FREQUENCY OF NEEDLE STICK INJURIES (NSI) AMONG HEALTH CARE WORKERS OF PRIVATE SECTOR HOSPITALS IN PESHAWAR

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ABSTRACT

Objective: To determine the frequency and causes of needle stick injuries (NSI) among health care workers of private sector hospitals in Peshawar.

Material and Methods: This was a descriptive cross-sectional study of health care workers in private sector hospitals of Peshawar from April 2019 to June 2019. Health care workers meeting the inclusion criteria for the study were given questionnaires personally about needle stick injuries (NSI).

Results: The total numbers of healthcare workers enrolled were 100, but 87 responded the questionnaires. The sample size had 32(36.7%) doctors, 44(50.5%) nurses and 11(12.6%) laboratory technicians. The frequency of needle stick injuries in nurses was 28(70%), Laboratory technician 6(54.5%) and doctors 12(37.5%). Majority 24(60%) of the nurses had needle stick Injuries while passing intravenous lines and cannulas.

Conclusion: The frequency of needle sticks injury (NSI) in health care workers in private hospitals is higher. Nurses performing duties in emergency and intensive care units are more prone to needle stick injuries while passing intravenous lines and cannulas.

Key words: Needle sticks injuries (NSI).

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INTRODUCTION

Needle stick injuries (NSI) are punctured wounds, cuts or scratches inflicted by a medical instrument like disposable syringes, lancets etc.[1] These injuries not only put the health care worker at risk to blood-borne infections; like Hepatitis B, Hepatitis C and Human Immuno Deficiency Virus (HIV)[2], but also predisposes them to psychological stress[3] and poses an additional burden on the economy of already weakened health sector.[4] According to WHO safe injection global net work report, about 90% of needle stick injuries occur in developing countries. A recent report by National Health Service (NHS) claims about 1800 needle stick injuries (NSI) occur among health care workers in the last 5 years with a prevalence rate of 67% in pakistan.[4] Doctors and nurses working as a first line, in operation theatres, intensive care units and emergency departments are more prone to get needle stick injuries.[5,6] The frequency of needle stick injuries in doctors and nurses is 73.7% and 19.1% respectively in literature.[6] These health care workers therefore, are at a higher risk of developing blood borne infections.[7] In Pakistan the frequency of needle stick injuries are higher in nursing staff than other health care workers and the possible reasons for needle stick injuries in nurses are lack of knowledge and practices, more interaction with patients and procedures, long working hours, inappropriate working conditions and recapping of the needles.[8,9] Fingers are the most likely site to get injured due to needle stick injuries.[10] Besides being getting infected with Hepatitis B, Hepatitis C and Human Immuno Deficiency Virus (HIV), the long term outcome of health care workers suffering from NSI includes substantial psychiatric morbidity such as depression, post traumatic stress disorder (PTSD) and adjustment disorder(AD) resulting in missed working days which directly affects the health care services and resource.[11] This study

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was undertaken to know the frequency and causation of (NSI) needle stick injuries among health care workers of private hospitals in Peshawar.

MATERIAL AND METHODS

A quantitative cross-sectional study was conducted in small private hospitals with 10-15 beds capacity of Peshawar from April to June 2019. A total of 100 health care workers were selected through simple random sampling technique. Our study population included doctors, nurses and laboratory technicians, working in the hospital for the last six months while those persons who were involved in administrative duties were excluded. Those who were willing to participate in the study and were present on day of data collection were included in study population. Informed verbal consent was taken and confidentiality was ensured. Face to face interviews were conducted using a structured questionnaire containing close ended questions. The questionnaire included demographic information about the study population, when needle stick injury occurred, the circumstances under which they had occurred. Post exposure response i.e. Reporting of needle stick injuries, status of vaccination of the health care worker, protocol followed in case the injury occurred previous knowledge from any training in preventing needle injuries and also their perception and attitude towards needle stick injuries, and suggestions how such injuries could be avoided. Data was analyzed in SPSS (version 20). Frequency and percentages were calculated for health care workers sustained needle stick injuries. Data was represented in table form.

RESULTS

The total response rate was 87%, among which majority were nurses and mostly belonged to surgical and allied departments see table 1 for details. The frequency of

Table 1: Factor Analysis of NSI in Different Categories of Health Care Workers in Private Hospitals of Peshawer.

Factor Analysis oF NSI	Different Categories of Health Care Workers			
Factors		Doctors N=32	Nurses N=44	Lab Technicians n=11
Gender of participant	Male	10	0	11
	Female	22	44	0
Age in years	Less than 35 yrs	23(52%)	36(81%)	9(81%)
	More than 35 yr	9(28%)	8(18%)	2(18%)
Medical discipline	Surgical	26(81.25%)	33(75%)	5(45.5%)
	Medical	6(18.7%)	11(25%)	6(54.5%)
Work experience (years)	Less than one yr	14(43%)	27(61.3%)	3(28%)
	More than one yr	18(56.2%)	17(38.6%)	8(72%)
Number of patients attended daily	Less than 35 patient	13(41%)	16(36.3%)	4(36.3%)
	More than 35 patient	19(59.3%)	28(63.63%)	7(63.6%)
Working night shifts	Yes	22(68.7%)	27(61.3%)	4(36.3%)
	No	11(34.3%)	17(38.6%)	7(63.6%)
Reasons of needle prick	Operation theater	18(58.33%)	10(22%)	0
	Exhaustion	8(25%)	16(36.3)	0
	Recapping needles=	6(16.66%)	18(40%)	3(27.3%)
	Blood Test samples			8(72.7%)
Use of gloves	Yes	19(59.3%)	34(72.2%)	10(90.9%)
	No	13(41%)	10(22.7%)	1(9%)
Washing of hands	Antiseptic	21(66.66%)	22(57.14%)	4(36.3%)
	Soap and water	10(31%)	14(35.71%)	5(45.5%)
	No action	1(3%)	2(7.14%)	2(18.18%)
Reporting about NSI	Yes	15(41.66%)	17(39%)	2(18.18%)
	No	17(53.44%)	27(61.3%)	9(81.8%)
Perceived risk related to NSI	Yes	32(100%)	43(97.7%)	10(90.0%)
	No	0	1(2.2%)	1(9.09%)
Vaccination status	Yes	24(78.12%)	24(59%)	6(54%)
	incomplete	6(18.75%)	13(32.5%0	3(33.3%)
	No	2(6.25%)	7(16%)	2(18%)

NSI in the last 6 months was 12(37.5%) amongst doctors, 31(70%) in nurses and 6(54.5%) in laboratory technicians.

REASON OF PRICK

Most of the injuries occurred in operation theaters follow by needle sticks.

ACTION

After needle stick injuries majority of health care workers washed their hands with anti-septic lotion. while a small number did not take any action after injury.

REPORTING

Although health care provider perceived NSI a health risk only 53(60.91%) health care reported it to the concerned authorities.

VACCINATION

54(62.06%) had completed their vaccination against Hepatitis B, 22(25.2%) had incomplete vaccination. While the remaining had not done any vaccination.

DISCUSSION

The frequency of needle stick was 49(56.3%) in the last 6 months in health care workers of private hospitals. The findings are consistent with an Irani study where it was (54%) and also Malaysian teaching hospital reported 52.9%[6] incidents of NSI. But our findings were inconsistent with Geravandi which accounts the frequency to be 76.7%[12] in 12 months which was too high then our findings. While on other hand Zeighami accounts the incident to be 10%[13] and Khalooei describe it to be 33%. [14] The difference may be due to demographic difference or socio-economic status and self reporting behavior of people of these countries. Other possibilities may be the differences in health care facilities infrastructures and the categories of sample participants selected from i.e nurses or all health care workers. NSI, is major occupational health and safety issue affecting health care workers around the world, mainly involving the nursing staff [15,16,17] mostly due to recapping, overworked, poor safety measures[18,19] lack of sleep due to long working hours.[18] Some interesting demographic factors were also noted to play some role in increasing burden of NSI i.e. with less experience in relative field and age less than 35 years, may be at this age group most of health care workers are young and enthusiastic and as they are new and careless they are more prone to prick themselves. As working in emergencies and surgeries in frontline, doctors (n=26, 81.25%), nurses (n=33, 75%) get more pricks in comparison to lab tech (n=5, 45.5%); as one is also exposed to each type of needle prick threats in the time of haste and hurry. These results were comparable to other national and international studies.[5, 6,7,8,9] Negligence was also noted with the usage of personal protective measures and first aid box. Heavy work loads i.e. more than thirty five patient dealing single handedly, working with more than one year of experience and exhaustion were main reason in doctors and nurses where in emergencies doctors are more prone to prick themselves as compared to nurses. It is very strange to know that more experienced health workers doctors (18, 56.2%) nurses (27,6 1.3%)and lab technicians (72%) get more injuries may be they are not taking the matter seriously or they consider themselves more experienced that's why they get more pricks or other reasons may be the exhaustion and their socio–economic status. In this study, it was concluded that needle stick Injuries are still high in health care workers mainly due to handling of syringes and I/V cannula especially in emergencies and working in their first year of duty, behavior of recapping of used needles and excessive workload with working in night shifts in noisy environment. Other reason included were not taking PPE measures seriously and lack of proper training and non availability of effective referral system for reporting. From this research it is shown that most of the health care workers did not report their injuries to the concerned authorities after knowing that the patient was Hepatitis B negative and due to their vaccinated state against Hepatitis B, Occupational exposure to blood borne diseases is high among health care workers.[20] Decreasing workloads, proper training and implementation of a working reporting system for needle stick injuries were few of the factors playing key role in causation of needle stick injury. NSI is known to be a reason for contracting hazardous diseases during patient dealing. These infections can be avoided by the use of improved Instruments, protective gears and new better methods.[21] Most of the injuries were not reported in our study as there is no uniform standard reporting system in our hospitals. Therefore reporting system should be made easy and simple.[22,23] A record of those injured should be maintained and vaccination against Hepatitis B should be available to all health care personnel.[23,24] Legislation should be made to ensure the betterment of care takers of health and number of patients per nurse be reduced. Moreover the burden on economy from these injuries can be lessen by practicing safety-engineered devices[25] instead of traditional old methods. Our sample size was small, we therefore recommend further studies with larger sample size to confirm our findings.

CONCLUSION

The frequency of needle stick injury (NSI) in health care workers, in private hospitals, was higher. Most of these injuries happened in staff nurses working in emergency or intensive care units during recapping of the needles and when they were tired or overworked. Lack of proper working environment, knowledge, protective measures, and work load are the most common factors in the causation of NSI.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Rehman R: Research Conception Design, Introduction discussion.

Gul R: Research Conception Design, Final Approval.

Nooreen S: Results.

Rehman ZU: Data Analysis Interpretation methodology.

Musa N: Data Acquisition

Alam A: Data Acquisition

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.