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Needlestick and Sharps Injuries Among Nurses and Laboratory Technicians at Misrata Hospitals

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Abstract

This study aims to estimate the incidence and circumstances or situation of NSSIs in a selected population of nurses and laboratory technicians at Misrata hospitals. Questionnaires were filled in by 134 active nurses and lab technicians working for some Misrata hospitals (Misrata Central Hospital, Misrata cancer center, AL-Mahjoob village hospital, AL-Jazeera healthcare center, Morbaat healthcare center, Misrata kidney and dialysis center, Misrata diabetic and endocrine center, Misrata TB and respiratory treatment center). The sample comprised people aging between 24 and 54 years with work experience from 2 to 30 years. The study showed that the incidence of NSSIs was significantly common among nurses (81%) and lab technicians (84.6 %). And there were 54% of samples injured by contaminated instruments. The most frequently reported circumstances of NSSIs were recapping of needles (39%) and quickness at crowded times (24 %). While, 50% of the samples were not vaccinated against hepatitis B. The present study showed a high occurrence of NSSIs among HCWs at Misrata hospitals. Training in handling and disposal of sharps, preventing and reporting strategies is needed to increase safety practices for HCWs.

Keywords: Needlestick and sharps, injuries, Nurses and Lab Technicians, Misrata Hospitals.

Introduction

Needlestick and Sharps injuries (NSSIs) have become one of the most vital occupational injuries and routes for contagion in healthcare workers (HCWs) [1]. Injuries caused by needle and sharps are a serious concern for all HCWs and pose an important hazard of occupational transmission of blood borne pathogens. Needlestick injuries (NSIs) are wounds caused by sharps such as hypodermic needles, blood collection needles, IV cannulas or needles used to connect parts of iv delivery systems. The causes include several factors such as form and design of needle, recapping activity, handling/transfer specimens, collision between HCWs or sharps, during clean up, manipulating needles in patient line related work, passing/handling devices or failure to dispose of the needle in puncture proof



containers [2]. Healthcare workers (HCWs) such as physicians, surgeons, and nurses, laboratory technicians and waste handlers are at an increased risk of accidental NSSIs [1, 2].

NSSI have caused in documenting transmission of different disease such as hepatitis B and C viruses (HBV, HCV) and human immunodeficiency virus (HIV), malaria, infectious mononucleosis, diphtheria, herpes, tuberculosis, brucellosis, spotted fever and syphilis [1,2,3]. WHO estimates that about 3 million of HCWs are at risk of occupational exposures to blood-borne viruses yearly. Also, World Health Organization (WHO) indicated that 90% of these infections occur as a result of exposures in developing countries [4,5]. In another report, WHO has estimated that exposure to sharps in the workplace accounts for 40 % of infections with HBV and HCV and 2-3 % of HIV infections among health care workers [6]. The danger of transmission through serum after a percutaneous injury with a patient with HBV was among 6% and 30%, and depending on the HBe Ag level, it was from 1% to 3% for HCV and about 0.3% for HIV [5-7].

The greatest significant factors involved in NSSIs events are standard precautions, the knowledge level of blood-borne diseases [8]. Moreover, improper use of protective tools such as failure to use proper-sized gloves, concerns due to the high workload, job stress, little experience, inadequate training, excessive working hours and fatigue that might lead to harm due to using sharp tools [9]. These exposures generally occur in Emergency Rooms, ICUs and Operating Rooms. Most situations happen at injection, sampling, recapping and while transmitting blood and body fluids from a syringe to the sampling container [10].

Assessment of the incidence and the causes of NSSI can be helpful in taking effective and appropriate strategies and plans for reducing related incidents in HCWs in order to improve patient safety. Due to lack of particular information and poor reporting on the incidence of NSSIs and related factors, the present study was to estimate the incidence, prevalence and conditions of NSSIs among HCWs in Misrata hospitals.

Materials and methods

The study was conducted in November and December 2016, a questionnaire were filled in by 134 from 150 population have been interviewed in some healthcare facilities in Misrata (Misrata central hospital, Misrata cancer center, AL-Mahjoob village hospital, AL-Jazeera healthcare center, Morbaat healthcare center, Misrata kidney and dialysis center, Misrata diabetic and endocrine center, Misrata TB and respiratory treatment center), the sample comprised people aging (24-54) years with work experience (2-30) years.

The questionnaires sought information concerning the age, sex, job category and place of work of healthcare workers. Details about injuries like incident, which included the type of pricking agent and the circumstances of injuries occurrence, frequency of exposure, actions after exposure, reasons of occurrence,

procedures of sharps disposal, receiving vaccination, in addition to the knowledge, education and awareness of staff about the dangers resulting and proper procedure to be followed after needlestick and sharps injuries. The data were then coded, tabulated and analyzed using SPSS version 17.

Results and discussion

89.3% was a percentage of response to a questionnaire, 29% of the sample were a laboratory technician and 71% were a nurse staff with a different specialization (**Table 1**).

Table 1. Workplaces of study population N (134)

Workplace	Number of workers (%)
Laboratory technician	29%
Outpatient clinic & observation rooms	24.6%
Medicine department	18%
Emergency department	12%
Surgical department	7.4%
Gynaecology department	3.7%
Dialysis unit	3%
Pediatric department	2.2%

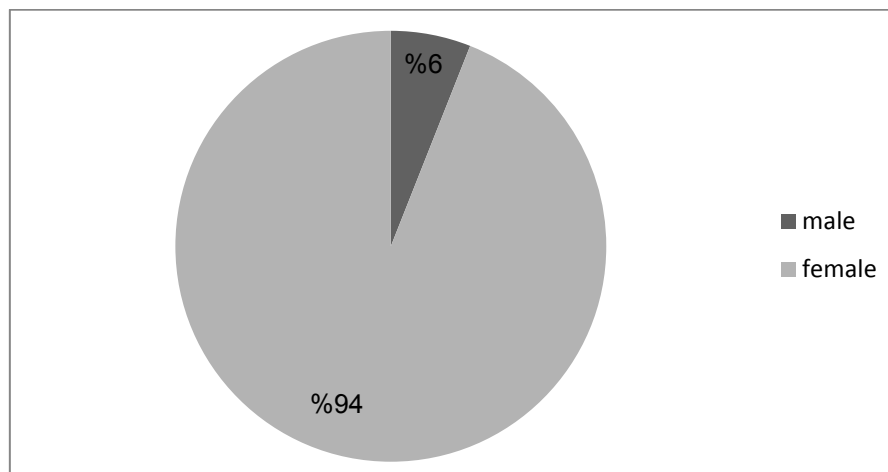


Figure 1. Workers gender included in the study.

94% of interviewer were female and 6% were male (**Fig. 1**). Chi-squar test proved that no relation between workers, gender and injuries occurrence.

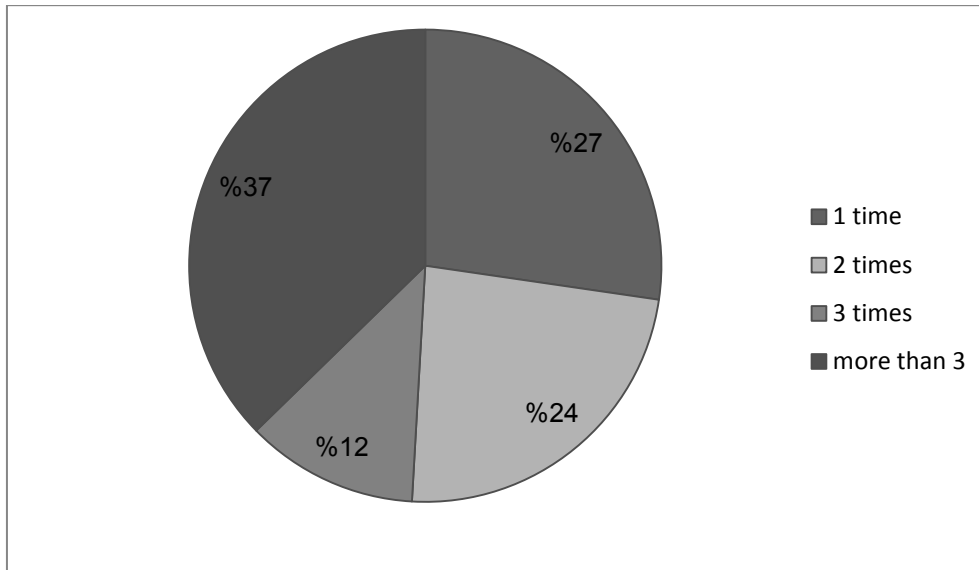


Figure 2. Frequencies of incidence exposure.

In general 73% of HCWs have been injured for more than one time, 37% injured for more than 3 times, 12% of HCWs said that they were exposure for injuries for 3 times only and 27% were injured once only (**Fig. 2**).

81% of nurses in this study who had suffered at least one needlestick injury. While, 84% lab technicians have been injured. In line with this study, hospital ranging between 50% and 90% were documented in a study among nurses in Turkey [11]. Another study indicated that 26.3% had at least one NSI in Fars, Iran hospital and 75% had sustained up to 4 injuries [12]. It should be noted that the rate of needlestick injuries might vary from high to epidemic among HCWs, depending on the availability of resources as well as the work environment [11].

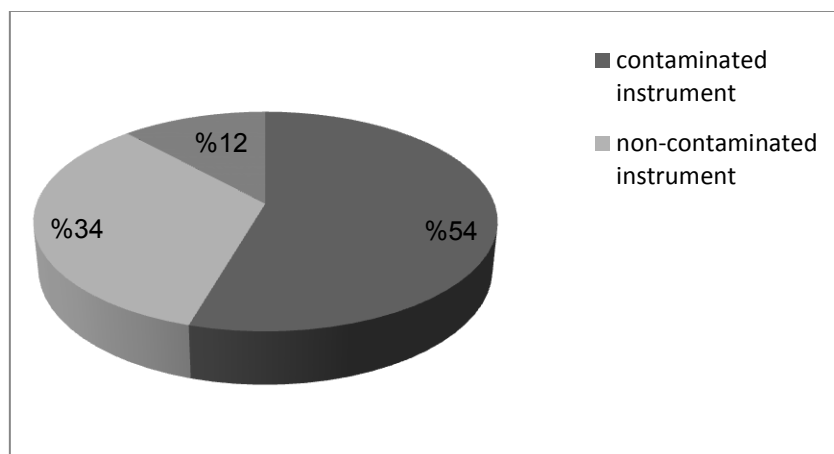


Figure 3. Sterility of medical devices causing injuries.

54% of the injuries were by contaminated medical devices and 34% were by non-contaminated devices, while 12% of the sample didn't know if the instrument was contaminated or not (**Fig. 3**).

This was also similar to the data which is mentioned that 73.8% of needlestick injuries was by contaminated medical devices in Poznan, Poland [13].

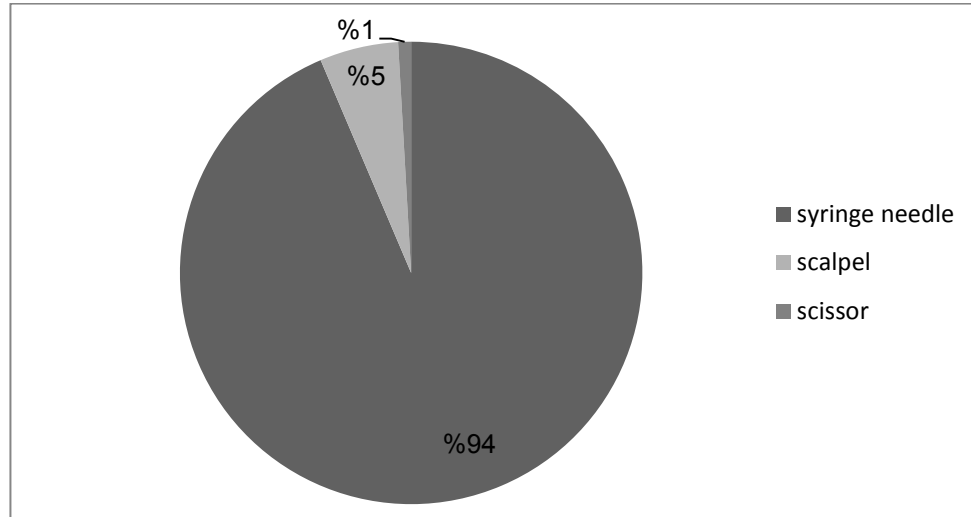


Figure 4. The medical devices responsible for injuries.

Syringe needles, scalpels, surgical scissor, suturing needles, laboratory slides, in addition to medicines ampoules are medical devices responsible for injuries. Syringe needles were responsible for the most of NSSIs, 94% of HCWs had injuries with syringe needle, while 5% was exposed to the injuries by scalpel, 1% by surgical scissor. In addition to the exposure to the syringe needles, some of HCWs were exposed to the suturing needle in operation rooms and laboratory slides in medical laboratories and medicines ampoules (**Fig. 4**).

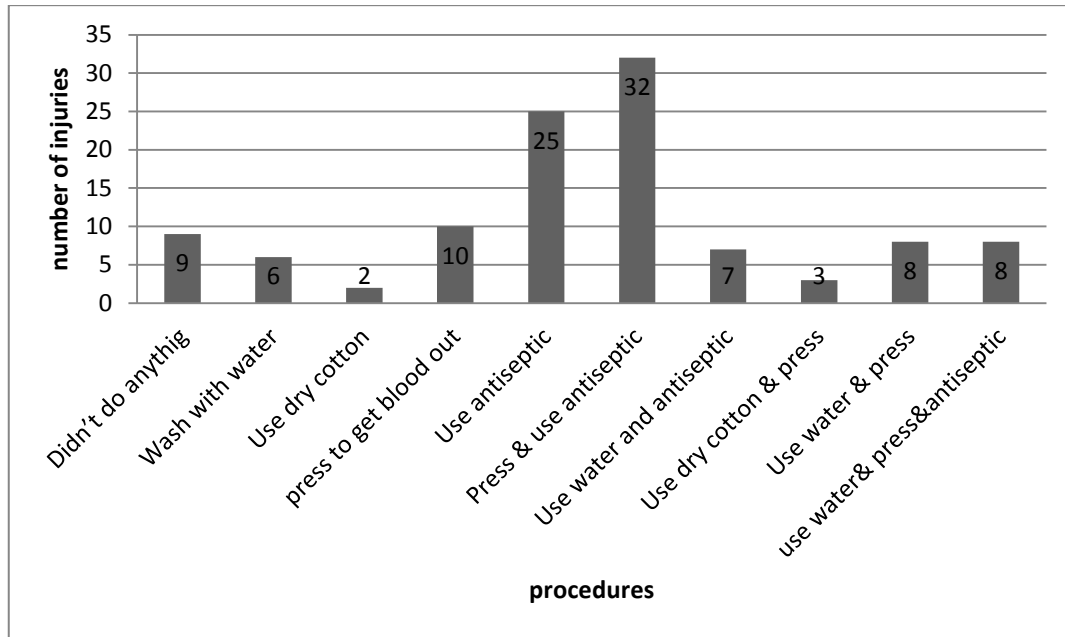


Figure 5. The procedure followed after NSSIs injuries.

After NSSIs occurrence, different actions taken by injured persons like washing hands with water and use of antiseptic solutions and others. 29% (n=32) of the participants use antiseptic materials and finger pressing to get blood out as action, 22.7% (n=25) used antiseptic only and 9% (n=10) just used finger pressing to get blood out and 8.2% (n=9) didn't do anything when they injured (**Fig. 5**).

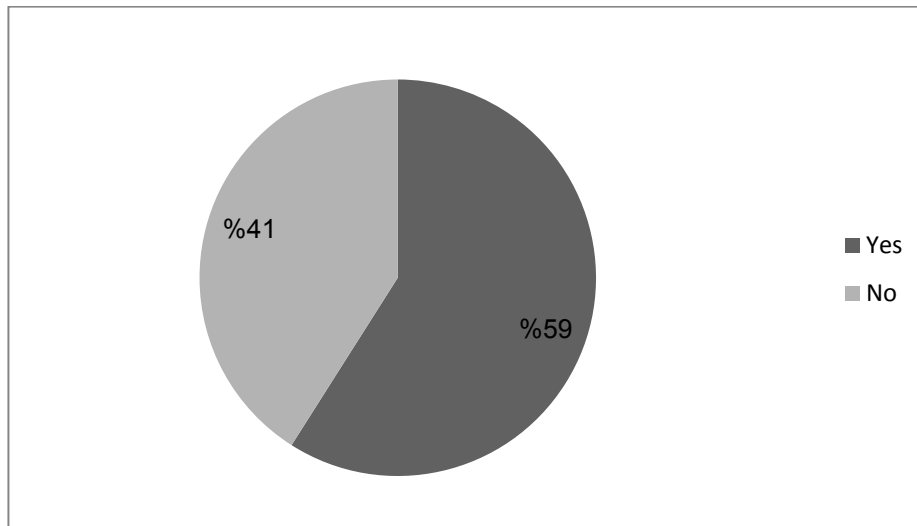


Figure 6. Level of workers education and knowledge about NSSIs.

Among 134 of HCWs in this study, 59% mentioned that they were educated during their studying period about NSSIs, while 41% did not have sufficient knowledge (**Fig. 6**).

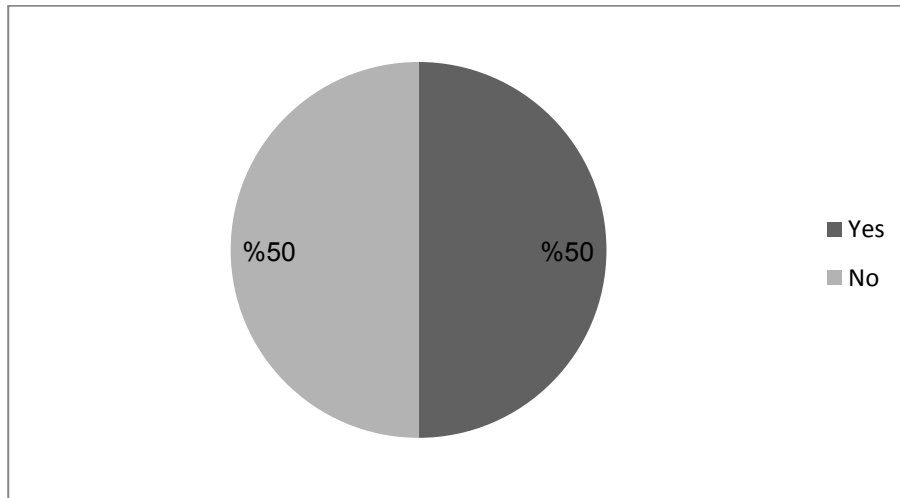


Figure 7. Proportion of receiving vaccines among the workers.

An equal proportion between the participants who had a history of receiving a vaccine against hepatitis B virus and who had not (**Fig. 7**). One study in Naft hospital, Iran stated that 80% of HCWs had a complete vaccination against HBV [5]. In HCWs of uncompleted vaccination, HBV immunization and monitoring of immune status will ensure maximum protection for HCWs of HBV transmission.

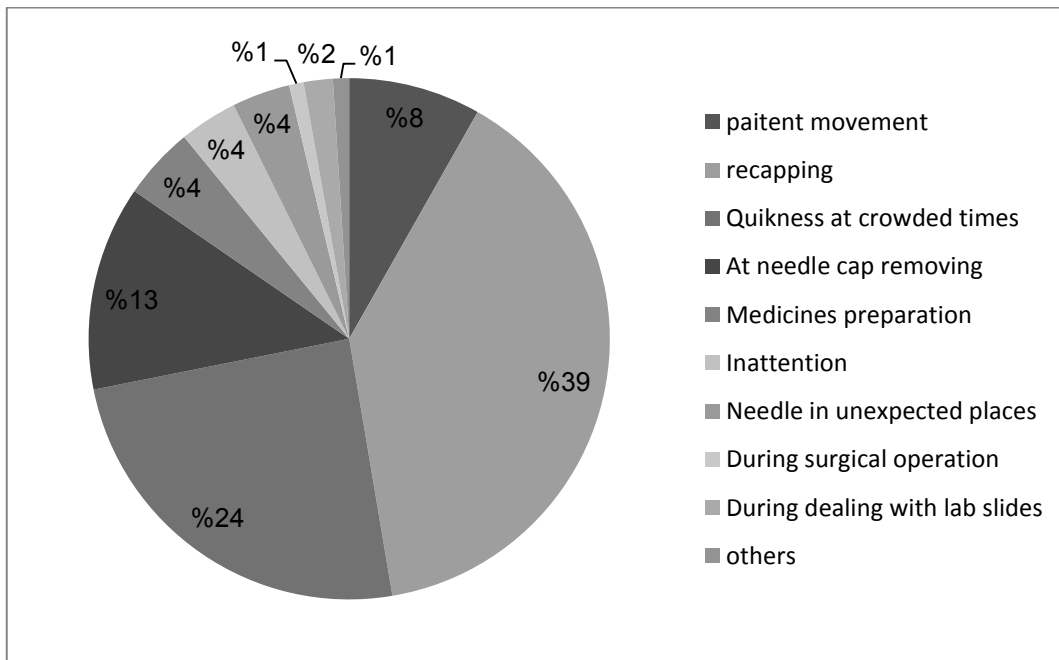


Figure 8. The main reasons for NSSIs occurrence.

Recapping needle was the most common activity responsible for needlestick injuries, accounting for 39 % of needlestick injury events, and quickness at crowded times accounted for 24 % and at needle cap removing was responsible for 13 % events (**Fig. 8**). Study in Saudi Arabia mentioned that recapping was the majority of injuries with 29% [1]. And recapping also responsible for 27.2% of injuries in Malaysian hospitals [14]. These results gave indicators that HCWs were the main reason for injuries occurrence. Avoiding the recapping of contaminated needles is recommended to reduce the incidence of injuries. Although some educational programs for the prevention of needlestick and sharps injuries should be given to HCWs.

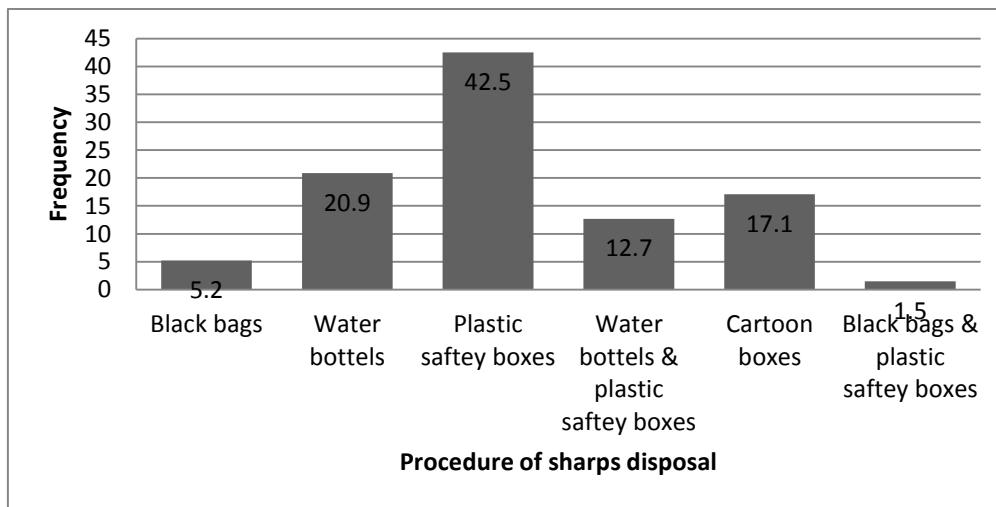


Figure 9. Procedures of sharps disposal after using.

Safety boxes used by 42.5% of the study sample, while 20.9% of the sample used water bottle. What is noticeable, that 12.7% used both water bottles and safety boxes at the same time, and 17.1% used carton boxes and 5.2% used black bags (**Fig. 9**). Uses of black bags to dispose of sharps is very dangerous to workers who is responsible for gathering medical wastes, that was a cause of many injuries among workers.

1- Conclusion

This study demonstrated a relatively high incidence of NSIs nurses and laboratory technicians in Misrata hospitals. Hospitals are encouraged to provide vaccination to their HCWs. Other efforts of the Ministry of Health for reducing sharps injuries have included publishing an instructional booklet for hospital administrators which describes non-recapping policy, educational needs. Training in handling and disposal of sharps, safety engineered devices, adequate healthcare staffing, effective prevention and reporting strategies are needed to increase safety practices for HCWs.

Acknowledgments

Thanks and appreciations to the supervising professors and to everyone who helped me completing this study.



References:

- 1- Buraidah A, Jahan S, Epidemiology of needlestick injuries among health care workers in a secondary care hospital in Saudi Arabia. *Ann Saudi Med* 2005, **25**(3):233-238.
- 2- Muralidhar S, Singh PK, Jain R, Malhotra M, Bala M, Needle stick injuries among health care workers in a tertiary care hospital of India. *Indian journal of medical research*. 2010 Mar **13**(3):405-410.
- 3- Guo Y, Shiao J, Chuang Y-C, Huang K-Y, Needlestick and sharps injuries among health-care workers in Taiwan. *Epidemiology and infection* 1999, **122**(02):259-265.
- 4- Prüss-Üstün A, Rapiti E, Hutin Y, Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers. *American journal of industrial medicine* 2005, **48**(6):482-490.
- 5- Mohohammadnejad E, Dopolani FN, Risk factors of needle stick and sharp injuries among health care workers. *Journal of nursing and midwifery sciences* 2015;**2** (1) 34-39.
- 6- Lakbala P, Azar FE, Kamali H, Needlestick and sharps injuries among housekeeping workers in hospitals of Shiraz, Iran. *BMC research notes* 2012, **5**(1):276.
- 7- Panlilio AL, Cardo DM, Grohskopf LA, Heneine W, Ross CS, Updated US Public Health Service guidelines for the management of occupational exposures to HIV and recommendations for postexposure prophylaxis. *MMWR Recomm Rep* 2005, **54**(RR-9):1-17.
- 8- Mohammadi N, Allami A, Malek Mohamadi R, Percutaneous exposure incidents in nurses: Knowledge, practice and exposure to hepatitis B infection. *Hepat Mon* 2011, **11**(3):186-190.
- 9- Gholami A, Borji A, Lotfabadi P, Asghari A, Risk factors of needlestick and sharps injuries among healthcare workers. *International Journal of Hospital Research* 2013, **2**(1):31-38.
- 10- Smith DR, Choe M-A, Jeong JS, Jeon M-Y, Chae YR, An GJ, Epidemiology of needlestick and sharps injuries among professional Korean nurses. *Journal of professional nursing* 2006, **22**(6):359-366.
- 11- Ayranci U, Kosgeroglu N, Needlestick and sharps injuries among nurses in the healthcare sector in a city of western Turkey. *Journal of Hospital Infection* 2004, **58**(3):216-223.
- 12- Askarian M, Shaghaghian S, McLaws M-L, Needlestick injuries among nurses of Fars province, Iran. *Annals of epidemiology* 2007, **17**(12):988-992.
- 13- Bilski B, Needlestick injuries in nurses—the Poznań study. *Int J Occup Med Environ Health* 2005, **18**(3):251-254.
- 14- Rampal L, Zakaria R, Sook LW, Zain AM, Needle stick and sharps injuries and factors associated among health care workers in a Malaysian hospital. *European Journal of Social Sciences* 2010, **13**(3):354-362.



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الخلاصة:

تهدف هذه الدراسة الى تقدير مدى انتشار و حدوث الاصابات بواسطة الادوات الحادة اضافة الى اسباب وظروف حدوثها لدى عدد من عناصر التمريض و فنيي معامل المختبرات في مستشفيات مدينة مصراتة.

اعتمدت هذه الدراسة على ملء استبيانات من قبل عينة عشوائية تم مقابلتها عددها 134 ممرض وفني مختبر في عدد من مستشفيات مدينة مصراتة (مستشفى مصراتة المركزي، مركز مصراتة لعلاج الاورام، مستشفى المحجوب القروي، المركز الصحي الجزيرة، المركز الصحي مرباط، مركز مصراتة لعلاج و غسيل الكلى، مركز مصراتة لعلاج مرضى السكر و الغدد الصماء، مركز مصراتة لعلاج الدرن و امراض الجهاز التنفسي)، حيث تراوحت اعمار الذين تم مقابلتهم بين (24-54) سنة و تراوحت خبرتهم العملية بين (2-30) سنة.

أظهرت النتائج المتحصل عليها من الدراسة وجود نسب عالية لحدوث الاصابات بالادوات الحادة لدى العاملين، حيث بلغ معدل الاصابة لدى عناصر التمريض 81% من اجمالي عددهم، فيما كانت 84.6% هي نسبة الاصابة لفنيي المختبرات.

إعادة غطاء الابرة كان هو السبب الاكبر في حدوث الاصابات بنسبة 39%، فيما كانت السرعة في الاوقات المزدحمة هي السبب الثاني في حدوث الاصابات بنسبة 24%. نصف عينة الدراسة 50% هم فقط من تحصلوا على تطعيمات خلال فترة عملهم ضد التهاب الكبد الفيروسي البائي.

الكلمات المفتاحية: وخز الابر والادوات الحادة، اصابات، تمريض و فنيي معامل المختبرات، مستشفيات مصراتة.