Original Article

The prevalence of needle stick and sharps injuries in nurses in North Cyprus

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ABSTRACT

Objective: The aim of this descriptive study was to determine the prevalence of Needle Stick and Sharps Injuries (NSSIs) in nurses working in North Cyprus.

Methodology: This descriptive study was conducted in Cyprus. Sample of the study comprised 151 nurses. Data were collected using a questionnaire developed by the researchers.

Results: According to the data, 68.2% of the nurses experienced NSSI, which was mostly by (79.6%) needle stick. The rate of injury was found to be higher in nurses working in emergency service, surgery clinics and intensive care units. The rate of reporting the injury after the event was found to be low (15.5%).

Conclusion: This study shows that a significant percentage of nurses receive NSSIs. Systematic control measures, including an effective and goal-oriented education program targeting NSSIs should be implemented in the hospital setting.

KEY WORDS: Nurse, Needle stick injuries, Sharps injuries, Occupational infections.

Pak J Med Sci April - June 2012 Vol. 28 No. 3 437-440

How to cite this article:

Akgur M, Dal U. The prevalence of needle stick and sharps injuries in nurses in North Cyprus. Pak J Med Sci 2012;28(3):437-440

INTRODUCTION

Leading professional risks of health workers may be listed as infection, radiation, toxic-chemical risks, physical risks (heat, noise, dust etc.), muscoloskeletal system problems and stress. Among these, the most frequent cause of disease and deaths are infections, some of which develop due to NSSI.[1-3] In various studies, it was reported that a large proportion of health workers are exposed to NSSI and its prevalance was high particularly in nurses.[4-8]

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* Received for Publication: February 21, 2012
* Revision Received: March 12, 2012
* Revision Accepted: April 5, 2012

Such injuries lead to primarily transmission of Hepatitis B, Hepatitis C and HIV. In the literature, it was reported that at least 20 different pathogens are transmitted with NSSI.[1,8]

In the study of Omac (2005), it was reported that according to International Labour Organization (ILO), of 136 million health workers, 6 million meet patients carrying potential risk. Of six million recorded health workers, almost half are nurses.[7] The data of National Surveillance System for Health Care Workers (NaSH) demonstrates that nurses, who form the majority of hospital work force, are tthe group who are most exposed to NSSIs.[9]

Infectious agents acquired in work place produce risk for patients, other health workers, family members and other social contacts.[10] NSSIs also influence the person emotionally in addition to transmitting infection. When the risk of transmission is high and it occurs, family and relatives of the health worker are also affected from this injury.[5,7,8,10]

It is imperative to report each case of NSSI as it may be life threatening due to the possibility of HIV, HBV and HCV risk. It has been established that health workers do not report injuries they

experience and do not seek medical help and that they do not have enough information on the subject and even if they have information, they do not take universal measures adequately.[2,9,11-13] It should be borne in mind that health workers need training on protection from injuries, what should be done after injury, reporting of accidents for increasing personal awareness on the issue and safe practice. The aim of this descriptive study was to determine the prevalence of Needle Stick and Sharps Injuries (NSSIs) in nurses working in North Cyprus.

METHODOLOGY

There are 460 patient beds in the hospital (with 19 clinics, 1 general intensive care unit and 1 neurological intensive care unit) and overall 365 nurses work there. There is no protocol or written material regarding measures against NSSI in the hospital. The sample of the study comprised 151 (41.3%) who consented to participate in the study, of 365 nurses working in the hospital.

Data were collected by the question form developed by the investigators after literature review on the issue, with face to face interview. There were 31 questions to determine demographic characteristics and NSSI status. After pilot administration was made, question form was revised. Question form was adminsitered by the investigator when it was convenient for participants. After forms were filled, questions asked by the nurses on NSSIs were answered by the investigator.

Data obtained were evaluated with, Statistical Package For The Social Sciences (SPSS) for Windows 11.0 program using proper statistical methods. Near East University Scientific Investigations Ethics Committee aprroved of the study. After participating nurses were informed on the aim of the study, their informed consent was taken.

Table-I: The status of medical NSSI and contaminated NSSI in the nurses.

	S	%
Medical NSSI status		
Injured	103	68.2
Not injured	48	31.8
The number of medical NSSI (n:103)		
1- 2	29	28.1
3 - 6	35	34.1
7 and over	39	37.8
Tool causing injury (n:103) *		
Needle stick	82	79.6
Scalpel	24	23.3
Medical ampule	16	15.5
Lancet	8	7.8
Rusty scissors	6	5.8
Contaminated NSSI status (n:103)		
Yes	74	71.8
No	29	28.2
The number of contaminated NSSI(n:74)		
1- 2	27	36.5
3 - 6	23	31.1
7 and over	24	32.4

* participants answered mor than one question and percentages were taken according to n.

RESULTS

As shown in Table-I, 68.2% of the nurses participating in the study was injured with medical NSS. Of the nurses injured, 79.6% was injured with needle stick, 23.3% with scalpel and, 15.5% with medical ampule. It was established that 71.8% was injured with a contaminated NSS.

It was also established that 70.9% of the nurses was injured during intravenous/intramuscular drug administration, 62.1% during recapping of needle and 36%, while separating the needle from injector. It was also established that, after injury, 62.1% washed the injured area with antiseptic solution, 47.6% underwent investigations and 36% bleeded the injured area. Table-II

It was further established that, of the nurses included in the study, 84.5% did not report the injury. When the causes of not reporting were

Table-II: Causes of NSSI and practice after injury.

	N	%
Causes of injury (n:103)*		
İntravenous/intramuscular drug administration	73	70.9
Recapping the needle	64	62.1
Separating the needle from the injector	38	36.9
Withdrawing drug from vial	33	32.0
Accidentally when it is friend's hands	28	27.1
Bending the needle	28	27.2
Disposing to disposal box	25	24.2
Helping friend	25	24.3
Transferring blood to the tube	24	23.3
Insert intravenous catheter, drawing blood	24	23.3
Suturing	20	19.4
Cleaning material	11	10.7
Practices after injuries (n:103)*		
Washing with antiseptic solution	64	62.1
Laboratory analysis	49	47.6
Investigating the presence of contagious disease in the patient	39	37.9
Bleeding	37	36.0
Washing the injured surface with water/soap	32	31.1
No attempt since she is already vaccinated	13	12.7
Informing head nurse	12	11.7
Ig administration	9	8.8
Having vacination administered	9	8.8
Prophylactic drug use	7	6.8
No attempts	3	2.9

*Participants gave more than one answer and pecentages were calculated according to n.

investigated, it was seen that 70.1% did not know that they should report. Table-III.

DISCUSSION

Among health workers, especially nurses and surgeons have closer direct contact with patients than other workers. Therefore, the rate of NSSI in this group seems to be higher than others. Among NSSI, nedle sticks are the leading cause. In various studies, it was stated that needle sticks injuries among nurses was at the rate of 60%-90% and that this rate increased to 70-75% in nurses working in operating theaters and emergency services.[3,11,13] In the present study, it was established that of nurses 68,2% was injured with NSS at least once during their work life, and 71.8% of injuries occurred with blood contaminated tools and mostly with injection needle (79.6%) (Table-I).

Altiok et al (2009), in their study on health workers, reported the rate of injury in health workers within the last year as 79.1%.[14] Kermode et al (2005) reported that, of 266 health workers 63% experienced at least one percutaneous injury within the last year and 73% of the group experienced at least one percutaneous injury during their work lifes.[6] These studies carried out to determine the rate of NSSI in nurses yielded results similar to our study. In the aforementioned studies, the causes of high rates of NSSI in nurses may be low number of nurses in clinics, lack of regular inservice training and supervision, inadequacy of equipment and material, nurses working hurriedly owing to high number of patients per nurse, their being responsible for many procedures such as care, treatment, placing IV catheter, drawing blood and cleaning of materials and inadequate organization.

The amount of inoculum during injury is an important factor in infection. It is determined by the type and manner of injury and the characteristics of NSS causing injury. The amount of inoculum is low in injuries with lancet and suture needles while injuries with lumen needles and catheters have higher risk of contamination.[2,11,13] Of the nurses participating in the study, 79.6% was injured with needle stick and 23.3% with scalpel (Table-I). In various studies, injuries with injection needle is the leading cause.[14-18] In the investigation carried out by Centers For Disease Control (CDC), 5000 percutaneous injuries were detected with NSSs in a follow up period of five years, 62% of which occurred with injection needles.[9] Administration of injection is one of the most frequent medical procedures carried out in hospitals. In the present study, the rate of injury during intravenous / intramuscular drug administration was found to be 70.8% (Table-II). In other studies, it was reported that injuries were experienced most during drug administration.[7,14-18]

Table-III: Distribution of nurses according to status of reporting injury.

	S	%
Statsus of reporting after injury (n:103)		
Reports	16	15.5
Does not report	87	84.5
The cause of not reporting (n:87)*		
I did not know that I should report	61	70.1
I was not worried	47	54.0
There was no such committee	38	43.7
I did not have time	26	29.9
I did not know the process	23	26.4
I drew blood from the patient. No infection risk was present	19	21.8
I was injured with a s sterile device.	14	16.1
I was immune	12	13.8
The risk of contamination from the patient was low	10	11.5

* Participants gave more than one answwer and percentages were calculated according to n.

It was also established that injuries occurred mostly during recapping the needle, separating the needle from injector and disposal to disposal box. In order to prevent percutaneous injuries, needle sticks should be disposed into sharps disposal box after treatment, without being recapped. It has been reported that the majority of percutaneous injuries occur during and after treatment while carrying out procedures such as, recapping the needle after treatment, applying suture and disposal.[11,13,18,19] In the present study, it was established that the rate of being injured during recapping of needle was high (Table-II), indicating that faulty practice still continues, which causes percutaneous injuries.

In the present study, 62.1% of the nurses cleaned the injured area with antiseptic solution, 31% with water and soap while, 36% bleeded the injury site (Table-II). Our results are compatible with those of other studies.[5,13,16]

In this study, 92.2% of the nurse stated that they underwent HBV vaccination. The reason why the vaccination rate is so high may be that awareness in our society regarding HBV has increased due to the news in media on HBV, training on the issue was given and free screening and vaccination programs were conducted for health workers upon the edict issued by Ministry of Health in 1993. Other observation was that 84.5% of the nurses stated that they did not report the event after NSSI. (Table-III). When asked about the reasons of not reporting injury, the answers were 'I did not know l had to report

the event', 'I was not worried' and 'there was no such committee' where to report. Thes results suggest that the information of the nurses on the issue is inadequate, they are not aware of the presence of infection control committee and that infection control committee does not inform health workers at a sufficient degree. In studies on the subject carried out at present, it has been stated that currently there is increasing awareness of the protective measures and vaccination, but the rate of reporting the event is still low.[4,5,12,13,16]

We have also established that nurses working in surgical units, emergency services and operating theaters experienced higher rates of injury than those working in other departments (operating theater 100%, emergency services 78.9%, surgery clinics 75%). In the study of Omac, (2010) it was reported that injury was experienced by 70.6% of the nurses working in surgical clinics and by 62,4% of those working in internal medicine clinics.[7] The causes of higher rates of NSSIs in surgical units may be high number and rate of parenteral practices and procedures.

Informing the health workers in health instutitions, establishing units for routine investigation and if necessary for post exposure treatment and follow up and coordination of necessary procedures by these units will be an efficient and cost effective way of coping with NSSIs.

CONCLUSION

NSSI is an important threat for the safety of nurses in Cyprus. It is expected that health institutions lower the rate of NSSI for the development of effective health worker safety policy. Decreasing these risks to minimum depends on training health workers on NSSI, their acting in accordance with their training, and the establishment of a efficient organizational structure by the instutition. The following recommendations can be made on the issue:

* Giving necessary information on protection from NSSI and other professional risks,
* Using reliable and ergonomic tools in the hospital,
* Establishing an unit accesssible to health workers where medical and psychological help can be obtained,
* Stressing the importance of reporting sytem to the personnel, increasing their awareness and keeping regular records should be the aims of such an approach.

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