

Needle Stick Injury: A Study on Awareness, Attitude and Practice of Its Preventive Measures Among Health Care Workers in A Tertiary Care Hospital

Dr.Anandhi Lakshmanan¹, Dr.Srinath Selvarajan², Dr.Olive Sharon¹,
Dr.Sarumathi Dhandapani³

1- ESIC Medical College and PGIMS, Chennai, Tamilnadu

2- Kilpauk Medical College, Chennai, Tamilnadu

3- JIPMER, Puducherry

Corresponding author: Dr.Sarumathi Dhandapani,

Abstract

Introduction:

Needle stick injuries (NSI) form an important occupational hazard among the healthcare workers (HCWs). In developing countries, including India, the situation is worse and occupational safety of HCWs remains a neglected issue. Therefore, the present study was conducted to assess the awareness of needle stick injury, attitude and practices of its preventive measures among HCWs in order to implement the intervention programs appropriately in our institution.

Method:

In this cross-sectional study, knowledge, attitude, and practice related to preventive measures were assessed using a 28-item questionnaire. The results were then entered into SPSS for analysis. Descriptive statistics were computed for all items in the questionnaire. Total knowledge and practice scores were computed for each participant. Good knowledge, Positive attitude and safe practice were defined as scoring more than the mean (67.44%) for knowledge, 66.05% for attitude and 87.99% for practice and others were defined as poor knowledge and negative attitudes and unsafe practice respectively. Logistic regression was used to obtain odds ratios (ORs) of having adequate knowledge, positive attitudes and safe practice of universal precautions. All tests were two sided, and p value < 0.05 was considered statistically significant.

Results:

49.3% had had a needle stick injury in the past. 55.2% of them had reported the incident to higher officials and sought further management. Hepatitis B virus coverage was 81.2%. 53.5% of the population were aware about Needle stick injury and its preventive measures. 47.6% showed positive attitudes towards preventive measures and 53.6% followed safe practices. 40% knew what had to be done immediately after a needle stick injury. 34.9% recapped needles, 64.3% wore gloves always, 86.9% disposed needles and other sharps only in puncture proof containers and 53.5% placed the containers close to the area of use. A moderate relationship between knowledge and designation was noticed. There were no associations between knowledge, attitudes, practices and age, Gender or years of experience. No significant correlation was found between knowledge and practice between the groups. However, attitudes were seen to influence practices among various designations ($r=0.181$, $p<0.05$).

Conclusion:

Specific training programs may have to target the designations in which Knowledge, attitudes and practices are poor to establish acceptance of appropriate practices that will enable them to adopt and adhere to preventive measures while the other designations may require continuous refresher training.

Keywords: Occupational safety, Puncture proof containers, Preventive measures,

Date of Submission: 19-11-2022

Date of Acceptance: 03-12-2022

I. Introduction

Needle stick injuries(NSI) form an important occupational hazard among the healthcare workers(HCWs) [1,2]. At least 20 different pathogens are known to have been transmitted by needle stick injuries [3]. Notably, they contribute to the transmission of viruses such as Hepatitis B, Hepatitis C and HIV [3,4]. Most injuries occur during disposal of used needles, during administration of parenteral injection or infusion therapy, drawing blood, recapping needles after use, or handling linens or trash containing uncapped

needles[5,6]. The level of practice of precautions among health care workers may differ from group and the another. The differences in knowledge of standard precautions by health care workers may be influenced by their different type of training and attitudes towards needle stick injuries. Despite the availability detailed guidelines, the knowledge and understanding of standard precautions among HCWs even in developed countries has been found to be inadequate. In developing countries, including India, the situation is worse and occupational safety of HCWs remains a neglected issue. Evidence exists that compliance with standard precautions reduces the risk of infections and protects the HCWs [7]. However, there are many reasons for poor compliance. In India, very few studies, with varying focus, have been conducted in this field. Therefore, the present study was conducted to assess the awareness of needle stick injury and attitude and practices of its preventive measures among HCW in order to implement the intervention programs appropriately. This study aims to assess the awareness of Health care workers about NSI and its preventive measures and their compliance with it as outlined in the standard precautions.

II. Materials and methods

A cross-sectional study was conducted among healthcare workers of our hospital after obtaining ethical approval from the Institutional Ethics Committee (IEC) and Indian Council of Medical Research (ICMR) reference ID - 2016-06723. Our hospital is a 330 bedded tertiary care hospital presently functioning as a zonal Occupational Diseases Centre in South India run by the ESI Corporation, New Delhi. A 28-item questionnaire was prepared from similar studies and it was validated by experts in the field of research and infection control. The questionnaire was structured in five sections. The first section collected the demographic characteristics of the participants. The second section aimed to assess the knowledge of NSI and its preventive measures. The third section required the participants to answer as per their views which reflects their attitude and, the fourth section aimed to know the usual practices followed in various terms such as always, often, sometimes, seldom and never. The final section was about the source of information. Prior to distribution, the questionnaire was pretested to test feasibility issues. Based on respondents' recommendations, some minor changes were corrected.

The questionnaire was provided to all workers involved in patient care.

Inclusion criteria and exclusion criteria: Health care workers directly involved in patient care activities such as specialist doctors, junior doctors, Staff nurses, Nursing orderlies, Lab technicians, Operation theatre technicians and housekeeping staff, who were willing to participate in the study were included. Health workers not likely to be exposed to sharps injuries such as radiology technicians and those not willing to participate were excluded from the study.

The wards were visited at different times and questionnaire distributed. The consent form was distributed prior to giving the questionnaire and those who consented were requested to respond to the questions. The consent form and questionnaire were made available in both English & the local language and the participants were given as per their preference.

The collected data were entered into an Excel spreadsheet and then transferred to Statistical Package for Social Science (SPSS) version 21 for analysis. Descriptive statistics were computed for all items in the questionnaire. Knowledge scores were calculated as follows: 1 for correct answers and 0 for incorrect answers, Attitude scores: 5 for agreeing to statements that reflect positive attitude and 1 for disagreeing to such statements. Practice scores were calculated by giving 5 for always on safe practices and down scoring for other responses. Total knowledge and practice scores were computed for each participant. Good knowledge, Positive attitude and safe practices were defined as scoring more than the mean (67.44%) for knowledge, 66.05% for attitude and 87.99% for practice and scores less than this were considered as poor knowledge and negative attitudes and unsafe practice respectively.

Logistic regression was used to obtain odds ratios (ORs). All tests were two sided, and p value < 0.05 was considered statistically significant.

III. Results

Out of the 300 questionnaires distributed, 213 forms were returned to the investigator with the response rate of 71%. Table 1 depicts the characteristics of study population.

Figure 1 shows the knowledge of preventive measures to be taken after a needle stick injury. 40% answered that they would wash the site of injury with running water, 16.4% would then apply an antiseptic, 7.5% would see a doctor while 15% would take a TT injection, majority being housekeeping staff (49.1%). (The relation is statistically significant. [p value=0.000]).

A large proportion of the respondents (88.2%) have already known the list of infections that could be transmitted by NSI. 81.2% knew that the maximum incidence of NSI occurs during the disposal of used needles while 11.7% and 5.6% opined that the events are common while administering parenteral injections and drawing

blood respectively. 85.9% of the participants were aware about the availability of Post Exposure Prophylaxis (PEP) and the need to initiate PEP without time delay.

On analysing the awareness of the participants of NSI preventive measures, half of them (54%) agreed that the standard precautions should be taken while caring all the patients irrespective of their infection status while the rest (45.5%) said it should be taken only when patients are infected with blood borne pathogens. Only 14.6% were able to identify all the components of NSI prevention as per standard precaution guidelines of which 47.2% were nursing orderlies with statistical significance (p value=0.000). Figure 2 represents the awareness of HCW about standard precautions.

Based on the above data the responses were scored and cumulative knowledge score and percentage computed. Mean score being 67.44%, those above the mean were considered to have good knowledge and those below, poor knowledge. Overall, 53.5% of the respondents had good knowledge.

Based on the designation, General doctors had the highest knowledge and awareness followed by lab technicians, Specialists, Staff nurses, Nursing orderly, Operation theatre technicians and lastly housekeeping staff. The relation between designation and knowledge was found to be statistically significant with a p value of <0.001. (Fig 3, Table 2)

65.7% of males had good knowledge & awareness as compared to 48.3% of females. The relation was also found to be statistically significant with p value =0.035 but the significance was lost on multivariate analysis with designation (p value=0.549) showing designation to be a significant confounding factor. (Table 2)

With regards to age, age group of <30 had highest knowledge (66.2%) while age group of 40-50 had the poorest knowledge (33.3%). The relation was also found to be statistically significant with a p value of 0.006 but was lost on multivariate analysis with designation (p value=0.733) proving designation again to be a confounding factor. Those with more than 10 years of experience had highest knowledge (59.6%) with statistical significance (p value= 0.005) which was also lost on multivariate analysis with designation (p value=0.412). The analysis here reveals that designation has considerably influenced knowledge and is being a significant confounding factor to other relations. (Table 2)

General attitude of the respondents is shown in figure 4. On grouping positive and negative attitudes together and scoring them it was found that among the entire population 47.6% had positive attitudes (scoring above the mean 66.05) and 52.4% had negative attitudes. Positive attitudes were seen with most staff nurses (74.1%) and least among operation theatre technicians (8.3%). The relationship is statistically significant with a p value of 0.001, but maintained on multivariate analysis only with specialists, Staff nurses and housekeeping staff. (Table 3). Positive and negative attitude in each designation is shown in the figure 5

The relationship of attitude with age, gender and years of experience is not significant. P values being 0.574 for gender, 0.773 for age and 0.108 for years of experience. (Table 3)

Overall, 53.6% of the population followed safe practices. However, the analysis of factors influencing practices (Table 4) reveals that none of the demographic characters have influenced practices as the associations are not statistically significant.

34.9% still recapped needles while 64.3% wore gloves always at work. Majority of them (86.9%) would dispose sharps only in the puncture proof container meant for it but only 53.5% kept it near the area of use. Nearly half (47.9%) would use Personal Protective Equipment even in case of emergency.

Each practice was analysed separately and correlated to the demographic characters using the Chi-square test and those with a p value of <0.05 were considered to be significant. It was found that with respect to designation, staff nurses ranked first in wearing gloves always (81.5%). The study has shown that all doctors would locate the sharps container close to area of use (100%). Operation theatre technicians ranked the last among three of the four safe practices studied. Staff nurses had satisfactory safe practices but only few of them use PPE in case of emergency. Though the proportion of housekeeping staff wearing gloves and would use in emergency is not agreeable a very high proportion of housekeeping staff (90.6%) would dispose sharps only in the containers meant for them probably due to instructions and monitoring of the supervisor and other in-charge personnel. (Table 5)

With regards to gender, significantly a greater number of females recapped needles (56.1%) as compared with 24.8% of males. More females (67.2%) placed the sharps container close to the area of use. There is no statistically significant association between the other practices. (Table 5)

With respect to age, more respondents in the age group of 41-50 (66.7%) wear gloves always. While incidence of Locating the sharps container close to the area of use and use of PPE in emergency was highest among age group of <30 (64.7% and 52.9% respectively), the incidence of recapping needles was also highest among them (39.7%). (Table 5)

With regards to length of service, maximum number of respondents used to wear gloves during procedures and mentioned that ideal place to keep sharps container was nearest to the area of use. was found among those with more than 10 years of service while maximum incidence of recapping needles was also found among them. More members in the 2-10 years' age group would use PPE in emergency situations. These relations are statistically significant (p<0.05) (Table 5)

A further observation was carried out at five stations in the hospital for two hours each on two different days and needle handling practices observed. The stations were Injection OP, Blood collection centre, Paediatric Immunization centre, medical ward, Surgical ward. All the staff nurses in the wards wore gloves while working while only some wore in the blood collection centre. Recapping of needles was observed only in the paediatric immunization centre. Needles were destroyed using a needle burner only in the injection OP while in the blood collection centre they were dropped into a puncture proof container with a solution of sodium hypochlorite. In the paediatric immunization centre however, they were left in cardboard boxes. All the sites had the disposal container close to the area of use while in the wards they were taken in a plastic box to be finally disposed in the sharp container kept at the nurses' station. This does not pose a threat as wards use needleless intravenous system with an intravenous cannula inserted into all admitted patients. The BD Venflon™ Pro Safety Shielded IV Catheter, developed to help minimise the risk of unanticipated blood splash and needle stick injuries is being effectively used in the wards. It was understood through the observations that the practices were not uniform throughout the hospital but rather varied from one worker to the other. It was also observed that the practices in the paediatric immunization centre were unsatisfactory probably because the nurses feel that risk is low. However, this has to be addressed. Some health workers felt that non recapping of needles was a practical difficulty and some felt that uncapped needles would pose a threat to the housekeeping staff involved in removal of waste. Hence the supply of needle destroyers to all centres using needles has to be advocated. There is a significant correlation between Attitude scores and Practice Scores [$r=0.181$; $p<0.05$] (Figure 6)

The analysis shows that curriculum has been the main source of knowledge followed by their doctors, Special training programmes, Senior colleagues and mass media such as internet (Figure 7).

IV. Discussion

No gender variation seen in our study which is similar to study done by salekar et al.[8] Half of population (53.5%) had good knowledge about needle stick injuries and their prevention. This observation is similar to a study conducted in Hyderabad by Mudedla S et al. [9] but contradicts the findings of a study conducted in Delhi by Kotwal et al. [10]. Majority (88.2%) knew the dreadful diseases that could be transmitted by a Needle stick injury similar to a study conducted in Jamaica by Vaz K et al.[11]. Muralidhar et al. shows 80.1% of participants with Needle stick injury in the past contrary to our 49.3%. The highest percentage was among nurses followed by junior residents, nursing students, lab technicians and interns in that order while in our study the incidence was highest among specialists, followed by housekeeping staff, lab technicians, then nurses and lastly Operation Theatre technicians [12]. 85.9% were aware of the availability of Post Exposure Prophylaxis contrary to the 40% of a study conducted in Delhi by Kotwal et al. [7]. 45.1% were able to identify more than three Standard Precaution Practice much lesser than the 77.9% of a study conducted in Nigeria by Amoran OE & Onwube OE [13] in 1996, the year standard precautions were introduced pointing to a reduction in intense training over the 20 years. An equal percentage of participants had positive and negative attitudes towards preventive measures. On correlation with practices, attitudes significantly influenced practice. Hence measures should be taken to improve attitudes towards prevention among health care workers. Only 53.5% followed safe practices. 34.9% recap needles similar to the study conducted in rural north India by Kermodé et al. [14] but much lesser than the studies conducted by R Holla et al. in coastal south India 48.3%, South India 59.3% (Sangini et al.) and Manipur 66.3% (Chaudhari et al)[15,16,17]. 64.3% wore gloves always. Similar results were seen in coastal south India but the practice was much higher in Nigeria and a study conducted at three regional hospitals in India by Gershon RR et al. and much lesser in the study in Manipur [13,15,17,18]. 86.9% would dispose sharps only in the puncture proof containers meant for it similar to other studies. [15,16,18]. Though adherence to some of the individual practices is high, certain unsafe practices such as recapping of needles and not locating the puncture proof container close to the area of use (46.5%) exist bringing down the overall percentage. The study reveals that that awareness of needle stick injuries and its preventive measures are significantly associated with designation, doctors, lab technicians and staff nurses being more knowledgeable and nursing orderlies, housekeeping staff being the least knowledgeable and are not associated with other factors contrary to a study in rural north India where length of service influenced practice [14]. This can be attributed to the fact that more knowledgeable designations had followed a standard curriculum which also according to the analysis forms the main source of knowledge. Doctors make the next highest source of information which has caused the better attitudes and practice of preventive measures but has not resulted in an increase in knowledge of those designations which have depended upon them for information. There is no association of knowledge with attitudes or practice similar to studies conducted in Brazil and Iran [19,20]. However, it was found that attitudes influence practices considerably.

V. Conclusion

Almost equal proportions have good and poor knowledge, positive and negative attitudes and safe & unsafe practices. The study gives varying degrees of compliance within the different measures contained within the standard precautions with compliance to some measures extremely high. Without the back up of knowledge and positive attitudes they may fail when confronted with a stressful situation as the practices are not internally motivated. The level of awareness varies only with designation. Hence targeted interventions have to be undertaken in those designations where awareness is low. Further a socially desirable response bias could have occurred with the more knowledgeable designations appropriately choosing the responses as the data collection tool used was a self-administered questionnaire. This is a limitation of this study. Attitudes are found to influence practice, hence if positive attitudes are developed in the individuals, practices can be improved. This can be done by presenting case studies of Health care workers suffering from diseases caused by needle stick injuries and motivating them. According to the study only 39.4% have undergone special training exposing a large unreached proportion.

References:

- [1]. Yazie TD, Chufa KA, Tebeje MG. Prevalence of needlestick injury among healthcare workers in Ethiopia: a systematic review and meta-analysis. *Environmental health and preventive medicine*. 2019 Dec;24(1):1-0.
- [2]. US Public Health Service. Guidelines for management of occupational exposure to HBV, HCV, and HIV and recommendations for post-exposure prophylaxis. *MMWR Recomm Rep*. 2001;50:1-52
- [3]. Cui Z, Zhu J, Zhang X, Wang B, Li X. Sharp injuries: a cross-sectional study among health care workers in a provincial teaching hospital in China. *Environ Health Prev Med*. 2018;23:2.
- [4]. Wilburn SQ, Eijkemans G. Preventing needlestick injuries among healthcare workers: a WHO-ICN collaboration. *International journal of occupational and environmental health*. 2004 Oct 1;10(4):451-6.
- [5]. Stewart KN. Safe needles save lives: Improving the knowledge and practice of injection safety amongst student nurses of the University of Benin Teaching Hospital. *PUBLIC HEALTH*. 2007
- [6]. McCormick RD, Maki DG. Epidemiology of needle-stick injuries in hospital personnel. *The American Journal of Medicine*. 1981 Apr 1;70(4):928-32.
- [7]. Kotwal A, Taneja DK. Health care workers and universal precautions: perceptions and determinants of non-compliance. *Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine*. 2010 Oct;35(4):526
- [8]. Salekar S, Motghare DD, Kulkarni MS, Vaz FS. Study of needle stick among health care workers at a tertiary care hospital. *Indian J Public Health*. 2010;54:18-20.
- [9]. Mudedla S, Tej W L, Reddy K T, Sowribala M. A study on knowledge and awareness of standard precautions among health care workers at Nizam's institute of medical sciences Hyderabad. *J Nat Accred Board Hosp Healthcare Providers* 2014;1:34-8
- [10]. Kotwal A, Taneja D. Health Care Workers and Universal Precautions: Perceptions and Determinants of Non-compliance. *Indian J Community Med* 2010;35(4):526-8
- [11]. Vaz K, McGrowder D, Alexander-Lindo R, Gordon L, Brown P, Irving R. Knowledge, awareness and compliance with universal precautions among health care workers at the University Hospital of the West Indies, Jamaica. *Int J Occup Environ Med* 2010;1(4):171-81.
- [12]. Muralidhar S1, Singh PK, Jain RK, Malhotra M, Bala M. Needle stick injuries among health care workers in a tertiary care hospital of India. *Indian J Med Res*. 2010 Mar;131:405-10.
- [13]. OE Amoran and OO Onwube: Infection Control and Practice of Standard Precautions Among Healthcare Workers in Northern Nigeria, *J Glob Infect Dis*. 2013 Oct;5(4):156-63. doi: 10.4103/0974-777X.122010.
- [14]. Kermode M, Jolley D, Langkham B, Thomas MS, Holmes W, Gifford SM. Compliance with Universal Precautions among health care workers in rural north India. *Am J Infect Control*. 2005;33:27-33.
- [15]. R.Holla, T.Kanchan, N.Kumaretal., "Perception and practices of standard precautions among health care professionals at tertiary care hospitals in coastal South India," *Asian Journal of Pharmaceutical and Clinical Research*, vol. 7, no. 2, pp. 101-104, 2014.
- [16]. Sangini Punia, Suma Nair, and Ranjitha S. Shetty, "Health Care Workers and Standard Precautions: Perceptions and Determinants of Compliance in the Emergency and Trauma Triage of a Tertiary Care Hospital in South India," *International Scholarly Research Notices*, vol. 2014, Article ID 685072, 5 pages, 2014. doi:10.1155/2014/685072
- [17]. Chaudhuri S, Baidya OP, Singh TG. Practice and its determinants of universal precaution among nursing staff in a tertiary hospital of Manipur. *Int J Med Sci Public Health*. 2016; 5(8): 1596-1599. doi:10.5455/ijmsph.2016.26112015264
- [18]. Gershon RR, Vlahov D, Felknor SA, Vesley D, Johnson P C, Delclos G L, Murphy L R, Compliance with Universal Precautions among Health Care workers at three regional hospitals, *Am J Infect Control* 1995 Aug;23(4):225-36
- [19]. Oliveira, Adriana Cristina, Marziale, Maria Helena Palucci, Paiva, Maria Henriqueta Rocha Siqueira, & Lopes, Aline Cristine Souza. (2009). Knowledge and attitude regarding standard precautions in a Brazilian public emergency service: a cross-sectional study. *Revista da Escola de Enfermagem da USP*, 43(2), 313-319. <https://dx.doi.org/10.1590/S0080-62342009000200009>
- [20]. Askarian M, McLaws ML, Meylan M. Knowledge, attitude, and practices related to standard precautions of surgeons and physicians in university-affiliated hospitals of Shiraz, Iran. *Int J Infect Dis* 2007;11:213-9.

FIGURES

Figure 1: Knowledge of first aid measures to be taken

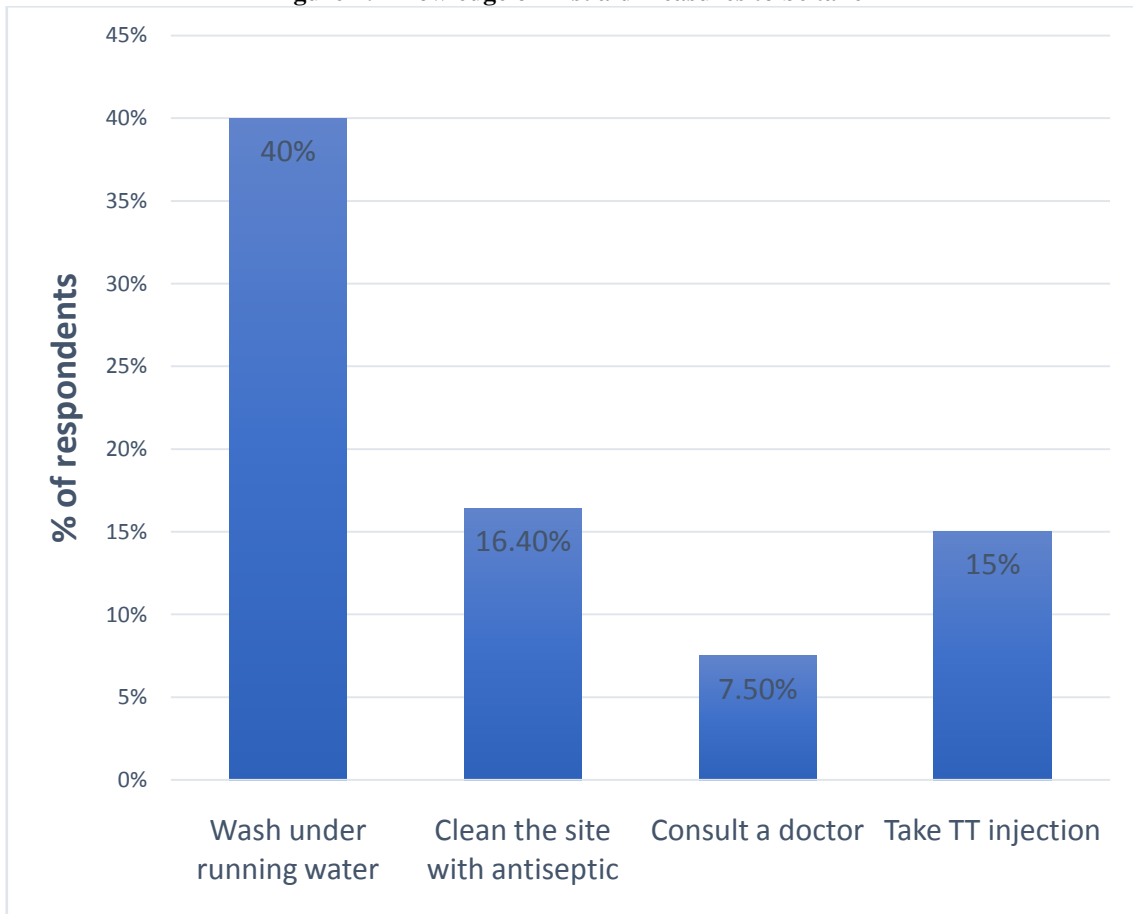


Fig 2: Awareness of Standard Precautions

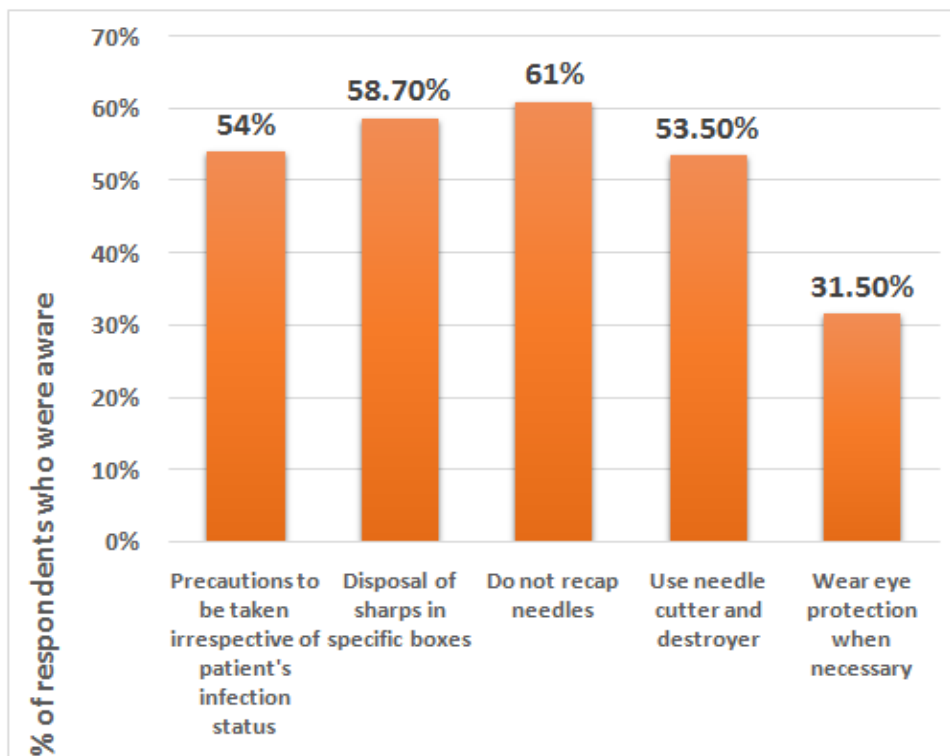


Fig 3: Knowledge among the designations

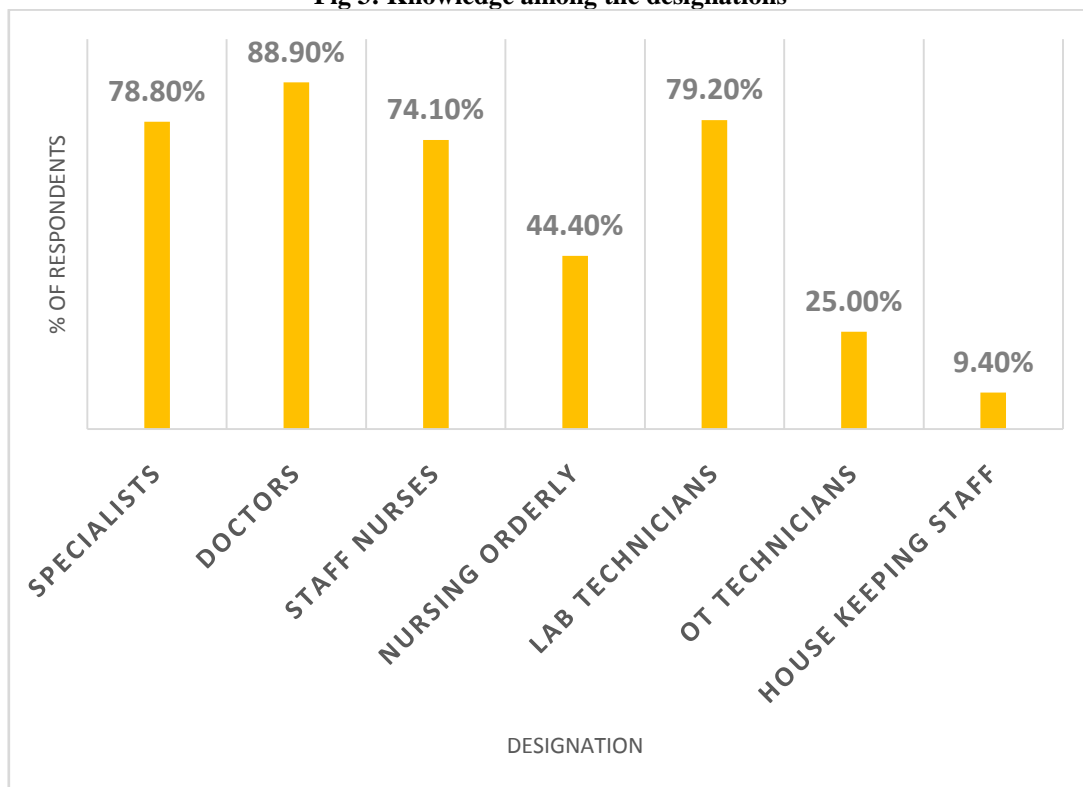


Fig 4: General attitudes of the respondents

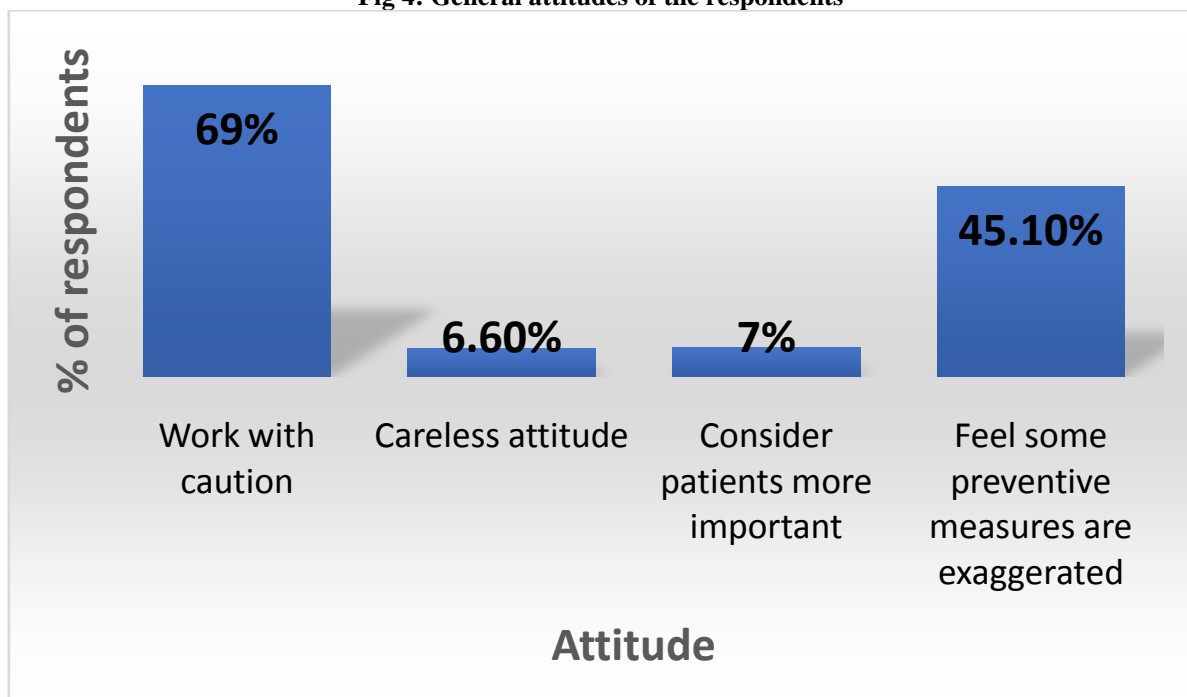


Fig 5: Positive and negative attitudes in each designation

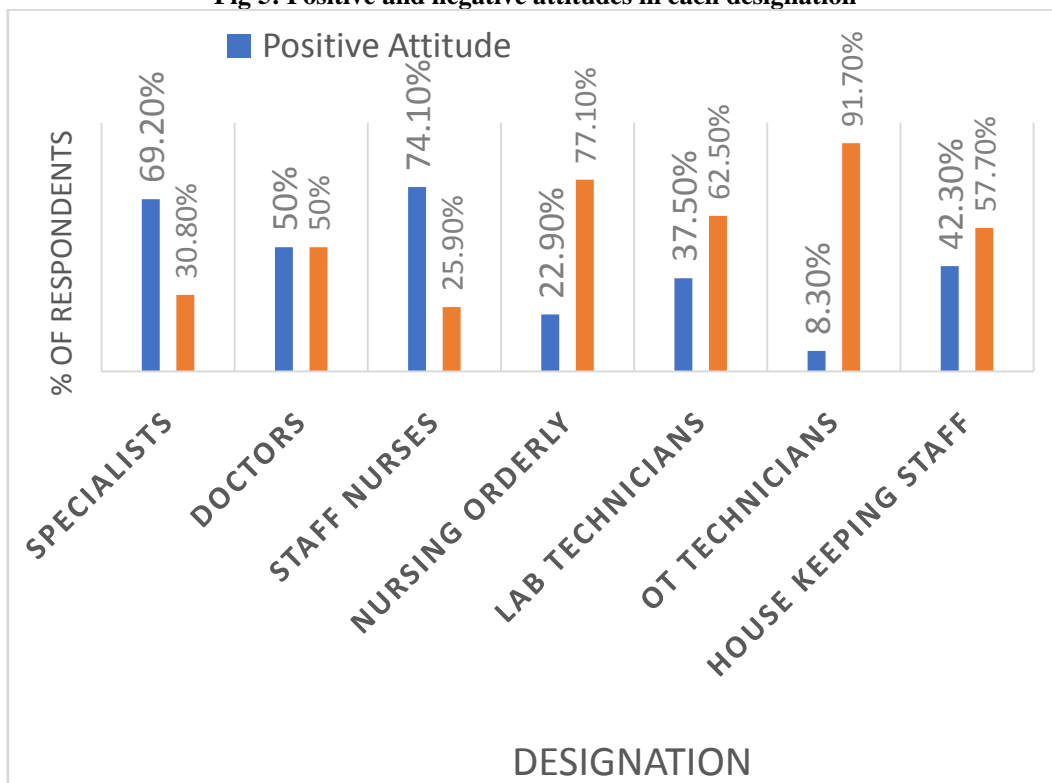


Fig 6: Correlation of Knowledge, attitudes and Practice

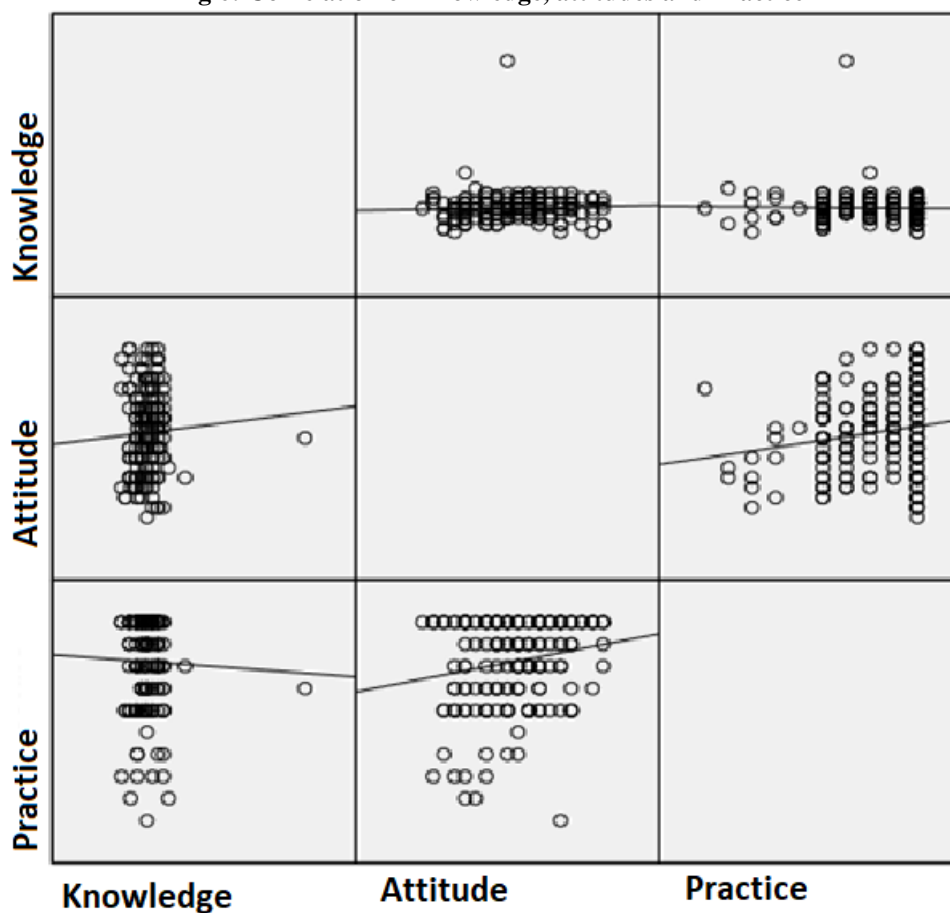
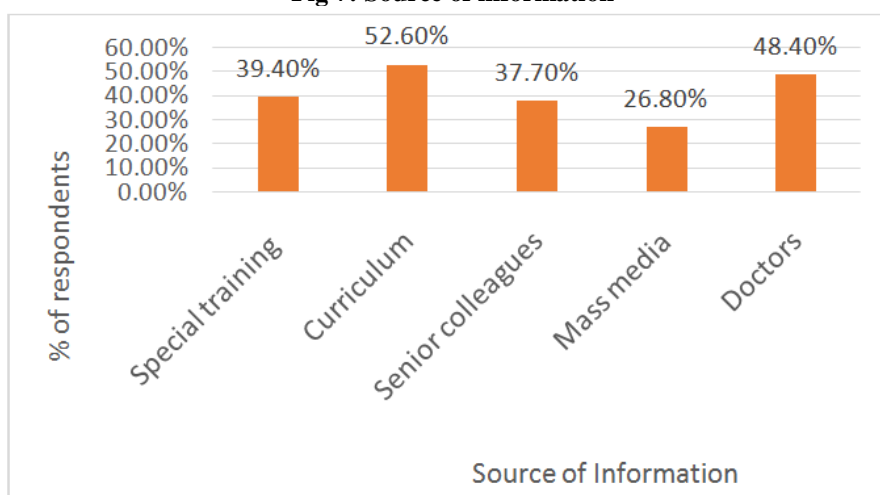


Fig 7: Source of information



TABLES

Sl.NO	Characteristic	Category	No.	%
1	Designation	Specialists	52	24.4%
		Doctors	9	4.2%
		Staff nurses	27	12.7%
		Nursing orderly	36	16.9%
		Lab technicians	24	11.3%
		OT technicians	12	5.6%
		Housekeeping staff	53	24.9%
2	Gender	Male	67	31.5%
		Female	146	68.5%
3	Age	<30 years	68	31.9%
		31-40	86	40.4%
		41-50	48	22.5%
		>50	11	5.2%
4	Years of experience	<2years	38	17.8%
		3-10	117	54.9%
		>10 years	58	27.2%
5	Total		213	100%
6	History of needle stick injury	Yes	105	49.3%
7	Reporting the incident	Yes	58	55.2%
8	Completed HBV vaccination	Yes	173	81.2%

TABLE 1: CHARACTERISTICS OF THE STUDY POPULATION

Table 2: Factors influencing knowledge

Sl. No	Character	Category	Good knowledge	Poor knowledge	P value	Adjusted p value
1	Designation	Specialists	78.8%	21.2%	<0.001	0.000
		Doctors	88.9%	11.1%		0.001
		Staff nurses	74.1%	25.9%		0.000
		Nursing orderly	44.4%	55.6%		0.011
		Lab technicians	79.2%	20.8%		0.000
		OT Technicians	25.0%	75.0%		0.061
2	Gender	Housekeeping staff	9.4%	90.6%	0.035	0.000
		Male	65.7%	34.3%		0.549
3	Age	Female	48.3%	51.7%	0.006	0.733
		<30	66.2%	33.8%		
4	Years of experience	31-40	55.3%	44.7%	0.005	0.412
		41-50	33.3%	66.7%		
		>50	54.5%	45.5%		
		<2 years	28.9%	71.1%		
		2 – 10 years	57.8%	42.7%		
		>10 years	59.6%	40.4%		

Table 3: Factors influencing Attitudes

Sl. No	Character	Category	Positive Attitude	Negative Attitude	P value	Adjusted p value
1	Designation	Specialists	69.2%	30.8%	<0.001	0.006
		Doctors	50%	50%		0.398
		Staff nurses	74.1%	25.9%		0.006
		Nursing orderly	22.9%	77.1%		0.533
		Lab technicians	37.5%	62.5%		0.383
		OT Technicians	8.3%	91.7%		0.344
2	Gender	Housekeeping staff	42.3%	57.7%	0.574	0.000
		Male	47%	53%		0.684
3	Age	Female	47.6%	52.4%	0.773	0.393
		<30	45.5%	54.5%		
4	Years of experience	31-40	50.6%	49.4%	0.108	0.132
		41-50	42.6%	57.4%		
		>50	54.5%	45.5%		
		<2 years	37.8%	62.2%		
		2 – 10 years	53.9%	46.1%		
		>10 years	40.4%	59.6%		

Table 4: Factors influencing Practices

Sl. No	Character	Category	Safe practices	Unsafe practices	P value	Adjusted p value
1	Designation	Specialists	53.8%	46.2%	0.619	0.878
		Doctors	77.8%	22.2%		0.435
		Staff nurses	60.9%	39.1%		0.792
		Nursing orderly	52.8%	47.2%		0.602
		Lab technicians	40.9%	59.1%		0.617
		OT Technicians	62.5%	37.5%		0.746
2	Gender	Housekeeping staff	50%	50%	0.506	0.828
		Male	51.6%	48.4%		0.599
3	Age	Female	55%	45%	0.229	0.163
		<30	57.4%	42.6%		
4	Years of experience	31-40	57.7%	42.3%	0.140	0.815
		41-50	48.8%	51.2%		
		>50	27.3%	72.7%		
		<2 years	45.2%	54.8%		
		2 – 10 years	60.2%	39.8%		
		>10 years	46.2%	53.8%		

Table 5: Practices with respect to demographic characters

Character	Wearing gloves (always)		Recapping needles (Always, often, sometimes, seldom)		Disposing sharps in Puncture proof container (Always)		Locating the Puncture Proof Container close to area of use (Always)		Using Personal protective equipment in emergency situations (Always)		
	%	p value	%	p value	%	p value	%	p value	%	p value	
Designation											

Needle Stick Injury: A Study on Awareness, Attitude and Practice of Its Preventive Measures ..

Specialists	59.6%	0.013	67.2%	0.000	84.6%	0.020	69.2%	0.000	50%	0.000
Doctors	77.8%		44.4%		100%		55.6%			
Staff nurses	81.5%		33.3%		92.6%		70.4%			
Nursing orderlies	58.3%		20%		86.1%		63.9%			
Lab technicians	79.2%		58.4%		87.5%		83.3%			
OT Technicians	50%		58.3%		58.3%		16.7%			
Housekeeping staff	58.5%	-	90.6%	-	47.2%					
Gender										
Male	64.2%	0.997	24.8%	0.000	89.7%	0.567	47.6%	0.002	49%	0.756
Female	64.1%		56.1%		80.6%		67.2%		46.3%	
Age										
<30	63.2%	0.007	39.7%	0.000	86.8%	0.526	64.7%	0.000	52.9%	0.002
31-40	64.7%		37%		85.9%		52.9%			
41-50	66.7%		23%		87.5%		39.6%			
>50	54.5%		36.4%		90.9%		54.5%		36.4%	
Years of experience										
<2 years	52.6%	0.088	10.5%	0.000	92.1%	0.375	26.3%	0.000	42.1%	0.025
2-10 years	65.8%		37.6%		88%		54.7%		56.4%	
>10 years	68.4%		44.7%		80.7%		70.2%		35.2%	

Dr.Anandhi Lakshmanan, et. al. "Needle Stick Injury: A Study on Awareness, Attitude and Practice of Its Preventive Measures Among Health Care Workers in A Tertiary Care Hospital." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 21(11), 2022, pp. 01-11.