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Research Article

Incidence of Needle Stick Injuries and Behavior After Injuries Among Nurses in Sulaimani Hospitals

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Abstract

Background: Needle-stick injuries cause occupational health and safety challenges for healthcare workers on a global scale. Needle-stick injuries can potentially expose individuals to dangerous blood-borne pathogens. ***Objectives***: To determine the prevalence of needle stick injuries and their main causes, as well as the nurse's behavior after being injured by needle stick injuries. ***Methods***: A self-reported cross-sectional study was conducted in Sulaimani city governmental and non-governmental tertiary hospitals in the Kurdistan Region of Iraq. The data was collected by constructing a questionnaire form from 300 nurses who provide medical care by non-probability convenience sampling from October 1, 2022, to March 1, 2023. ***Results***: 74.3% of the 223 nurses who participated in the study experienced needle stick injuries. The needle syringe (88.7%) was the most common tool involved. The sterilization of wound area 48.9% was the number-ranked action of the nurses after injury, followed by pushing the injured area 28.4% to drain blood. Most of the nurses did not receive post-injury prophylaxes (57.4%) or send their blood to additional tests (73.1%). ***Conclusions***: Syringe needles were a major cause of the needle sticks, which injured three out of four participants. Additionally, the nurses' top priority after receiving a needle stick was to sterilize the exposed portion of the wounds.

Keywords: Infection control, Needle stick injuries, Nurses behavior, Sulaimani city.

حدوث إصابات وخز الإبرة والسلوك بعد الإصابات لدى الممرضات في مستشفيات السليمانية

الخلاصة

الخلفية: تسبب إصابات وخز الإبر تحديات تتعلق بالصحة والسلامة المهنية للعاملين في مجال الرعاية الصحية على نطاق عالمي. يمكن أن تعرض إصابات وخز الإبر الأفراد لمسببات الأمراض الخطيرة المنقولة بالدم. **الأهداف**: تحديد مدى انتشار إصابات وخز الإبر وأسبابها الرئيسية، وكذلك سلوك الممرضة بعد إصابتها بإصابات وخز الإبر في مستشفيات السليمانية. **الطريقة**: أجريت دراسة مقطعية ذاتية الإبلاغ في مستشفيات مدينة السليمانية الحكومية وغير الحكومية في إقليم كردستان العراق. تم جمع البيانات من خلال إنشاء نموذج استبيان من 300 ممرضة يقدمون الرعاية الطبية عن طريق أخذ عينات مريحة غير احتمالية من 1 أكتوبر 2022 إلى 1 مارس 2023. **النتائج**: 74.3٪ من 223 ممرضة شاركوا في الدراسة عانوا من إصابات وخز الإبرة. كانت حقنة الإبرة (88.7٪) هي الأداة الأكثر شيوعا. كان تعقيم منطقة الجرح 48.9٪ هو الإجراء رقم الممرضات بعد الإصابة ، يليه دفع المنطقة المصابة بنسبة 28.4٪ لتصريف الدم. لم يتلق معظم الممرضات الوقاية بعد الإصابة (57.4٪) أو يرسلن دمهن إلى اختبارات إضافية (73.1٪). **الاستنتاجات**: كانت إبر المحاقن سببا رئيسيا لوخز الإبر ، مما أدى إلى إصابة ثلاثة من كل أربعة مشاركين. بالإضافة إلى ذلك ، كانت الأولوية القصوى للممرضات بعد تلقي وخز الإبرة هي تعقيم الجزء المكشوف من الجروح.

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INTRODUCTION

Needle-stick injuries (NSIs) are unintended wounds caused by contact with the end of a sharp instrument, such as syringe needles or shattered ampules. NSIs pose occupational health and safety problems for healthcare workers (HCWs) on a global scale [1]. It is estimated that three out of 35 million HCWs worldwide have reported accidental NSIs [2], and nearly half (44.5%) of healthcare workers worldwide report needle stick injuries at least once a year [3]. The NSI injury problem may affect health care personnel at all levels in a variety of healthcare settings [4]. NSIs have the potential to expose people to hazardous blood-borne diseases, including HIV, Hepatitis B, and Hepatitis C [5]. In healthcare facility workplaces, exposure to human fluids or blood via needle stick injuries is regarded as the principal occupational hazard. Furthermore, almost three million healthcare workers are exposed to blood-borne viruses each year, with blood serving as the primary source of exposure for nearly all occupationally acquired diseases. Exposures are primarily caused by NS episodes that include a patient's infected blood, either directly or indirectly, such as contact with the patient's blood on the healthcare worker's nose, eye, or mouth [6]. Nurses play a critical role in clinical services and are primarily responsible for vital aspects of patient care in a variety of healthcare institutions. Nurses in all departments are exposed to a wide range of occupational dangers, including infectious diseases, chemical compounds, environmental hazards, and psychosocial concerns [7, 8]. Needle-stick injuries are one of the most serious risks that frontline healthcare professionals encounter, despite the fact that these exposures are frequently assumed to be part of their job obligations. There are various factors that enhance the risk of NSIs, including medical staff risky practices such as inappropriate and excessive use of sharp devices, recapping needles, and improper sharp device disposal. There is also a shortage of safety measures, such as personal protective equipment (PPE), sharps disposal containers, engineering control, personnel scarcity, and proper training [5]. Needle-stick injuries can be caused by a variety of healthcare devices, including blood collection needles, cannulas, hypodermic needles, and IV administration system connections. Additionally, NSI occurrences may occur during the needle waste treatment procedure. Healthcare practitioners who come into touch with needles while performing clinical activities are at a high risk of developing needle-stick injuries, which can lead to serious or even fatal infections [9. To prevent and control NSIs, measures should be reversed to pre-exposure, with prophylaxis initiated as soon as the risk of an incident is suspected, and when NSIs occur, timely post-exposure prophylaxis (PEP) administered within 24 hours of the injury is critical. In addition to confidential counseling and follow-up, regular retroviral testing and counseling support should be continued throughout three-month follow-up consultations [10]. Proper management techniques are critical for avoiding and controlling NSIs and its repercussions for medical care professionals, such as administering the HBV vaccine, providing adequate PEP, teaching through training, and supplying dedicated sharp containers to each hospital room to prevent needle recapping [11]. The infection prevention and control (IPC) program, particularly for healthcare personnel who manage NSIs, has received considerable attention in recent years. This increased attention includes institutional changes at all levels of hospital organizations, such as the establishment of infection control units or teams in all hospitals to monitor the execution of IPC principles. These guidelines, which are mostly based on international standards such as those set by the World Health Organization (WHO), provide evidence-based procedures for nurses to prevent NSIs. Compliance with IPC guidelines is required for all Sulaimani hospitals, necessitating measures such as the installation of safety boxes in all hospital units, the mandatory vaccination of all healthcare staff against HBV, and the provision of comprehensive staff training to improve knowledge, correct misconceptions, and prevent practices that may lead to NSIs. The current study aims to investigate the occurrence of needle stick injuries and their primary causes, as well as the nurse's behavior following a needle stick injury.

METHODS

Study design and setting

A self-report cross-sectional study was conducted to determine the prevalence of needle stick injuries among the nurse staff and their actions after they were injured in Sulaimani City public and private tertiary hospitals in the Kurdistan Region of Iraq, from 1st October 2022 to 1st March 2023.

Inclusion and Exclusion criteria

The study included all nurses who were at risk of needle injuries through providing medical care for the patients and excluded those nurses who worked in administration positions in hospitals; also, the nurses who worked in hospitals where their administrations did not agree to participate in the study.

Data collection and outcome evaluation

The data were gathered from 300 nurses using non-probability convenience sampling and a designed questionnaire. The built questionnaire form was based on studies on the same issue and was divided into three sections: the first portion included questions about their demographic features as well as questions about their job at the hospital. The second piece featured questions concerning the nurse's background knowledge, attitude, and daily practice with needle sticks, while the third section asked about needle stick injuries and the nurse's behavior after being harmed

by needles. Four academic experts at Sulaimani Polytechnic University agreed that the questionnaire form was valid. Prior to data collection, a pilot study was done to test the clarity of the questions and to learn about the obstacles that might arise during the data gathering process. The questionnaire form was completed using the self-filling method. Furthermore, the Sulaimani Polytechnic University Research Council and the Sulaimani Director of Health and Hospital Administrations both certified the study as ethical. The data was analyzed using SPSS software, which calculated the mean, standard deviation, frequency, and percentage.

RESULTS

The current study's data was gathered from 300 nurses at Sulaimani hospitals. The nurses' ages ranged from 20 to 60 (34.55±10.9 years). In Table 1, 116 (38.7%) of the nurses were between the ages of 20 and 29, followed by 86 (28.7%) who were 40-49 years old, 49 (16.3%) who were equivalent to or more than 50 years old, 40 (13.3%), and 9 (3%) who did not provide their age.

Table 1: the distribution of the nurse's demographic and hospital characteristics

Variables		n(%)
Age (year) (34.55±10.9)	20-29	116(38.7)
	30-39	86(28.7)
	40-49	49(16.3)
	≥ 50	40(13.3)
	Missing	9(3.0)
Gender	Male	91(30.3)
	Female	209(69.7)
Certificate	High School	36(12)
	Diploma	138(46)
	Bachelors	80(26.7)
	Missing	46(15.3)
Type of job contract	Permanent	207(69)
	Temporary	80(26.7)
	Missing	13(4.3)
Hospital	Governmental	176(58.7)
	Private	76(25.3)
	Both	44(14.7)
	Missing	4(1.3)
Working unit	Ward	123(41)
	Emergency room	52(17.3)
	OP Department	5(1.7)
	Surgery	44(14.7)
	ICU	21(7)
	Hemodialysis	6(2.0)
	Blood drain	19(6.3)
	Missing	30(10)
Experience (year)	≤ 5	96(32)
	6-15	89(29.7)
	16-25	45(15)
	> 26	40(13.3)
	Missing	30(10)

The vast majority of the nurses were female, 209 (69.7%) compared to males, 91 (30.3%), and the majority of the nurses had an institute diploma, 138 (46%) compared to other certificates such as bachelor's 80 (26.7%) and high school 36 (12%), with 46 (15.3%) lacking their certifications. In terms of work-related questions, the vast majority of nurses (69%) had a permanent working contract, compared to 80 (26.7%) with 13 (4.3%) absent, and the majority of the nurses worked in public hospitals. 176 (58.7%), compared to those who work in non-governmental hospitals, 76 (25.3%), and those who work for both 44 (14.7%) and 4 (1.3%), did not respond. In addition, most of the nurses were working in the ward 123 (41%) followed by the emergency room 52 (17.3%), surgery room 44 (14.7%), blood drain 19 (6.3%), Intensive Care Unit (ICU) 21 (7%), hemolysis 6 (2%), and Outpatient Department (OPD) 5 (1.7%), respectively, with 30 (10%) missing their working unit, and the majority of the nurses 96 (32%) had equal or less than 5 years of working experience compared with longer durations such as 6-15 years old 89 (29.7%), 16-25 y 40 Table 2 comprises responses from nurses about their prior knowledge and daily experience with needle stick injuries. In terms of nurse training on needle stick injuries, 129 (43%) did not attend training or courses on needle injury prevention, whereas 166 (55.3%) did, and 5 (1.7%) did not respond to this question. Furthermore, the majority of the nurses, 214 (71.3%), did not receive any training in the hospital where they worked throughout the data collection period, as opposed to those who did, 81 (27%), and 5 (1.7%) decided not to respond to this question. Furthermore, to tell the hospital police about the immunization, the nurses were asked if the institution obliged medical professionals to acquire immunizations. The vast majority of nurses, 202 (67.3%), said no, while only 83 (27.7%) said they needed medical help to take it, and 15 (5%) did not respond to the question. The vast majority of nurses constantly do needle recapping (68.7%), as opposed to the minority who never do it, while 46 (15.3%) and 45 (15%) do it on occasion, with 3 (1%) missing responses, respectively. Fortunately, the vast majority of nurses (236; 78.7%) do not bend the needles before disposal, as compared to those who do it infrequently (40; 13.3%) or always. 18 (6%), 6 (2%) replies.

Table 2: the nurse's background knowledge and practice on needle stick injuries

Questions		n(%)
Did you attend any training or course on the prevention of needle stick injuries?	Yes	129(43)
	No	166(55.3)
	Missing	5(1.7)
Did you attend any training in the current working hospital on how to deal with needle sticks?	Yes	81(27)
	No	214(71.3)
	Missing	5(1.7)
Hospital obligates medical staff to take vaccination to protect you against infections come from needle stick injuries in the hospital.	Yes	83(27.7)
	No	202(67.3)
	Missing	15(5.0)
Do you do needle recapping?	Never	46(15.3)
	Sometime	45(15)
	Always	206(68.7)
	Missing	3(1.0)
Do you bend needles before disposal?	Never	236(78.7)
	Sometime	40(13.3)
	Always	18(6.0)
	Missing	6(2.0)

Three-quarters (223/74.3%) of the nurses in the current study experienced a needle stick while giving medical care to patients, compared to 77 (25.7%) who did not (Figure 1).

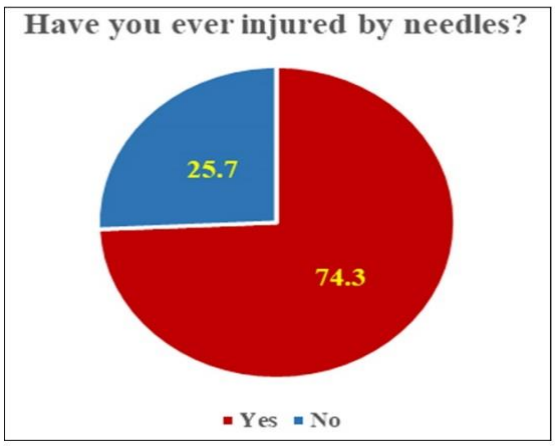

Figure 1: The percentage of the needle stick injuries,

Table 3 shows data on the wounds and causes of needle stick injuries among only the nurses who received them. The majority of the nurses, 131 (58.7%), had never been injured by a needle stick, whereas 88 (39.5%) had, and 4 (1.8%) did not respond. During the injury, the bulk of the nurses, 159 (71.3%), were injured during the day, while 33 (14.8%) were injured at night, and 24 (10.8%) and 7 (3.1%) did not reply.

Table 3: Characteristics of the wound and the causes of the nurse's needle stick injuries

Questions		n(%)
Did you injure recently?	Yes	88(39.5)
	No	131(58.7)
	Missing	4(1.8)
In what work shift?	Day shift	159(71.3)
	Night shift	33(14.8
	Both	24(10.8)
	Missing	7(3.1)
Type of injure?	Superficial (no bleeding)	120(53.8)
	Moderate (some bleeding)	94(42.2)
	Severe (profuse bleeding)	6(2.7)
	Missing	3(1.3)
What device involved in the incident?	Needle syringe	181(88.7)
	Cannula	12(5.9)
	lancet	5(2.5)
	Other	6(2.9)

Furthermore, half of the nurses' injuries (53.8%) were superficial, while 94 (42.2%) were moderate, with just six (2.7%) severe and three (1.3%) missing data. The most often used equipment or tools involved in the injury were needle syringes (88.7%), cannula needles (5.9%), lancets (2.5%), and miscellaneous tools (2.9%). To assess nurses' post-injury behavior, the following questions were posed to those who had sustained needle stick injuries: nearly half of the nurses 131 (48.9%) sterilized the wound area, followed by actions such as pushing the injured area 76 (28.4%) to drain blood, cleaning and dressing the injured area 29 (10.8%), testing 21 (7.8%) for diseases, and taking vaccine 3 (1.1%), respectively, with 8 (3%) not responding to this question. In terms of reporting the occurrence to hospital management or the infection control unit, 173 nurses (77.6%) did not do so, while 45 (20.2%) did and 5 (2.2%) did not react. The nurses ranked the reasons for not reporting in the following order: it is not required to disclose 116 (52%), it is not significant 14 (6.3%), and they did nothing. 7 people (3.1%) do not have time. 1 (0.4%) and 85 (38.1%) did not determine the cause. The bulk of the nurses (128, or 57.4%) denied receiving special hospital care for their injuries, while just 79 (35.4%) received medical attention, with 16 (7.2%) nurses declining to reply. Furthermore, the majority of patients (73.1%) involved in needle stick injuries with nurses were not submitted to additional testing (blood borne illnesses), and just 43 (19.3%) of the patients were sent to additional tests, with 17 (7.6%) having missing data (Table 4).

Table 4: The nurses post needle stick injury behavior

Questions		n(%)
What did you do when you injured?*	Push	76(28.4)
	Sterilizing	131(48.9)
	Clean and Dressing	29(10.8)
	Vaccine	3(1.1)
	Test	21(7.8)
	Nothing	8(3.0)
Did you report the incidence	Yes	45(20.2)
	No	173(77.6)
	Missing	5(2.2)
Why?	It is not important	14(6.3)
	It is not necessary	116(52)
	Not have a time	1(0.4)
	They do nothing	7(3.1)
	Missing	85(38.1)
Did receive special medical care by the hospital?	Yes	79(35.4)
	No	128(57.4)
	Missing	16(7.2)
Additional tests provided to the patients?	Yes	43(19.3)
	No	163(73.1)
	Missing	17(7.6)

* Multiple answer questions

DISCUSSION

The current study found that 74.3% of subjects experienced NSI. This is consistent with a study conducted in Ethiopia [12] which found that 67.3 percent of HCWs were injured by needle sticks, while another study conducted in Iran [13] reported that NSI was responsible for 46.5 percent of HCW injuries. Furthermore, this finding is similar with another study conducted in Iran [14], which discovered that the syringe with a needle was the most common cause of NSI (34.7%). Wrong working procedures, incorrect work practices, and a heavy workload (number of patients per day), combined with the provision of special storage and disposal containers, were significantly associated with an increase in the incidence rate of needle stick injuries among health care workers working in various departments of hospitals. More than half of the nurses in this study had never taken a needle stick injury prevention or control training course. This finding contradicts a study conducted in southeast Ethiopia (15) that found that 65.3% of HCWs had not received course training on needle stick injury prevention, and another study

conducted in Iran [14] found that the majority of NSI-positive participants (93.8%) had attended needle stick injury training workshops prior to the NSI. This could be due to hospital administrators' failure to allow infection control units to teach medical personnel. Furthermore, no regulation requires hospitals to provide adequate facilities for infection control training. Training is a purposeful attempt to facilitate the learning of specified competencies. Training can assist you in increasing staff knowledge, converting a negative attitude into a positive attitude, and transforming bad habits into good habits for any common precautions, such as how to deal with needles or sharp goals. Several studies have demonstrated that good training, followed by appropriate assessment, has reduced NSIs among medical professionals [16,17]. In our study, 67.3 percent of people were not compelled by their healthcare provider to get vaccinated against HBV, which might cause needle stick injuries. The aforementioned finding is comparable to a study in India [18] that found that 63.3% of HCWs were not vaccinated, and another study from Iran [13] found that in Kashan, Iran, 89.3% of HCWs were vaccinated. Furthermore, another study from Iran [19] discovered that 96.9% of healthcare workers were fully vaccinated. The low HBV vaccine uptake among nurses could be attributed to medical facilities' poor adherence to infection control guidelines, which state that every medical staff member should be vaccinated against HBV, as well as the medical staff's lack of knowledge about how to take precautions to avoid blood borne pathogens [20,21]. In this study on recapping syringe needles after use, 68.7% of the participants recapped the needles before disposal. This study contradicts previous research from Tigray, northern Ethiopia [12], which indicated that only 14.6% of health care workers recapped syringe needles after use, and another from Turkey [22], which reported that 22.8% of HCW recapped syringe needles after use. Another study from southern Ethiopia [19] discovered that 51.9% of healthcare workers were recapping syringe needles. This issue could be caused by a lack of knowledge about the risks of recapping syringe needles after use. In this study, approximately 21.3% of participants bent syringe needles before discarding them. This finding is congruent with a study in Ethiopia [23], which discovered that 240 (95.2%) of HCW did not bend the syringe needles and used a safety box to dispose of them immediately after the procedures. All infection prevention and control guidelines consider needle recapping or bending to be unacceptable practices, and studies have indicated that needle recapping is the most closely related practice with NSIs [15,24]. Throughout the trial, 74.3% of patients sustained needle stick injuries, whereas just 25.7% did not. This data is comparable with a study conducted in India (18), which discovered that 60% of healthcare workers experienced needle stick injuries. The high NSI rate among nurses could be attributed to health care staff using inappropriate procedures at work and a lack of knowledge about needle safety. In the current poll, 39.5% of healthcare workers had recently been injured. This data is consistent with previous research in southeast Ethiopia [15], which indicated that injury rates in the last 12 months, 24 months, and 3 years and older were all 19.1%. According to a study conducted in Nepal [25], 46.9% of healthcare workers were recently injured, whilst another study conducted in North East Ethiopia [19] discovered that 40.1% of healthcare workers suffered needle stick injuries recently. This could indicate that needle stick injuries are still considered a global issue among healthcare personnel. The outcomes of this study indicate that 71.3 percent of the participants were injured while working the day shift. This result is consistent with a study done in Northern Ethiopia [12] that revealed that (71.3%) were exposed during the day shifts, and another study from Iran [5] revealed that (57.7%) got NSIs during the day shifts, whereas it is inconsistent with a southwest Ethiopia [23] study that showed that night shift injuries were (53.7%). Another study from Iran [14] discovered that 63.60% of NSIs occurred during the day shift. This conclusion could be due to the fact that the majority of nurses work the day shift rather than the night shift, putting a significant strain on the health professional during the morning shift. According to the current study's findings, 53.8% of participants got a superficial injury during the NSI, while 42.2% experienced a skin puncture wound and bleeding. This conclusion contrasts with research conducted in Amhara, Ethiopia [26], which found that whereas 56% of respondents experienced moderate skin penetration, 15% of HCWs reported serious needle stick and sharp object injuries. This data is consistent with research conducted in north-west Ethiopia [23], which revealed that 56.1% of respondents experienced superficial injuries during the NSI, as well as another study in India [27], which found that stick injuries affected 98.8% of HCWs. The survey discovered that the majority of nurses (48.9%) cleaned the damaged site, with squeezing the area until bleeding coming in second (28%). Other studies, such as one conducted in Iran [13], discovered that the most common behaviors of healthcare workers were compression, squeezing, and soap cleaning (15.8%). Another study in Iran [14] discovered that 21.4% of healthcare workers were pushing the wound after NSI. The nurses' self-care for NSIs provides them confidence that they can treat themselves without any additional follow-up or tests, despite the fact that they are still at high risk of developing the illnesses, according to the follow-up studies. In northeast Ethiopia, [23] discovered that 66.9% of injured healthcare professionals did not obtain post-exposure prophylaxis, whilst another study found that the majority of healthcare personnel did not take any additional or sufficient action after NSI [22]. Furthermore, Amhara-Ethiopia reported that 59% of respondents felt there was no post-exposure prophylaxis [26]. According to the study's findings, just 20.2% of respondents reported their NSI to the health care facility administration. This conclusion is comparable with a study conducted in Namibia [28], which indicated that only 17% of healthcare workers reported NSI, but it varies with

another study conducted in India [15], which revealed that 80% of HCW reported NSI. Another study [29] discovered that 80.5 percent notify their management about NSIs. In addition, a survey in Iran [30] discovered that 38.14% of HCW reported their supervisor. According to infection prevention and control recommendations, every NSI should be reported to infection control units or hospital staff administration so that the NSI protocol can be implemented to control the NSI issues for medical workers and patients [10]. They did not disclose because 52% of health care professionals believed it was unnecessary to alert the administration of the health care facility about NSI. This conclusion contradicts a study conducted in Iran [14], which indicated that 27.5 percent of injured HCW felt that reporting is unnecessary, as well as a study conducted in Nepal [25], which found that 56.1 percent of HCW believe that reporting to the supervisor is required. The reason for not reporting NSIs varies between research that may be more applicable to the countries investigated, yet some studies cite the following factors as reasons: fear of job loss, high workload, and medical staff's lack of knowledge of post-injury treatment options. In the current study, 57.4% of participants refused medical treatment following NSI, which is identical to a study conducted in Ethiopia [23], which discovered that 66.9% of injured healthcare professionals did not receive any post-injury medication. According to a Saudi study [31], 19% of HCW with NSI received post-exposure prophylaxis to treat their injuries. This could be attributed to the fact that most hospitals do not follow the rules governing the requirement for post-injury prophylaxis, as well as a lack of staff knowledge about post-NSI providers. Finally, the current study's findings indicate that 73.1% of nurses did not receive medical examination after being wounded. It contrasts a study conducted in India [32], which discovered that 20.7% of HCWs did blood tests shortly after NSI. Another study conducted in Ethiopia [23] discovered that 20.7% of HCW had their blood tested immediately after injury. Even when patients show no signs or symptoms, NSIs have the ability to spread highly dangerous infections like HBV, HIV, and others. As a result, any NSI involving patients should be followed by numerous diagnostic testing for the aforementioned illnesses [10]. The prevalence of NSI among nurses remains high; therefore, a new preventative strategy with a new monitoring system must be established and updated in compliance with the preventive measures guidelines. By providing a sufficient training session to a new employee and improving nurses' NSI skills through adequate training following a positive assessment. Additionally, offering a new system for reporting NSI incidents, such as computer reports, and making the necessary vaccine available to all HCW.

Conclusion

Three out of four participants in the current study sustained needle stick injuries while working in a hospital, with syringe needles being the most common source of needle stick injuries among nurses. Furthermore, after receiving a needle stick, the nurses' first goal was to sterilize the exposed area of the wound.

Conflict of interests

No conflict of interests was declared by the authors.

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Data sharing statement

Supplementary data can be shared with the corresponding author upon reasonable request.

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