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Research article

Analysis of needlestick and sharps injuries (NSSI) in a tertiary level hospital: A 6-year review study

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Abstract

This study aims to determine health care workers' (HCW) causes of injuries, and changes in these injuries according to years by analyzing notification forms made by HCWs in a tertiary hospital between 2018 and 2023 due to needlestick and sharps injuries (NSSI) and provide suggestions to managers for prevention of injuries. The study was a descriptive, single-center, retrospective study. It included data on the number of injuries reported by HCWs in a training and research hospital during 2018-2023. The year of injury to HCWs, the unit in which the injury was sustained and the type of injury instrument were evaluated. NSSI rate was determined using the "Healthcare Quality Standards Indicator Management Guide". Obtained data were analyzed and interpreted through tables created with SPSS 26.0 statistical software and Microsoft® Excel software. The study found that a total of 74, 105, 69, 55, 82 and 118 NSSIs were reported in 2018, 2019, 2020, 2021, 2022 and 2023, respectively. For 2018-2023, rates were 11.1%, 15.8%, 20.1%, 11.7% and 12.2%, respectively. Considering all years, the highest NSSI rate was found in 2020 (20.1%) by year. lowest NSSI rate was found in 2018 (11.1%). In 6 years between 2018 and 2023, the highest number of NSSI reports came from clinics/services. These units are followed by intensive care units, emergency departments, and operating rooms. It was observed that nurses/midwives (54) and doctors (25) were most likely to be exposed to NSSIs based on title. It was found that HCWs were exposed to the majority of needle-tipped NSSIs in all years. The results of the study indicate that most at-risk occupational groups are nurses among health workers. It is recommended to increase training activities, especially in high-risk groups, and to facilitate follow-up and reporting procedures after notification to prevent NSSI.

Keywords: *Health institutions; health workers; Needlestick and Sharps Injuries (NSSI); tertiary hospital*

1. Introduction

Needlestick and sharps injuries (NSSI) present a significant occupational hazard for healthcare workers (HCWs) due to the nature of their work (Mohamud et al., 2023; Li et al., 2024). These injuries have the potential to transmit over 20 different bloodborne pathogens, with the risk of contracting serious infections such as human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV). Although effective treatments exist, the risk of these infections can lead to psychological issues such as anxiety, depression, and post-traumatic stress disorder among HCWs, along with a decreased quality of life (Cooke and Stephens, 2017; Gauba, 2023). The estimated transmission rates of HIV, HCV, and HBV following a needlestick injury are 0.2%, 1.8%, and 30%, respectively, with only HBV being preventable through vaccination. Despite the implementation of preventative measures, including improved equipment design and enhanced training, sharps injuries continue to occur during all phases of handling sharps (Yunihastuti et al., 2020). The United States Occupational Health and Safety Administration (OSHA) states that 5.6 million HCWs are at risk of exposure to bloodborne pathogens through NSSIs (Alfulayw et al., 2021). Globally, approximately three million HCWs are exposed to blood-borne

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pathogens through needlestick injuries each year, resulting in approximately two million HBV infections, 0.9 million HCV infections, and 170.000 human immunodeficiency virus (HIV) cases, according to the World Health Organization (WHO) (WHO, 2024). Over 90% of these infections occur in developing countries. Despite the implementation of advanced prevention strategies in developed nations, such as real-time injury monitoring and standard operating protocols, NSSIs remain a global concern (Jahangiri et al., 2016).

HCWs experience a high incidence of NSIs and mucosal exposures, which are exacerbated by limited resources, inadequate infrastructure, insufficient personal protective equipment (PPE), and overwork in Türkiye. Studies in Turkish hospitals indicate that a significant proportion of HCWs have suffered NSSIs, despite high compliance with standard precautions (Duzgol et al., 2020; Kotanoglu, 2020; Korkmaz et al., 2022; Sari et al., 2023). These injuries are particularly prevalent among doctors and nurses, with surgical clinics and assistant doctors being notably affected. Further analysis in operating rooms and intensive care units highlights the necessity for the implementation of preventive measures, the maintenance of appropriate equipment, and the provision of comprehensive employee education with the aim of mitigating risks and ensuring safety (Thakur and Rao, 2024).

The risk of occupational blood-borne infections for HCWs in low- and middle-income countries remains high due to several factors. These include overcrowded hospitals, high patient-to-HCW ratios, limited awareness of the risks involved, inadequate PPE, a lack of sharps containers, insufficient understanding and use of post-exposure prophylaxis, low adherence to universal precautions, a high prevalence of bloodborne viral infections among patients, and low hepatitis B vaccination rates among HCWs (Dafaalla, 2016). It is imperative that continuous efforts be made to improve safety protocols, increase awareness, and enhance reporting mechanisms in order to protect HCWs from NSSIs globally (Kepenek and Sahin Eker, 2017). Furthermore, effective strategies for preventing NSSI rates in healthcare settings include implementing standardized training programs, ensuring adequate availability and proper utilization of personal protective equipment (PPE), establishing safety protocols, and promoting a culture of incident reporting and feedback mechanisms. The literature underscores the paramount importance of comprehensive safety measures for reducing injury rates, emphasizing risk factors such as inadequate training, fatigue, and insufficient personal protective equipment (PPE) (Abdalkareem Jasim et al., 2023; Abdo Almoliky et al, 2024). The prompt administration of post-exposure prophylaxis (PEP), the implementation of pathogen-specific protocols, and the undertaking of regular training initiatives are essential elements in preventing occupational exposure to bloodborne pathogens (Kutubudin et al., 2024; Manenzhe and Singh, 2024). The utilization of safety needles, such as fully passive safety needles, has demonstrated favorable outcomes in the prevention of NSSIs among healthcare professionals, exhibiting high success rates and positive feedback on safety features (Praise et al., 2023; Picakciefe et al., 2024). Quality improvement projects that concentrate on incident reporting, root cause analysis, and policy modifications have also been shown to be effective in reducing needle stick injuries among healthcare personnel (Kumah and Forkuo-Minka, 2023; Ebrahimi and Khosravi, 2024).

The Quality Standards in Health (QSH) initiative, spearheaded by the Ministry of Health, aims to enhance the quality of healthcare in Türkiye, standardize care and develop relevant policies. The Quality Standards in Health İndicator Management Guide has been established to ensure employee health and safety in accordance with the QSH, and NSSI situations in healthcare institutions are monitored under the title of "Reducing the risks of needle sticks and sharps injuries" (Ministry of Health, 2020). In accordance with the Quality Standards in Health (QSH), it is obligatory to monitor the incidence of sharps injuries rate (NSSIR) in healthcare institutions as an indicator, with the initiation of improvement activities when necessary. In this context, the determination of the frequency, type, and causes of NSSI in healthcare personnel will contribute to the reduction of the risk of exposure to these injuries (Ministry of Health, 2023). The objective of this study was to determine the causes of NSSI and the changes in the number of injuries over time, based on the notification forms completed by healthcare workers in a tertiary hospital between 2018 and 2023. The findings were used to provide valuable information and recommendations to managers on the prevention of these injuries.

2. Materials and methods

The descriptive, single-center, and retrospective study encompasses the data on NSSI reported by healthcare professionals in a training and research hospital over a six-year period between 1 January 2018 and 31 December 2023. The population of the study consisted of all notification forms pertaining to NSSI in the relevant period. İn the registration forms, healthcare workers were categorized according to their occupational groups, including physicians, nurses, midwives, health officers, cleaning personnel, interns and others. The year of injury, the unit in which the healthcare workers were injured and the type of injury instrument were evaluated.

In order to determine the NSSIR, the "Health Quality Standards Indicator Management Guide" was employed as a reference point, with the injury rate calculated in accordance with the following methodology: (Ministry of Health, 2023).

$$\textbf{NSSIR:} \frac{\textit{Number of NSSI Notification}}{\textit{Patient Load Coefficient}} \times 100$$

$$\textbf{Patient Load Coefficient:} \frac{\textit{In the relevant period total number of patient applications}}{\textit{In the relevant period active HCW number}}$$

The number of patient applications is the sum of the number of inpatients, emergency, and outpatient applications in the relevant period. Each application of patients with more than one application is included in the calculation.

The number of personnel actively working in the relevant period includes the personnel assigned through service procurement, interns, and intern students. Personnel working on administrative duty and personnel on temporary duty and unpaid leave are excluded.

In accordance with the ethical standards of the study, institutional permission was obtained from the Hospital Administration on 6 May 2024 (permission number 242972901). Additionally, ethical committee approval was obtained from the Antalya Training and Research Hospital

Clinical Research Ethics Committee on 9 May 2024 (decision number 128). Furthermore, the study was conducted in accordance with the Declaration of Helsinki and no falsification was made of the data. The data were obtained from the Quality and Statistics units of the relevant hospital and analyzed and interpreted through tables created with the SPSS 26.0 statistical program and Microsoft® Excel program.

3. Results

In this study, the NSSIR was determined according to the number of NSSIs reported between 2018 and 2023 in a tertiary hospital. Table 1 presents information on the number and rates of NSSIs according to years and months. According to the table, a total of 74 NSSIs were reported in 2018, resulting in an NSSIR of 11.1%. The lowest number of notifications was recorded in October (3), while the highest number was observed in December (12). The months with the highest NSSIR were December (19.5%), November (18.9%), and April (12.7%) in 2018; 105 NSSIs were reported, resulting in an NSSIR of 15.8% in 2019. The fewest notifications were recorded in April, July, and August, with five notifications each, while December had the highest count, with 17 notifications. The months with the highest NSSI rates were December (28.9%), February (25.6%), and November (23.8%) for 2019, There were 69 reported NSSIs, with an NSSIR of 20.1% in 2020; May had the fewest notifications, with only one, and August had the most, with 11 notifications. April (46.1%), August (42.6%), and October (24.3%) had the highest NSSI rates same year.

A total of 55 NSSIs were reported, resulting in an NSSIR of 11.7% in 2021. The months with the lowest number of notifications were September, October, and November, each with two notifications, while August recorded the highest, with seven notifications. The months with the highest NSSI rates in 2021 were January (25.4%), February (23.5%), and May (18.0%).

A total of 82 NSSIs were reported, yielding an NSSIR of 12.2% in 2022. The lowest notification counts were observed in January, February, and May, with four notifications each, while April recorded the highest, with 12 notifications. The months with the highest WACR were April (20.0%), September (15.0%), and October (14.4%).

A total of 118 NSSIs were reported, resulting in an LWRR of 18.2% in 2023. June had the fewest notifications, with two, and August had the highest, with 18 notifications. The months with the highest NSSIR in 2023 were August (35.3%), July (31.5%), and April (26.0%). Fig. 1 presents the monthly NSSIR figures for each year. A review of all years revealed that the highest NSSIR was observed in 2020 (20.1%), with the highest levels occurring in April-August. The lowest NSSIR was determined to be in 2018 (11.1%) and in the months of January to October.

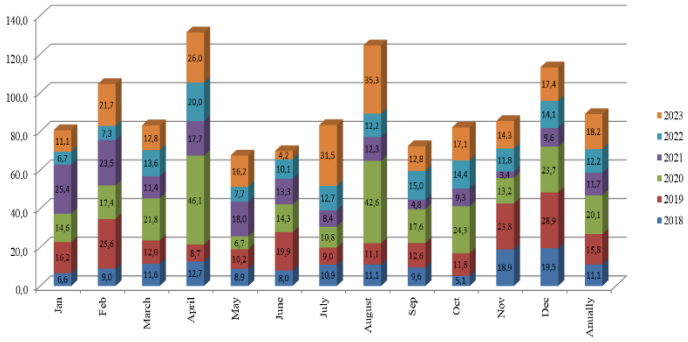
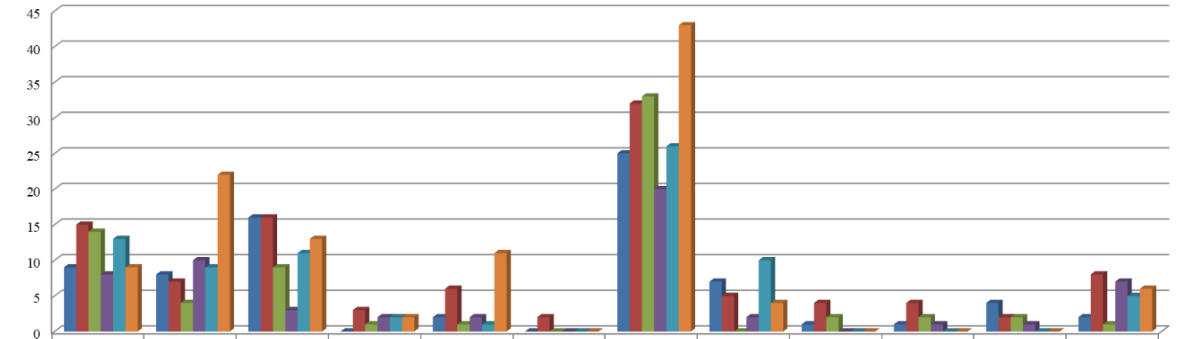


Fig. 1. NSSI rates.

Fig. 2 illustrates the distribution of NSSI notifications by units. Over the six-year period between 2018 and 2023, the highest number of NSSI notifications were made from inpatient units, which are clinics/services. These units are followed by intensive care units, emergency departments, and operating theatres. The number of notifications by units fluctuates according to the number of years, with the operating theatre ranking second in NSSI notifications in 2023.

Fig. 3 A-B illustrates the distributions based on title and the instrument causing injury by years. In 2018, a total of 73 HCWs reported that they were exposed to NWİ. The categories of nurse-midwife-health officer (34 people) and supporting staff (22 people) were the most prevalent in terms of exposure to NSSI injuries. In 2019, a total of 104 HCWs reported being exposed to NSSI. The data indicates that the greatest number of incidents involved nurse-midwife-health officers (41 people) and supporting staff (25 people). It was observed that the number of trainee injuries increased in this year compared to previous years. In 2020, a total of 69 healthcare workers reported being exposed to NSSI. The greatest number of HCWs exposed to NSSI were nurse-midwifes (27 people) and supporting staff (25 people). In 2021, a total of 55 HCWs reported being exposed to



	Emergency Department	Operating Rooms	Intensive Care Units	Medical Laboratories	Blood Sample	Chemotherapy Unit	Inpatient Clinics	Outpaient Clinics	Maternity Service	Medical Imaging Service	Sterilization Unit	Other
2018	9	8	16	0	2	0	25	7	1	1	4	2
2019	15	7	16	3	6	2	32	5	4	4	2	8
2020	14	4	9	1	1	0	33	0	2	2	2	1
2021	8	10	3	2	2	0	20	2	0	1	1	7
2022	13	9	11	2	1	0	26	10	0	0	0	5
2023	9	22	13	2	11	0	43	4	0	0	0	6

Fig. 2. NSSI distribution by units.

Table 1
NSSIR date by years.

Year	Data	Jan	Feb	March	April	May	June	July	August	Sep	Oct	Nov	Dec	Annually
2018	NSSI number	4	5	7	7	5	4	6	5	5	3	11	12	74
	Total Number of Patient Admissions to the Hospital	242.871	224.356	247.645	230.355	234.129	204.541	225.339	192.741	219.794	249.703	248.432	254.142	2.774.048
	Number of Active HCW	4019	4021	4097	4166	4148	4081	4106	4278	4227	4284	4265	4130	4152
	Patient Load Coefficient	60	56	60	55	56	50	55	45	52	58	58	62	668
	NSSIR	**6.6**	**9.0**	**11.6**	**12.7**	**8.9**	**8.0**	**10.9**	**11.1**	**9.6**	**5.1**	**18.9**	**19.5**	**11.1**
2019	NSSI number	10	14	7	5	6	9	5	5	7	7	13	17	105
	Total Number of Patient Admissions to the Hospital	263.904	236.691	252.874	248.227	254.172	199.920	247.176	200.652	243.299	258.035	241.950	259.839	2.906.739
	Number of Active HCW	4264	4333	4333	4335	4314	4415	4431	4435	4369	4339	4437	4423	4369
	Patient Load Coefficient	62	55	58	57	59	45	56	45	56	59	55	59	665
	NSSIR	**16.2**	**25.6**	**12.0**	**8.7**	**10.2**	**19.9**	**9.0**	**11.1**	**12.6**	**11.8**	**23.8**	**28.9**	**15.8**
2020	NSSI number	9	9	8	6	1	4	3	11	4	5	3	6	69
	Total Number of Patient Admissions to the Hospital	273.335	231.210	170.546	57.547	69.523	129.594	129.594	138.639	127.154	127.091	118.017	125.035	1.697.285
	Number of Active HCW	4448	4481	4640	4423	4639	4648	4658	5372	5580	6180	5193	4939	4933
	Patient Load Coefficient	61	52	37	13	15	28	28	26	23	21	23	25	344
	NSSIR	**14.6**	**17.4**	**21.8**	**46.1**	**6.7**	**14.3**	**10.8**	**42.6**	**17.6**	**24.3**	**13.2**	**23.7**	**20.1**
2021	NSSI number	**6**	6	4	6	5	5	3	7	2	4	2	5	55
	Total Number of Patient Admissions to the Hospital	105.535	114.583	157.960	152.403	124.560	169.313	161.089	257.315	189.967	195.955	282.784	239.671	2.151.135
	Number of Active HCW	4470	4488	4508	4508	4473	4491	4523	4520	4568	4532	4790	4600	4539
	Patient Load Coefficient	24	26	35	34	28	38	36	57	42	43	59	52	472
	NSSIR	**25.4**	**23.5**	**11.4**	**17.7**	**18.0**	**13.3**	**8.4**	**12.3**	**4.8**	**9.3**	**3.4**	**9.6**	**11.7**
2022	NSSI number	4	4	8	12	4	6	6	6	9	8	7	8	82
	Total Number of Patient Admissions to the Hospital	236.369	215.413	232.610	236.025	205.421	244.491	189.253	228.837	244.603	255.954	273.542	299.998	2.862.516
	Number of Active HCW	3988	3954	3944	3938	3940	4104	3998	4661	4072	4623	4623	5278	4260
	Patient Load Coefficient	59	54	59	60	52	60	47	49	60	55	59	57	672
	NSSIR	**6.7**	**7.3**	**13.6**	**20.0**	**7.7**	**10.1**	**12.7**	**12.2**	**15.0**	**14.4**	**11.8**	**14.1**	**12.2**
2023	NSSI number	6	11	8	13	9	2	16	18	7	10	8	10	118
	Total Number of Patient Admissions to the Hospital	293.043	248.584	306.301	245.561	282.288	237.335	262.463	263.655	277.416	295.136	283.403	292.685	3.287.870
	Number of Active HCW	5408	4898	4907	4904	5087	5027	5168	5165	5085	5047	5056	5080	5069
	Patient Load Coefficient	54	51	62	50	55	47	51	51	55	58	56	58	649
	NSSIR	**11.1**	**21.7**	**12.8**	**26.0**	**16.2**	**4.2**	**31.5**	**35.3**	**12.8**	**17.1**	**14.3**	**17.4**	**18.2**

NSSI. The majority of these were nurse-midwife-health officers (27 people) and supporting staff (16 people). In 2022, a total of 81 HCWs reported being exposed to NSSI. Of these, 38 were nurse-midwife-health officers and 20 were supporting staff. In 2023, a total of 113 HCWs reported NSSI exposure. The highest number of NSSI exposures by title was nurses-midwives-health

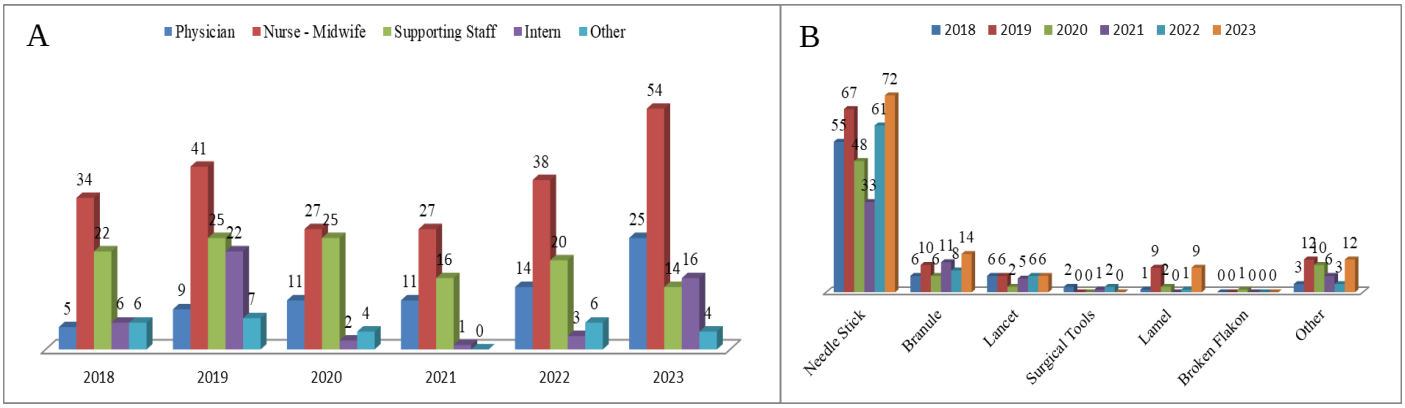


Fig. 3. (A-B) Classification of NSSI by title and tool causing injury.

officers (54 persons) and doctors (25 persons) (Fig. 3A). The instruments that were reported by HCWs and caused injury were: needle tip, branula, scalpel, surgical instrument, slide/lamel, and broken glass materials. It was determined that HCWs were mostly exposed to NSSI with a needle tip in all years. The years 2018 (67 notifications) and 2023 (72 notifications) were the years in which NSSI exposure due to needle tip was reported (Fig. 3B).

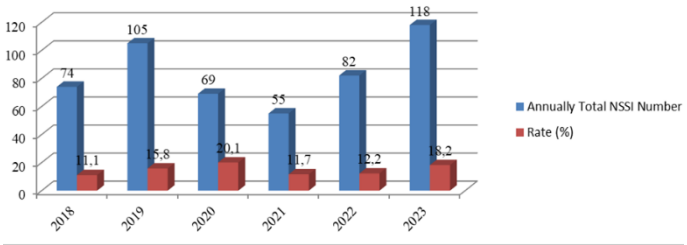


Fig. 4. The number and rates of NSSI by years.

Fig. 4 presents the number and rate of NSSIs by year. Upon analysis, it was observed that while the number of injuries in 2020 was 69 and the injury rate was 20.1%, the rate was determined to be 18.2% in 2023 despite 118 notifications. It can be concluded that the injury rate is directly proportional to the number of patients and active staff.

4. Discussion

The objective of this study was to analyze the notification forms completed by HCWs in a tertiary hospital between 2018 and 2023 due to NSSI. The aim was to determine the characteristics of the employees, the causes of the injuries, and the changes in the number of injuries over the years. Additionally, the study aimed to provide suggestions to the managers to prevent these injuries. The rationale for selecting a tertiary hospital as the subject of this study is that such institutions represent one of the highest levels of care, with a high patient density and a focus on complex and severe cases. This may result in a greater number and variety of medical procedures and interventional procedures, thereby increasing the risk of injuries. The assessment of such injuries will provide valuable information to policymakers and managers in terms of implementing precautions. Indeed, a study found that there were more notifications in a tertiary education and research hospital among the health facilities in Bolu province compared to other health facilities (Esen et al., 2024) which confirms this situation.

Similar studies conducted in healthcare institutions have demonstrated that occupational accidents involving NSSI occur with considerable frequency, particularly among nurses. These studies have revealed that these accidents are commonly precipitated by several factors, including a lack of attention, suboptimal working conditions, negligence, fatigue, and a tendency to work at a fast pace. The most common tools causing injuries in these accidents are needles, scalpels, medical devices and medical instruments. (Barnes et al., 2020; Reda et al., 2021; Abalkhail et al., 2022; Hosseinipalangi et al., 2022). HCWs, particularly support staff with less than five years' experience, are the most affected occupational group and are frequently exposed to injuries from improper handling and collection of medical waste and materials. İn addition, lack of knowledge and the normalization of accidents among HCWs contribute to both the occurrence and underreporting of these incidents. This situation highlights the need to develop prevention strategies and structured protocols following non-sharps safety incidents (NSSIs) to reduce such injuries. (Joukar et al., 2018; Papadopoli et al., 2019; Song et al., 2023).

The study found that the highest rate of NSSIR in 2020 was 20.1%, with the peak occurring between April and August. It is well known that the COVID-19 pandemic in 2020 put unprecedented pressure on healthcare systems worldwide. HCWs, especially those at the frontline, were required to work long hours. Due to the increased workload, stress, and difficulties associated with the use of personal protective equipment, workers may have been more susceptible to NSSI. Indeed, Esen et al. (2024) examined NSSI reports over a five-year period and found that a total of 614 incidents were reported during this period. The study identified 2022, the post-COVID-19 pandemic period, as the year with the highest reporting rate, with 28.99% (n:178) of incidents reported. İn the study by Karakoc et al. (2019), which examined NSSI reports from 2013 to 2016, the annual NSSI rates were found to be 4.3%, 9.6%, 4.4%, and 8.6%, respectively. The study, which spanned the six-year period from 2018 to 2023, revealed that inpatient units, such as clinics/wards, intensive care units, emergency departments, and operating rooms, were the units with the highest number of NSSI reports. In the study by Harman-Gunerken (2023) examining NSSI exposure, the highest number of injuries occurred in operating rooms (22.3%), emergency departments (18.8%), intensive care units (18.3%), and surgical wards (12.6%). Among the cases, 117 (62.5%) were due to needlestick injuries, and 45 (24%) were due to injuries from sharp instruments.

The study identified that the instruments causing injuries included needle tips, cannulas, scalpels, surgical instruments, slides/coverslips, and broken glass materials, with needle tips being the most common cause of NSSI across all years. The

years 2018 (67 reports) and 2023 (72 reports) had the highest number of NSSI incidents due to needle tips. The occupational groups most frequently exposed to injuries were nurses, midwives, health officers, and cleaning staff. In the study evaluating NSSI from 2013 to 2018, there were 393 reports, with the highest incidence among nurses (39.7%), followed by cleaning staff (36.3%), doctors (10.4%), other workers (7.4%), and laboratory technicians (5.9%) (Saadeh et al., 2020).

In a study spanning eight years, Ceylan and Celik (2022) observed NSSI exposure in a total of 132 individuals. Of these, nurses constituted the most frequently affected occupational group (69.7%). Injuries were more commonly observed in the emergency department (21.2%) and blood collection units (17.5%). The most frequent cause of injuries was needle stick exposure (76.5%). Kurttekin and Tacgin (2019) observed that NSSI was the most prevalent type of occupational accident among HCWs, with 80% of percutaneous injuries resulting from needlestick incidents.

Among the occupational groups experiencing exposure, nurses are the most frequently subjected to NSSIs. This is due to their close contact with patients during medical treatment and care, as well as their frequent use of syringes, cannulas, and ampoules. Consequently, nurses experience higher rates of NSSI compared to other healthcare workers. Furthermore, the global shortage of nurses, coupled with long and intensive working hours, contributes to the prevalence of NSSI (Ozturk Mentese and Karaca, 2021). Bozdemir and Bahar (2023) highlight that the incidence of injuries among nurses increases with longer shifts and advancing age.

Research indicates that 50% or more of NSSIs are underreported among HCWs. NSSIs not only carry the risk of transmitting infectious diseases but also impose economic burdens due to the testing and prophylaxis required after risky exposures. This can lead to anxiety and lack of motivation among HCWs, thereby negatively affecting their performance (Ozturk Mentese and Karaca, 2021). To minimize the often-irreparable injuries that can result from NSSIs, it is essential to provide periodic training to relevant healthcare personnel and to inform them about the procedures for reporting incidents.

Studies have shown that the number, rate, occupational groups, and instruments causing NSSIs vary across countries, regions, and the status of healthcare institutions (Martins et al., 2012; Cho et al., 2013; Bekele et al., 2015; Saadeh et al., 2020; Mohamud, 2023). In developed countries, the implementation of improved reporting systems and safety protocols has been associated with elevated NSSI reporting rates. Conversely, in developing countries, lower reporting rates may be observed due to a lack of awareness, insufficient training, inadequate safety equipment, and deficiencies in reporting systems (Jagger et al., 2008).

Regional disparities may emerge because of the configuration of healthcare systems, cultural influences, and the educational attainments of healthcare professionals. For example, the rates of non-suicidal self-injury (NSSI) in large hospitals situated in urban areas are likely to be higher than in other hospitals (Lee and Hassim, 2005). Furthermore, differences are observed among various occupational groups. It has been demonstrated that healthcare professionals, including nurses, doctors, surgeons, and laboratory technicians, exhibit varying degrees of risk for NSSI (Barnes et al., 2020; Cruz-Ausejo et al., 2022).

This study has certain limitations that need to be mentioned. The study was conducted at a single center, a tertiary research and training hospital with 1,270 beds. Consequently, the results are specific to this hospital and cannot be extrapolated to all hospitals. It is possible that the results of the study may not be generalizable to other healthcare institutions due to differences in the rates and causes of NSSI across different regions and geographical areas.

5. Conclusion

The study revealed significant variations in the rates of NSSI and the number of NSSIs reported from 2018 to 2023 at a tertiary hospital. The highest NSSIR was observed in 2020 (20.1%), coinciding with the COVID-19 pandemic, and the lowest in 2018 (11.1%). The occupational group most frequently affected was that of nurses, midwives, and health officers, due to their close patient contact and frequent use of needles. The most common instruments causing injuries were needle tips, followed by cannulas, scalpels, surgical instruments, slides, and broken glass. The study highlights the need for improved reporting and preventive measures to mitigate the risk of NSSIs among HCWs.

Preventive measures, such as occupational health and safety training on sharp object injuries, post-injury follow-up, root cause analyses, ensuring the appropriateness of personal protective equipment usage, prevention of injuries due to inadequate equipment usage, consideration of occupational conditions (stress, number of shifts, intra-team communication, working conditions, shift durations, etc.), and addressing material shortages (continuing the use of excessively filled sharp object containers) are crucial in mitigating such incidents. These measures are also pivotal in enhancing the quality of healthcare services. It is recommended that managers and units responsible for incident reporting, in particular, review safety policies and training among high-risk groups. Educational programs should be tailored to different occupational levels and learning paces, incorporating methods and techniques used in adult education such as animations and mobile applications. Regular repetition of such training programs and ensuring easy access for healthcare workers to participate are essential. It is recommended that policymakers, managers, and relevant stakeholders examine the issue in-depth and implement policies and measures accordingly. To ascertain whether the findings of this study reflect national trends, multicenter studies at the national level should be conducted.

Conflict of interest: The author declares that she has no conflict of interests.

Ethical Approval: The study was approved by the Ethical Committee of the Antalya Training and Research Hospital, (Approval number: 2024/128).

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