Derna Academy Journal for Applied Sciences

E-ISSN: 3006-3159

DAJAS

Prevalence and Causes of Needlestick Injuries among Healthcare Workers in the Surgery Department at Abu Salim Trauma Hospital

[1] Rowida. S. Gahawi, [2]Arij. Mousa*

[1, 2] Department of Public Health, Faculty of Medical Technology, University of Tripoli, Libya

*Corresponding author: E-mail addresses: Ar.Mousa@uot.edu.ly

Volume: 2 **Issue: 2** **Page Number: 127 - 136**

Keywords:
Needlestick Injuries (NSIs), Healthcare Workers (HCWs), Occupational Hazards, Medical Saff Members, Abu Salim Taruma Hospital.

Received: 27\07\2024
Accepted: 22\08\2024
Published: 30\08\2024

DOI: https://doi.org/10.71147/t2sf5e71

ABSTRACT

Needlestick injuries (NSIs) are an occupational hazard of concern in the medical community as they can transmit blood-borne infections like HBV, HCV, and HIV in hospitals. NSI prevalence varies among healthcare workers (HCWs), with higher rates among surgeons, nurses, and emergency staff. This study focuses on NSI prevalence among health workers in the surgery department at Abu Salim Trauma Hospital and aims to identify causes of NSIs. The cross-sectional study involved 60 medical staff members, with a 95% response rate. Results showed that 66.67% of health workers experienced NSIs, with 29% having multiple exposures during their careers. Inappropriate patient handling caused 89% of injuries, while 63% occurred during needle recapping. The study found a high NSI prevalence at Abu Salim Trauma Hospital, with morning shift workers more vulnerable due to factors like excessive workload and fatigue.

1. INTRODUCTION

Needlestick accidents (NSIs) or percutaneous harm is the penetration of the skin via a needle or another sharp device that was in touch with blood, tissues, or other frame fluids previous to publicity. it's miles a severe occupational threat facing healthcare workers (HCWs) for the duration of the sector. Healthcare workers are exposed to contaminated needlestick injuries at some stage in their daily activities in healthcare settings, and they have a better chance of acquiring infection with blood-borne pathogens (Isara,2012). the superiority of NSIs distinct from country to country even if it can vary within a country.

but, in growing nations, the prevalence of NSIs is high due to terrible health settings, lack of education, adoption of safer working practices, lack of expertise about NSIs, and unavailability of occupational protecting measures which include vaccination towards HBV(Cui et al,2018). consistent with the Centers for Sickness Manipulate (CDC) and EU Company for Safety and Health at Work, predicted that exposure to blood and body fluids by way of sharps and NSIs greater than 385,000 and 1,000,000 instances annually among HCWs running in hospitals inside the U.S.A. and Europe, furthermore, world fitness company (WHO) expected that NSIs purpose Hepatitis C Virus (HCV) that account 16,000, Hepatitis B Virus (HBV) that account sixty-six,000, and Human Immunodeficiency Virus (HIV) that account 1,000 annually among HCWs (Dechasa,2021).furthermore, the prevalence of NSIs are high but are not equal amongst all HCWs in the hospitals, where arise more regularly among surgeons, nurses, and emergency staff (Bouya, S.2020). NSIs pose a big hazard of contracting numerous kinds of infections, and healthcare carriers are continuously beneath large hazards. the main difficulty with the underreporting of NSIs is that the people who were uncovered have been no longer given postexposure prophylaxis at the precise time to prevent the improvement of infection in the individual that had skilled NSI. besides infection, healthcare employees who have skilled needlestick harm exposure to psychiatric ailments together with despair, post-traumatic strain sickness (PTSD), and adjustment sickness (ad) (Wilburn SQ2004).
NSIs lead to exposure to blood-borne pathogens and pose sizable dangers to medical groups of workers inside the surgical department. wherein it is common amongst surgeons in training and is often unreported. stepped forward prevention and reporting techniques are needed to boost occupational safety for surgical companies. furthermore, Needlestick accidents are extra commonplace at some stage in night shifts and for much less skilled people, fatigue, over workload, shift work, and excessive perception of risk all of those factors can increase the chances of publicity to NSIs. There are more than 20 blood-borne pathogens that could be transmitted through contaminated NSIs with patients' blood or frame fluids to healthcare workers, and the most not unusual are (HBV), (HCV), and (HIV) (Cui, 2018) There are numerous motives for exposure to NSIs however the maximum not unusual are not the usage of safety- sharps container or the use of them incorrectly, recapping needles, moving a body fluid between bins, failing to remove used needles properly in puncture-resistant sharps boxes (NIOSH 2021). The significance of the examination comes from its worldwide importance, the arena fitness agency states that more than 35 million hospital treatment employees in the world are vulnerable to acupuncture and sharp devices and that the percentage of this damage ranges from 25% to 70%, considering that needle-stick accidents and sharp contraptions are many of the most crucial risks to which scientific employees are uncovered. from human docs, because of erroneous and threatening clinical practices, along with: recapping needles, and not putting off them appropriately”. The inaccurate and doubtlessly dangerous scientific strategies employed with the aid of hospital personnel have substantially contributed to their harm, particularly due to carelessness and a lack of subject for the completed objects, including needles. the main recognition of the have a look at is to decide the occurrence price of medical experts with acupuncture inside the surgical branch at Abu Salim Trauma clinic.

2. METHOD

This cross-sectional study randomly sampled 60 medical staff members from the surgery department at Abu Salim Trauma Hospital in Tripoli, Libya between June and September 2023 to assess the prevalence of needlestick injuries. A questionnaire with 43 questions, including those on reasons for and exposure to needlestick injuries, as well as preventive measures, was distributed with a response rate of 95% (57 responses). Data analysis was conducted using SPSS.

3. ETHIC APPROVAL

The research received an informed consent from participants, and approval from the hospital's ethics committee.

4. RESULT

The sample size was 57 precipitants in the surgery department at Abu Salim Trauma hospital, the result showed that the highest percentage of the random sample that was physician, where the percentage of doctors were 42.11% of the sample size. 36.84% nursesand technicians were 17.54 %. (figure 4.1). Approximately 60% were female and 40% male.

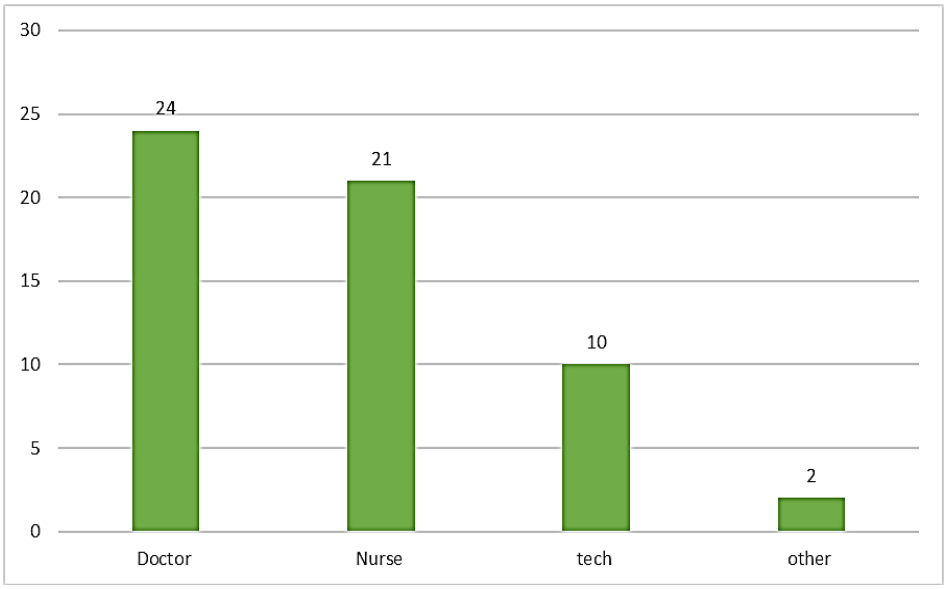

Fig 4.1 Distribution according to job

The result conducted that 29 (50.90%) of staff had bachelor degree, 14 (%24.56) of participants had intermediate diploma. And the lowest percentage was 3.50% who had Training course. (Figure 4.2)

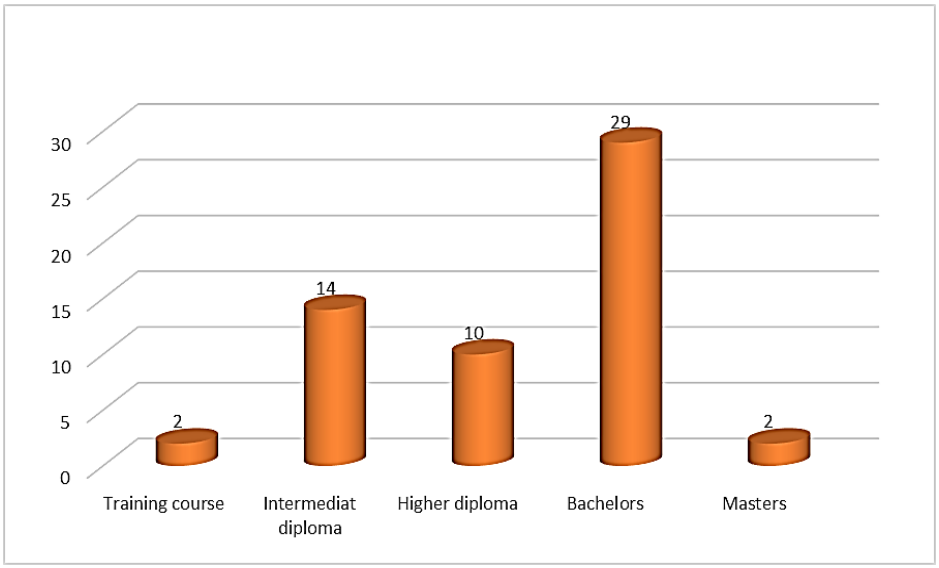

Fig 4.2 distribution the scientific degree

Most of the participant their age was between 20-30 years, where the highest percentage was (42.10%). And the lowest was (1.75%(of participants were their over 50 years old Table(4.1).

Table 4.1 Age distribution

Age	Number	Ratio
20-30years	24	42.10%
31-40years	23	40.35%
41-50years	9	15.80%
Over 50 years old	1	1.75%
Total	57	100%

Approximately (43.86 %) of the participants were employed for a duration exceeding16 years, whereas the proportion of participants who worked for a duration less than 5 yearswas (19.30 %) of the total sample size. Table (4.2)

Table (4.2) Distribution according to work per years

Work per years	Number	Ratio
M-5	11	**19.30%**
6-10	10	**17.54%**
11-15	11	**19.30%**
16 and up	25	**43.86%**
Total	57	100%

According to the result, (57.90%) of participants worked about 2 to 4 days per week, while (21.05%) worked from 4 to 6 days per week and (21.05%) worked 7 days per week. (Figure 4.3)

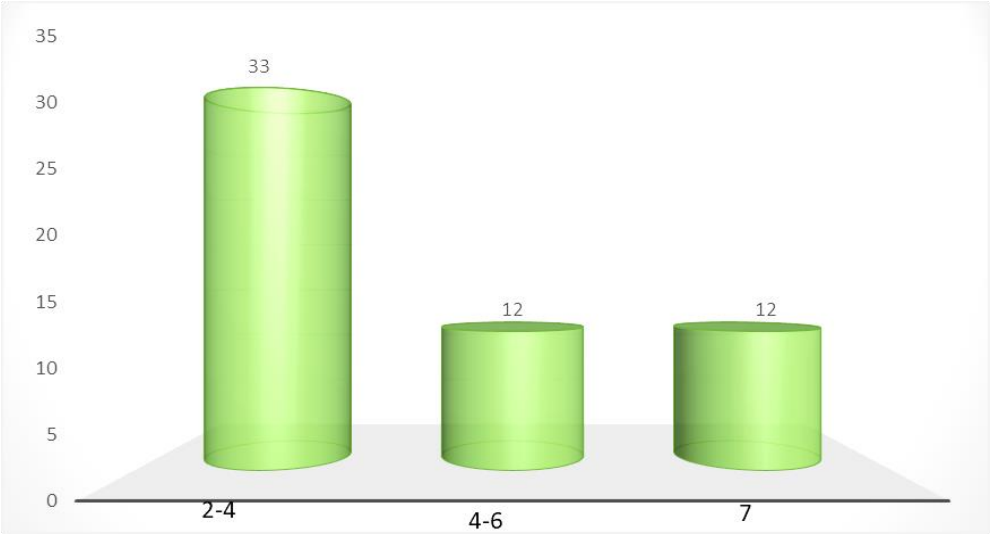

Fig 4.3 work per days

The result conducted to the most of health worker work in different shifts were 58% work6 hours per day, while the lowest percentage was (19%) who work around 24 hours per dayin shift. (Figure 4.4)9 61.40%) of participants work in the morning shift

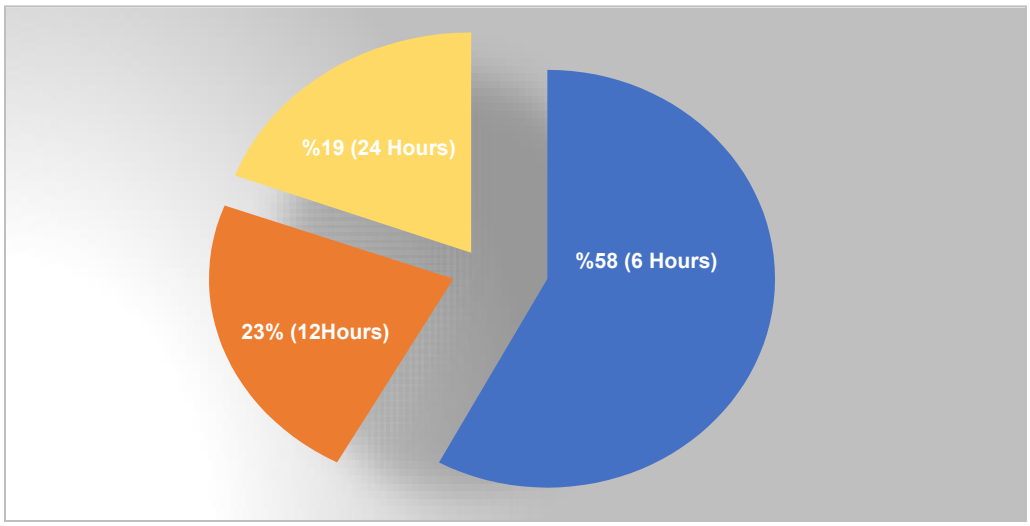

Fig 4.4work per hours

The result indicates that 38 health workers (66.67%) were exposed to NSIs during theirwork duty (Figure 4.6). The percentage is very high when we compared this result with a study was done in Benghazi city in 2020 among dental students, where this study included183 students.45 (24.5%) of students exposed to NSIs during their first clinical year (Al- Amamy ,2020).

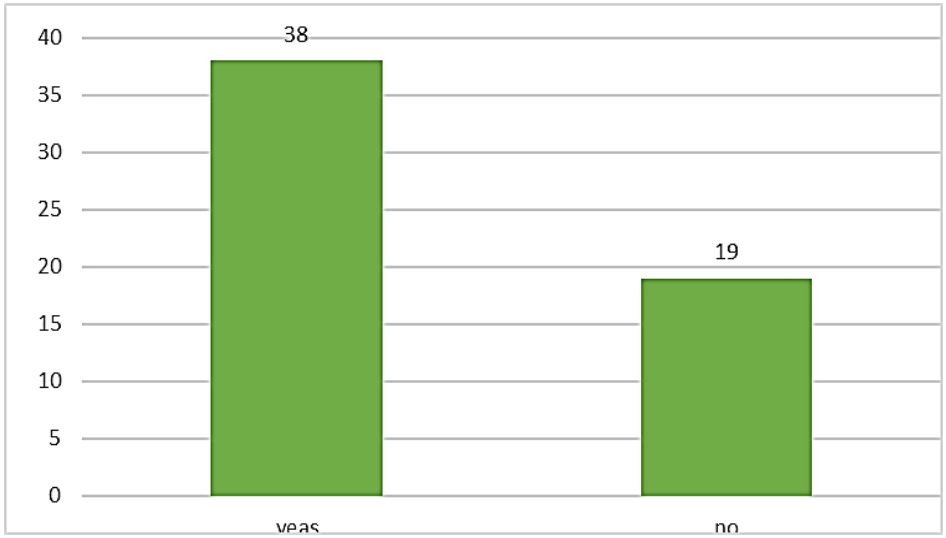

Fig 4.6The prevalence rate of worker exposed to NSIs

The study revealed that 11 (29%) workers who were exposed to NSIs experienced exposure on average of three occasions during their career. Of these, 21 % were exposed ona single occasion, while 18 % experienced exposure on two occasions during their career. Table (4.3). According to study, a significant proportion of health workers,79 %, were exposed to needle stick injury on more than one occasion, compared to the study conductedin Benghazi, where only 25 % of the students who sustained needle stick injuries reported having more than one incident of needle stick injury. (Al-Amamy ,2020)

Table (4.3) the number of exposures to NSIs

The number of exposures	Number	Ratio
1	8	21%
2	7	18%
3	11	29%
4	4	11%
5	3	8%
6	2	5%
8	1	3%
10	2	5%
Total	38	100%

The findings indicated that females were more susceptible to the NSI than males, as evidenced by Table (4.4). While comparing the result with the study in 2007 in Iran, the result was found that 47 of males (82.5%) and 93 of females (75.6%) had received one or more needlestick injuries during their clinical work. This is a strong indicator that there wasnot a relationship between sex and exposure to NSI. (Ebrahimi ,2007).

Table 4.4 The relationship between sex and NSI exposure

		NSI EXPOURE		
		NO	YES	Total
Gender	FEMALE	10	24	34
	MALE	9	14	23
Total		19	38	57

Thirty- tow percent (32%) of health workers never been reported to superiors. (37%)of worker never been reported to infection control office, comparing with study in in Abha CityMore than half (52.7%) of the injuries went unreported (ALsabanni ,2022).

Approximately 39% of health workers were exposed to NSI during the first year of clinicalsessions. Compared to the study in was conducted in Benghazi it found that about (80%) of these incidents occurred when the student was at first clinical year. So lack of experienceis not the main cause of exposed the health worker to NSI in our study (Al-Amamy ,2020).Eighty-four percent (84%) of health worker were exposed to NSI in their hand, (Figure 4.7).Moreover (39%) of the incidence happened in the morning. The result of pervious study in India that found (70%) were happen in the morning shift (Norsayani ,2003).

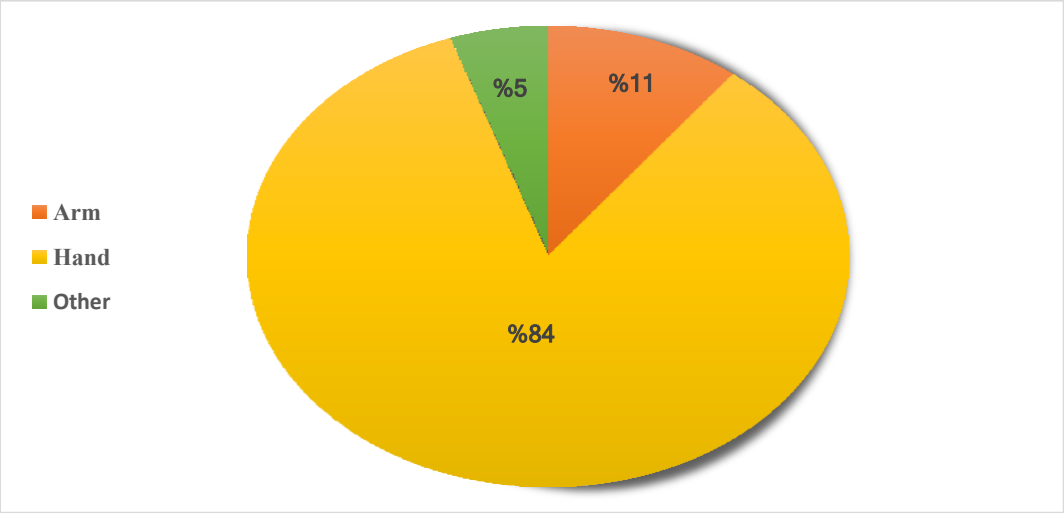

Fig 4.7 The site of insertion of needle

According to the findings of the study, 89% of health workers were injured due to inappropriate handling of patients, while 63 % were injured during needle recapping (Figure4.7) . In contrast, the study conducted in Benghazi revealed that 36 % of students were injured during needle recapping, and 16 % sustained injuries while handling other sharps inthe clinic (Al-Amamy, 2020)

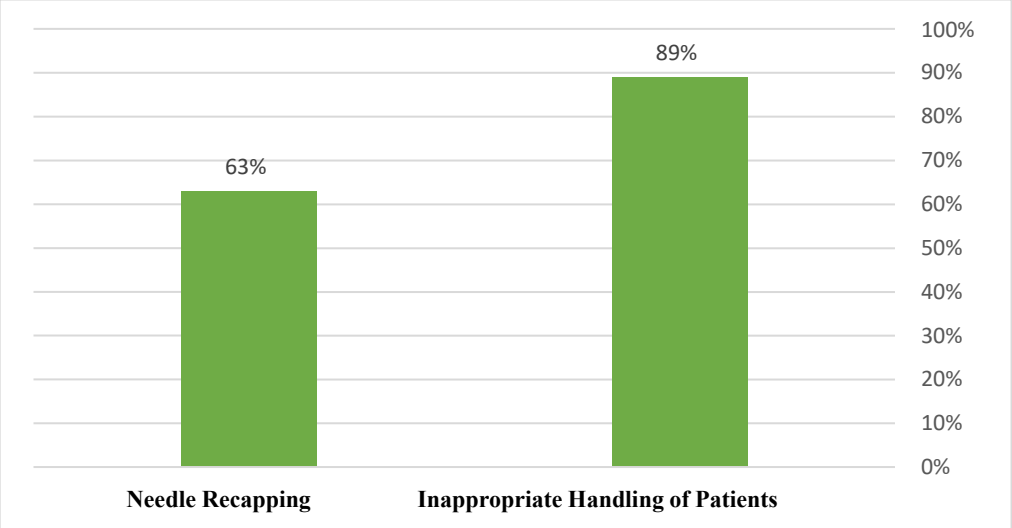

Fig 4.7causes of exposed to NSI

The result conducted to (65 %) of health workers were taken educational lectures about therisks of NSIs (Figure 4.8).

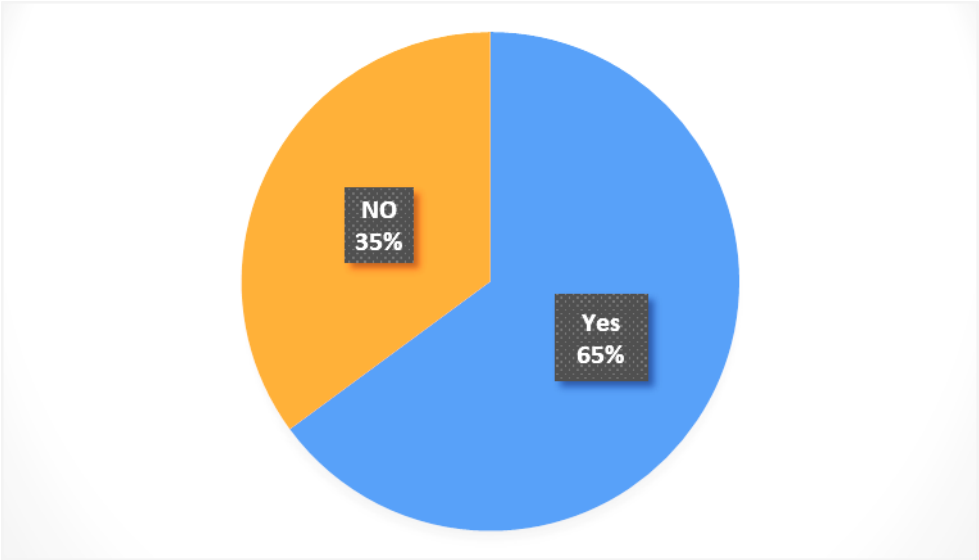

Fig 4.8 Taking educational lectures on the risks of NSI

Regrettably, the outcomes revealed that the personnel who were tasked with managing NSIs acted in an improper manner, and a majority of them were unaware of the protocols established by the clinic post-exposure. Wherein 84 % of the workers utilized disinfectant on the site of needle insertion, 72 % pressed the site of bleeding, and 56 % were unaware toadminister vaccine for 72 hours after exposure. According to previous study in Bengahzi 132 (72%_ of students were awared about the protocols of clinic post exposure and only 42of them found these protocols easy to follow (Al-Amamy, 2020).The result indicated that, 68% of health worker were wear personal protective equipment(PPE). While 12% of them were not wear PPE during working (Figure 4.9)

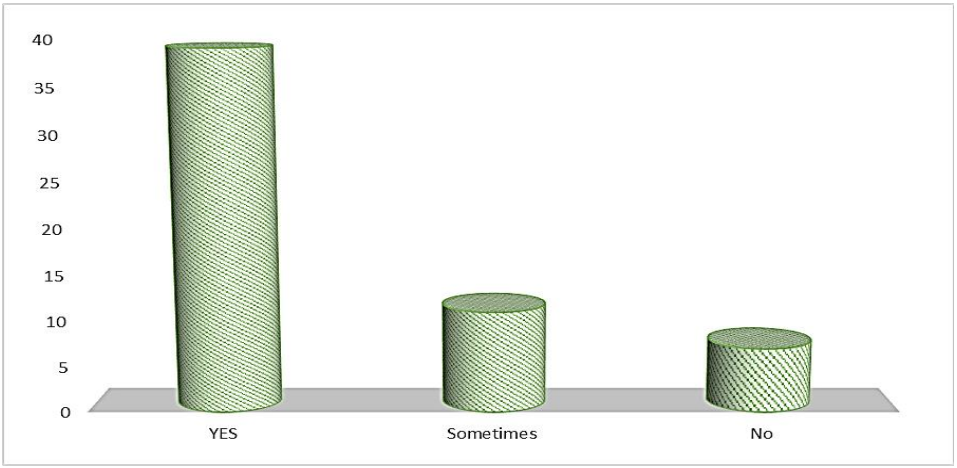

Fig 4.9 workers wearing PPE

Thirty -eight (67%) of health workers were vaccinated against HBV. compared to study in Melaka, (Malaysia). It was observed that (92.8%) respondents were immunized with Hepatitis B vaccine and 11 (7.2%) were not immunized at all (Bhardwaj,2014). The exposed to NSI happened due to many reasons,33 (58%) of worker consider the lack of experience, and dealing with patients are not the main reasons of NSI, while 47(82%)of health workers considered the main reasons of exposed to NSI were overwork load, fatigue and work for long period of time without rest.

Conclusion

This study has shed light on the heightened risk of needlestick injuries (NSIs) among healthcare professionals in the surgical department. It is evident from the data that more than half of the sampled individuals have experienced NSIs while working in this department, with a significant portion of them encountering multiple incidents within theirfirst year of employment. Our findings have further emphasized that healthcare workers on morning shifts are particularly vulnerable to NSIs compared to their colleagues on evening and night shifts.The primary factors contributing to this risk include excessive workloads, fatigue, and prolonged working hours without adequate rest.

In summary, this study has quantified the prevalence of NSIs among healthcare workers at Abu Salim Trauma Hospital's surgical department and has identified the primary factors responsible for these occurrences. We trust that the insights from this research can pave theway for effective strategies to mitigate the risk of needlestick injuries in this crucial healthcare setting.

ACKNOWLEDGMENT

The authors are grateful to Rayan Erhoma Alghuddi , Noura Abdalrhman Wali and Sajeda Almoneer Saad For collecting data from clinic

7. REFERENCES

Alfulayw,K . el .al. 2021.Factors associated with needlestick injuries among healthcare workers: implications for prevention , BMC health services and research

Adel, J. 2022.prevalence of needle stick injuries among laboratory personal at the national center of public health laboratory in Aden, Yemen. Medical and pharmaceutical science, v(6) :71-83.

ALsabanni, el al .2022.Incidence ,knowledge ,attitude and practice toward needle stick injury among health care workers in Abha city , Saudi Arabia .Public health Education and promotion ,V(10)-

Al-Amamy .A & Ingafou.M . 2011. Sharps and Needle-Stick Injuries among Studentsin Benghazi Dental faculty. Libyan Journal of Dentistry. 2020;4(2):69-74.

/www.ljd.uob.edu.ly /.

A Bhardwaj ,MF. El. 2014. The Prevalence of Accidental Needle Stick Injury and their Reporting among Healthcare Workers in Orthopedic Wards in General HospitalMelaka, Malaysia Jul;8(2): 6-13.doi: 10.5704/MOJ.1407.009https://www.ncbi.nlm.nih.gov/

Bouya ,S. et al 2020. Global Prevalence and Device Related Causes of Needle StickInjuries among Health Care Workers: A Systematic Review and Meta-Analysis. AnnGlob Health. ; 86(1): 35

Cui, Z., Zhu, J., Zhang, X., Wang, B., & Li, X. (2018).Sharp injuries: a cross- sectional study among health care workers in a provincial teaching hospital in China.Environmental health and preventive medicine, 23(1), 1-7.

Dechasa, A. Mengistu et al 2021. Worldwide Prevalence of Occupational Exposure to Needle Stick Injury among Healthcare Workers: A Systematic Review and Meta- Analysis. 1; Published 29 January.

Ebrahimi H. & Khosravi A . 2007 Needlestick Injuries among Nurses. Health Sci, Vol. 7, No. 2, pp. 56-6

Hanafi M.I. .el. Needlestick injuries among health care workers of University of Alexandria hospitals. Eastern Mediterranean Health Journal. EMHJ •Vol. 17 No.

Isara,A.ofili 2012: prevalence of occupational accident / injuries care workers in federal medical center in southern Nigeria . West Africa medicine (1):47-51

NIOSH. Needlestick InjuriesarePreventable.CDC2021
https://www.cdc.gov/niosh/newsroom/feature/needlestick_disposal.html

Norsayani ,M & Hassim ,I .2003 .Study on incidence of needle stick injury and factors associated with this problem among medical students May;45(3):172-8 doi: 10.1539/joh.45.172.

Wilburn S.Q. 2004. Needlestick and sharps injury prevention. The Online Journal ofIssues in Nursing. Sep 30;9(3):5.
https://pubmed.ncbi.nlm.nih.gov/