. Informed consent was implied when students completed and returned their questionnaires.

The data were evaluated using the Statistical Package for Social Sciences (SPSS 13.0) programme.

Results

Some of the sociodemographic characteristics of the students in the research are shown in Table 1.

Table I. Demographic Characteristics of Students

Sociodemographic characteristics (N=285)	N	%
Mean Age	20.94 (±1.9)	
Gender		
Female	285	100.00
Graduated Middle School		
Normally middle school	273	95.7
Health middle school	12	4.3
Year of the study		
First year	86	30.1
Second year	63	22.1
Third year	66	23.2
Fourth year	70	24.6
Previous nursing experience		
Yes	6	2.1
Vaccination against hepatitis B		
Yes	277	97.2
Immunization Status		
Complete (3 doses)	248	87.0
Knowledge of NSI		
Yes	168	58.9
Knowledge of universal precautions		
Yes	155	54.4

Prevalence of Needlestick and Sharps Injuries of the students in the research are shown in Table 2. The NSI prevalence was as follows: 31.4% in the first year, 44.4% in the second year, 39.4% in the third, and 18.6% in the fourth, a statistically significant difference (Chi-square = 11.281 p=0.01).

Table II. Prevalence of Needlestick and Sharps Injuries

Causative Device	Prevalence by year of study (%)											
	All (N=285)		Student		First year (N=86)		Second year (N=63)		Third year (N=66)		Fourth year (N=70)	
	n	%	n	%	n	%	n	%	n	%	n	%
Glass item	41	14.4	8	9.3	16	25.4	10	15.2	7	10.0		
Injector syringe	37	12.9	13	15.1	8	12.7	12	18.2	4	5.7		
Blood glucose lancet	6	2.1	4	4.7	1	1.6	1	1.5	0	0.0		
Butterfly needle	5	1.7	1	1.2	1	1.6	2	3.0	1	1.4		
Scalpel blade	3	1.1	1	1.2	0	0.0	1	1.05	1	1.4		
Bottle of patient secretion	2	0.7	0	0.0	2	3.2	0	0.0	0	0.0		
Any NSI device	94	33.0	27	31.4	28	44.4	26	39.4	13	18.6		

Chi-square = 11.281 p=0.01

Discussion

The needlestick injuries occur frequently among medical students (Sullivan et al., 2000; Patterson et al., 2003; Deisenhammer et al., 2006). Overall, NSI reporting rates increased significantly between the first year and the third. In Turkey, practical nursing experience begins in the first year and culminates in the fourth year with a 4-month nursing practicum at teaching hospitals and other affiliated healthcare services. Throughout this time, students are gradually exposed to more and more needles and sharps activities as their competency improves and their clinical skills develop. The clinical responsibilities of student nurses in the main routine patient care involve measuring patients basic vital signs (body temperature, pulse, blood pressure and respiration) (Schaffer, 1997). Turkish student nurses are also expected to administer injections and manage patients with HBV and HCV under adequate supervision. The process of clinical internship can be very stressful to student nurses especially in the areas of personal inadequacy and the fear of making mistakes (Sawatzky, 1998). Therefore, aside from the lack of knowledge of the reporting mechanisms, underreporting may be linked to the fear of being considered to have poor clinical skills. The student nurses are performing these clinical responsibilities as an educational pathway for the acquisition of the knowledge and technical competence rather than sharing the registered nurses' clinical workload in a less intensive manner. Compliance with universal precautions by student nurses is far less than acceptable; in particular, behavior associated with the disposal of used needles. We recommend that student nurses require targeted education for injection practices, and information about the existence of formalized reporting mechanisms. It is important that NSI reporting continues to be emphasized in undergraduate nursing education.

References

- Choudhury, R.P., & Cleator, S.J. (1992). An examination of needlestick injury rates, hepatitis B vaccination uptake and instruction on 'sharps' technique among medical students. *Journal of Hospital Infection*, 22, 143–148.
- Deisenhammer, S., Radon, K., Nowak, D., & Reichert, J. (2006). Needlestick injuries during medical training. *Journal of Hospital Infection*, 63, 263–267.
- Hambridge, K. (2011). Needlestick and sharps injuries in the nursing student population. *Nursing Standard*, 25, 38-45.

- Patterson, J.M.M., Novak, C.B., Mackinnon, S.E., & Ellis, R.A. (2003). Needlestick injuries among medical students. *American Journal of Infection Control*, 31, 226–230.
- Sawatzky, J.A.V. (1998). Understanding nursing students' stress: a proposed framework. *Nurse Education Today*, 18,108–115.
- Schaffer, S. (1997). Preventing nursing student exposure incidents: the role of personal protective equipment and safety engineered devices. *Journal of Nursing Education*, 36, 416–420.
- Shiao, J.S.C., McLaws, M.L., Huang, K.Y., & Guo, Y.L. (2002). Student nurses in Taiwan at high risk for needlestick injuries. *Annals of Epidemiology*, 12, 197–201.