ORIGINAL ARTICLE

KNOWLEDGE PRACTICE GAPS ABOUT NEEDLE STICK INJURIES AMONG HEALTHCARE WORKERS AT TERTIARY CARE HOSPITALS OF PAKISTAN

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Background: The aim of our study were to assess the knowledge and practice gaps about Needle Stick Injuries (NSIs) and their associated factors among Health Care Workers' (HCWs) at tertiary care hospitals of Pakistan. **Methods:** A cross-sectional study was conducted in two tertiary care teaching hospitals in Karachi, Pakistan, representing both private and public health sector. During the months of January to May 2008, trained medical graduates interviewed 497 HCWs (Doctors and Nurses) who were working in those particular hospitals for more than a year and were willing to participate in the study. **Results:** Overall the knowledge about transmission of HBV HCV and HIV was good. However, 19.1 and 12.3% HCWs had misconception about the transmission of malaria and tuberculosis by NSIs; more female and working as a nurse. Furthermore, a large number of participants had lack of knowledge for the transmission of infectious mononucleosis. Over two third of study subjects were not vaccinated for hepatitis B infection, again more females (p=0.002) and nurses (p<0.001). Large numbers of study participants were not wearing protective cloths, and do not us sharp containers. Similarly, preponderance of study subjects does not avoid breaking needle by hands and leave syringes open; these poor practices are significantly more prevalent among those working for more than five years and doctors (p=0.003). **Conclusion:** In addition to lack of knowledge, poor practices were reported in this study. Proper curriculum reform and training are required to protect the health Care workers and patients. Further research and interventions are suggested in this regards.

Keywords: knowledge, practice, public and private sector, Pakistan.

INTRODUCTION

Occupational health safety for medical practice is an important issue and Needle stick injury remains the potential source for transmission of blood born infection and one of the main safety concerns which need to be address for the prevention of various blood borne diseases among HCWs. Reported risk associated with transmission of HBV infection by NSI is about 30%, similarly for HCV and HIV, 10 and 1% respectively.[1]

Needle stick injury presents the greatest risk for medical personnel. Most people at risk for occupational exposures are in developing countries where there is paucity of reporting standard protocols.[2] In addition; HCWs suffer from significant anxiety and emotional distress following a Needle Stick Injury.[3]

Reported activities related to the majority of NSIs are administering injections, drawing blood, recapping needles, and disposing of needles, handling trash and dirty linen and transferring blood or body fluids from a syringe to a specimen container.[4] In addition, poor knowledge and practices about the risk and hazards of NSIs substantially contribute the probability of NSIs.[5]

It is estimated that 6–8 million NSIs occur each year in developed countries, like USA and 16 million are reported annually in resource constrain countries.[6] However, it is being decreased to 3,85,000 annually, due to implementation of multiform approaches including safer devices.[7–10]

It is clear that serious consequence of NSIs can be markedly reduces by increasing awareness of safe needle practice. We therefore in this study assessed the knowledge and practice of NSIs among the HCWs. We also identified the various factors associated with knowledge and practice gaps among study participants.

MATERIAL AND METHODS

A cross-sectional study was conducted in two tertiary care teaching hospitals in Karachi, Pakistan. One each hospital represents public and private sector facility. In all, 497 HCWs were participated in this study after giving consent to participate in this study. No ethical issue or harm risk was involved in this questionnaire-based study, nevertheless study protocol and questionnaire was reviewed and approved by departmental research committee. Using a pre-tested and structured questionnaire, interviews were conducted during the months of January–May 2008. The variables of questionnaire include as sex, designation (doctors and nurses), years since practicing and area of practice (medicine and surgery) of study participants. In all, six knowledge related questions and ten practice related questions were included. All the responses were categorized in 'yes' and 'no' response and takes about 20 minutes to complete the questionnaire.

We analysed the data of 497 HCWs whose information was complete. SPSS-17 was used to enter,

validate and analyse the data. Frequency proportions were calculated for all variables of interest while chi-square test was used for identifying the factors associated with poor knowledge and practices among HCWs.

RESULTS

The majority of the study participants were females (64.2%) and practicing in medical units (62%). Overall, 29.6% HCWs were working for more than five years while there was slight pre-pordance of nurses (52.7%) compared to doctors (47.3%) (Table-1).

Table-1: Basic characteristics of healthcare workers (n=497)

Characteristics	Frequency	(%)
Gender		
Male	178	35.8
Female	319	64.2
Area of practice		
Medicine	308	62
Surgery	189	38
Designation		
Doctor	235	47.3
Nurse	262	52.7
Years of practice		
<5	350	70.4
>5	147	29.6

In Table-2, factors associated with knowledge for needle-stick injuries among health care workers are described. Overall, small proportion of participants was not aware about the transmission of HBV, HCV and HIV by NSIs; generally more females and those who were working as nurses. In all, 19.1 and 12.3% of respondents had misconception that malaria and tuberculosis can be transmitted by NSI; again more females and nurses and also those who were working in surgical specialty. A huge majority of study participants were not knew that infectious mononucleosis can be transmitted by NSI again more nurses (p<0.001) and those working in surgical units (p<0.001).

Factors associated with practice gaps for needle stick injuries among health care workers are given in Table-3. Overall large numbers of study participants were not screened for HBV and HCV, significantly more females and those working as nurses. Over two-third of HCW were not completed their vaccination against HBV; again more females (p=0.002) and nurses (p<0.001) compared to their counterparts. A huge majority of study participants were not wearing protective cloths and do not us sharp containers. Similarly, pre-pordance of study subjects do not avoid breaking needle by hands and leave syringes open; these poor practices are significantly more prevalent among those working for more than five years and doctors.

Table-2: Factors associated with knowledge for needle stick injuries among healthcare workers

Knowledge variables	Overall (%)	Gender			Years since practicing			Designation			Area of practice		
		Male	Female	*p*	1–5	> 5	*p*	Doctors	Nurses	*P*	Medicine	Surgery	*p*
HBV cannot be transmitted by NSIs	13.1	3.4	18.5	<0.001	11.4	17.0	0.92	3.8	21.4	<0.001	12.7	13.8	0.725
HCV cannot be transmitted by NSIs	13.3	6.2	17.2	<0.001	14.3	10.9	0.308	3.8	21.8	<0.001	12.7	14.3	0.605
HIV cannot be transmitted by NSIs	11.5	9.6	12.5	0.316	13.7	6.1	0.015	4.3	17.9	<0.001	9.1	15.3	0.034
Malaria can be transmitted by NSIs	19.1	12.4	22.9	0.004	18.0	21.8	0.329	14.9	22.9	0.023	14.3	27.0	<0.001
TB can be transmitted by NSIs	12.3	6.2	15.7	0.002	8.6	21.1	<0.001	4.7	19.1	<0.001	9.4	16.9	0.013
Infectious mononucleosis cannot be transmitted by NSIs	89.3	86.5	90.9	0.128	90.3	87.1	0.290	84.7	93.5	<0.001	85.7	95.2	<0.001

Table-3: Factors associated with practice gaps for needle stick injuries among healthcare workers

Practice variables	Overall	Gender			Years since practicing			Designation			Area of practice		
		Male	female	*p*	1–5	>5	*p*	Doctors	Nurses	*p*	Medicine	Surgery	*p*
Not screened for HCV	85.5	8.3	88.4	0.014	84.6	87.8	0.357	87.7	83.6	0.198	87.7	82	0.082
Not screened for HBV	55.3	47.2	59.9	0.006	54.6	57.1	0.599	48.5	61.5	0.004	53.2	58.7	0.233
Not completed HB vaccination	66.8	57.9	71.8	0.002	67.1	66.0	0.803	57.4	75.2	<0.001	65.9	68.3	0.590
Do not use tray to carry syringes	46.5	42.1	48.9	0.147	44.3	51.7	0.130	51.1	42.4	0.052	39.9	57.1	<0.001
Move with uncapped syringes	18.7	24.7	15.4	0.010	15.7	25.9	0.008	25.5	12.6	0.000	21.8	13.8	0.026
Do not use gloves	28.2	29.2	27.6	0.699	30.0	23.8	0.161	23.0	32.8	0.015	22.7	37	<0.001
Do not wear lab coat/protective cloths	80.7	85.6	71.9	<0.001	79.1	84.4	0.179	69.8	90.5	<0.001	81.2	79.9	0.727
Do not use sharp containers	88.3	87.6	88.7	0.721	88.6	87.8	0.796	87.7	88.9	0.659	87.3	89.9	0.379
Do not avoid to bend or break needle by hand	62.8	61.2	63.6	0.596	58.6	72.8	0.003	65.5	60.3	0.229	62.0	64.0	0.653
Do not avoid leaving open syringes	55.1	53.4	56.1	0.556	51.7	63.3	0.018	62.1	48.9	0.003	53.2	56.7	0.824

DISCUSSION

In this study, large numbers of participants were aware of transmission of HBC, HCV and HIV. These results endorse other studies from developing countries regarding transmission of these infections by NSIs.[12,13] Good knowledge level among HCWs reflects the fact that being more chronic and serious infections, dissemination of information about these infections is very common from various platforms by targeting different groups of people including HCWs. However, a big majority of the participants in our study reported that infectious mononucleosis cannot be transmitted by NSIs and small number of HCWs has misconception regarding malaria and tuberculosis transmission by NSIs.

In our study, compared to doctors and males, nursing staff and females had poorer knowledge and practices regarding NSIs. On the other hand, one study from a private hospital indicate that knowledge and practice on bedside while dealing with the patients were highly good in nurses compared to doctors, who strictly

follow the preventive protocols. However, that study had limitation of small sample size and confined to one tertiary care hospital only.[13] Findings of our study are similar to other studies by Janjua and Gillan where majority of staff nurses were not following universal precaution during their day-to-day work. These poor practices were also identified among HCWs who were working in surgery and allied compared to their counterparts working in medicine and allied.[14,15]

As far as use for personal protection was concerned, 28.2% of health care workers were not wearing gloves while dealing with the patients. Usage of gloves was lowest among the nurses compare to doctors. Around 73% HCWs had poor practice by moving around with uncapped syringes, and 82% of HCWs did not use disposal containers and bending/ breaking needle by hand. This kind of practice may be observed due to increased workload on staff, stress, carelessness, and overflow of patients in particular at tertiary care hospitals which are shown in our study that is consistent with other study[16] in Pakistan.

Two-thirds of our study participants were not completely vaccinated for HBV and about half of the participants did not screen for HBV infection. These findings are very low in comparison to studies from developed countries like USA and UK.[17,18] This contrast reflects poor accessibility and affordability issue in developing countries. Similarly, other preventive facilities were not up-to-mark in hospitals included in our study. Regular screening and vaccination is mandatory for all HCWs, but it is not possible due to limited resources in Pakistan. Active surveillance, analysis of injury data and periodic review for intervention are important, particularly where workload and turnover is higher, as in teaching hospitals.[19–21]

RECOMMENDATIONS

Hospitals and health care facilities should be provided will all preventive skills and instruments against infections. Record keeping and reporting of sharp injuries should be considered as an essential part of the infectious control actively. Post-exposure prophylaxis and follow-up facility should be provided by hospital management. Infectious control training and teaching should be an integral part of the curriculum of all disciplines including medical, dental, nursing, and paramedics. Immunization program should be mandatory for every employee.

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