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Knowledge and prevalence of needle stick injuries among nurses working in hemodialysis units in Al jouf region, Saudi Arabia.

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Abstract: *Needle stick injuries (NSIs) present the single greatest risk to nursing personnel, primarily due to accidental exposure to infected blood and body fluids. The US Centers for Disease Control and Prevention (CDC) estimates that about 600,000– 1,000,000 needle stick injuries occur annually. It is further estimated that about half of these needle stick injuries were unreported. These injuries may lead to serious and potentially fatal infections with blood borne pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV), or human immunodeficiency virus (HIV).this study aimed to determine Knowledge and prevalence of needle stick injuries among nurses working in hemodialysis units in Al jouf region. The study carried out in hemodialysis units from 4 hospitals Prince Motaib, Soir, koriat and Arar. Two questionnaires were administered to a convenient sample of 65 nurses to gather the necessary data. This study revealed that knowledge of hemodialysis nurses in Al jouf region about the risks associated with needle-stick injuries and use of preventive measures was inadequate. Comprehensive program should be done for nurses including appropriate prevention strategies for NSI.*

Key words*: Needles stick injuries, nurses, hemodialysis, prevalence and knowledge.*

I. Introduction

Needle stick injuries (NSIs) present the single greatest risk to nursing personnel, primarily due to accidental exposure to infected blood and body fluids [(1)]. The US Centers for Disease Control and Prevention (CDC) estimates that about 600,000– 1,000,000 needle stick injuries occur annually [(2)]. It is further estimated that about half of these needle stick injuries were unreported [(3)]. These injuries may lead to serious and potentially fatal infections with blood borne pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV), or human immunodeficiency virus (HIV) [(4,5)] .

The frequency of such events has been estimated to be about 600,000–800,000 cases annually in the USA [(6)]. Some published studies about NSSIs in Saudi Arabia show that there are a reported 282 cases of NSSIs among health care workers from 11 hospitals in the Eastern province region during the period from 1995 to 1997. Also, there are a reported 116 cases of NSSIs from Assir central hospital during the period from 1996 to 2000[(7)].

Hemodialysis staff exposure risk is high to blood-borne viruses (BBVs) [(7,8)]. BBVs include hepatitis B virus, hepatitis C virus and human immunodeficiency virus (HIV). The risk of acquisition of hepatitis B virus from exposure to a blood-contaminated hollow-bore needle is 1 in 3, hepatitis C virus acquisition risk is 1 in 30 while acquisition of HIV is 1 in 300[(9)] . Risk of exposure and subsequent acquisition of a BBV is higher when handling blood-contaminated hollow-bore needles than any other sharps or from blood or body fluid splashes [(10)].

Worldwide, more than 100 health care workers have been infected by HIV due to needle stick injuries related to their work and several thousands have contracted HBV and HCV [(11)] . In addition, health care workers may suffer an emotional fear because a percutaneous injury with a potentially contaminated sharp object is a stressful event [(12)].

The prevalence of HBsAg in healthy blood donors in Saudi Arabia ranges from 2.7% to 9.8%. 2-3 Sero-prevalence studies suggest that the overall anti-HCV positivity is about 3.5% to 5%. Thalassemia and sickle cell disease are common in Saudi Arabia and prevalence of hepatitis C virus antibodies among this high-risk group is about 40%[(13)]. The prevalence of HIV sero-positivity has been reported to be about 0.09% in the Kingdom. These figures suggest that a sizable number of individuals are a potential risk for transmission of blood-borne diseases to doctors, laboratory technicians, blood bank workers, nurses, personnel working in renal dialysis and transplant units, and other health care workers [(14)].

There is a lack of research on NSIs among nurses working in hemodialysis units in Al joufregion. So, the purpose of this study was to determine the knowledge and prevalence of needle stick injuries among nurses working in hemodialysis units in Al jouf region

Aim of the study
To determine Knowledge and prevalence of needle stick injuries among nurses working in hemodialysis units in Al jouf region.

II. Materials &Methods

Research design:
The research utilizes a descriptive research design.

Setting:
The study carried out in hemodialysis units from 4 hospitals Prince Motaib, Soir, koriat and arar in Al Jouf region.

Subjects:
A convenient sample of 65 nurses distributed as following:

Hospital	Nurses
Arar	23
Soair	8
Koriat	8
Prince Motaib	26
Total	65

Tools:
Two questionnaires were administered to all nurses to gather the necessary data.

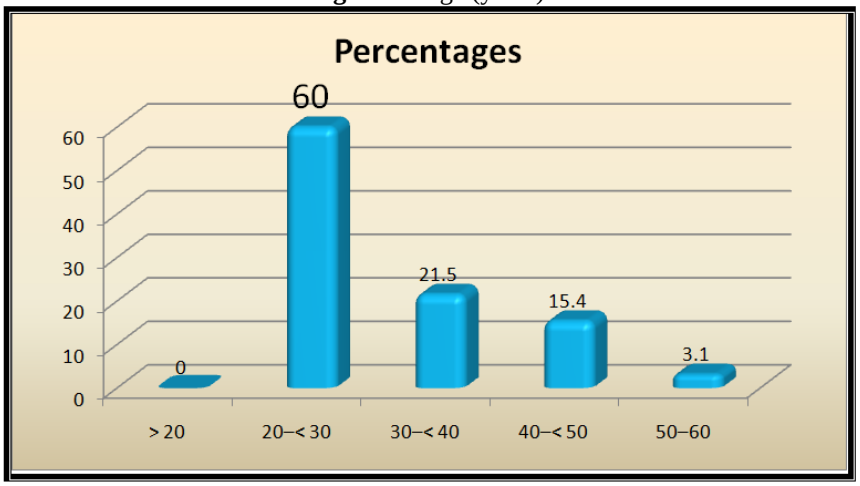
Questionnaire 1: needle sticks knowledge (multiple choice questions 1-30)
Quessionaire 2: prevelance of needle stick

Methods
1. The questionnaire was provided with a covering letter explaining the purpose of the study, the way of responding, the aim of the research and the security of the information in order to encourage a high response.
2. The questionnaire included multiple choices; The variety in these questions aims first to meet the research objectives, and to collect all the necessary data that can support the discussion, results and recommendations in the research.
3. The data was coded and exported to SPSS version 16.0 for statistical analysis.

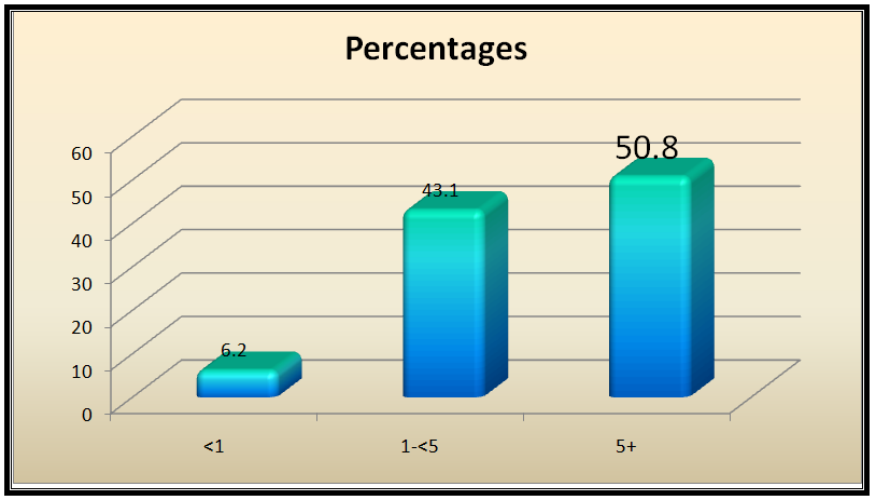
III. Results

1. Personal characteristics of nurses:

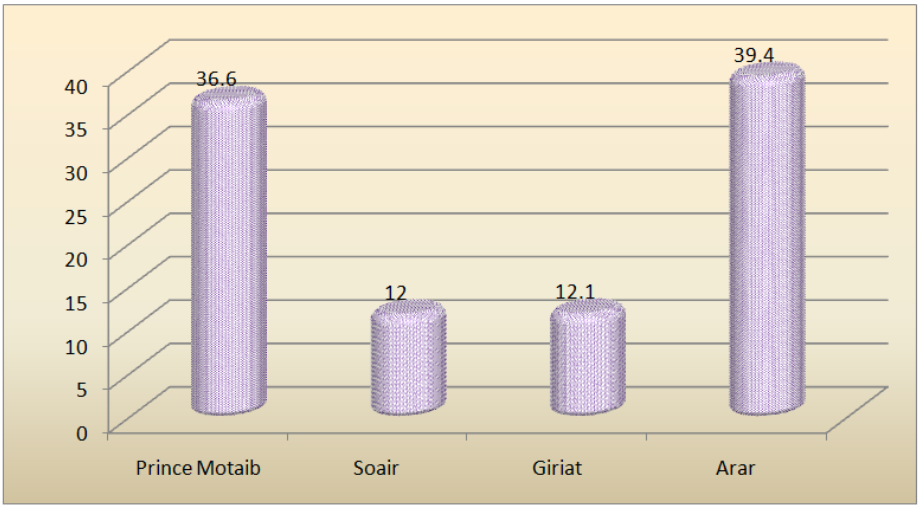
Figure 1: Age (years):



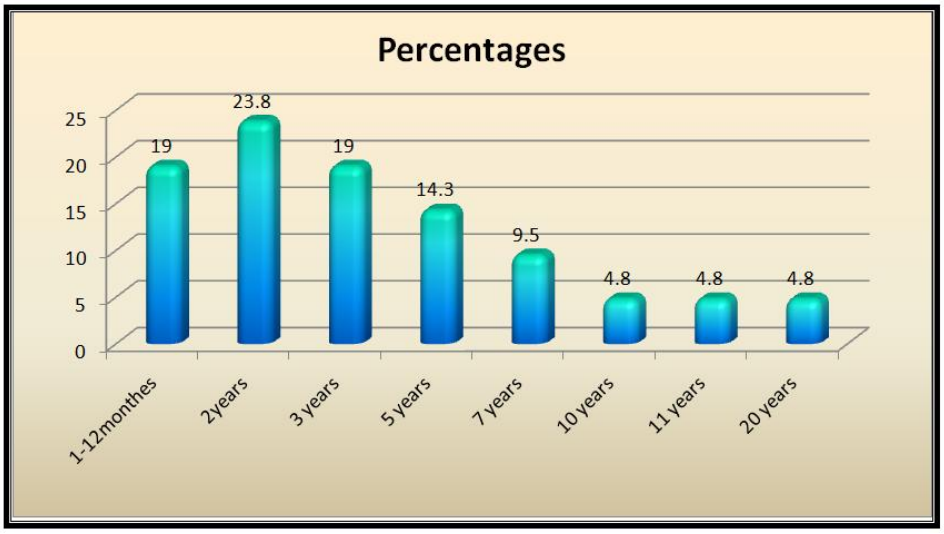
The Figure 2: Work experience (years):



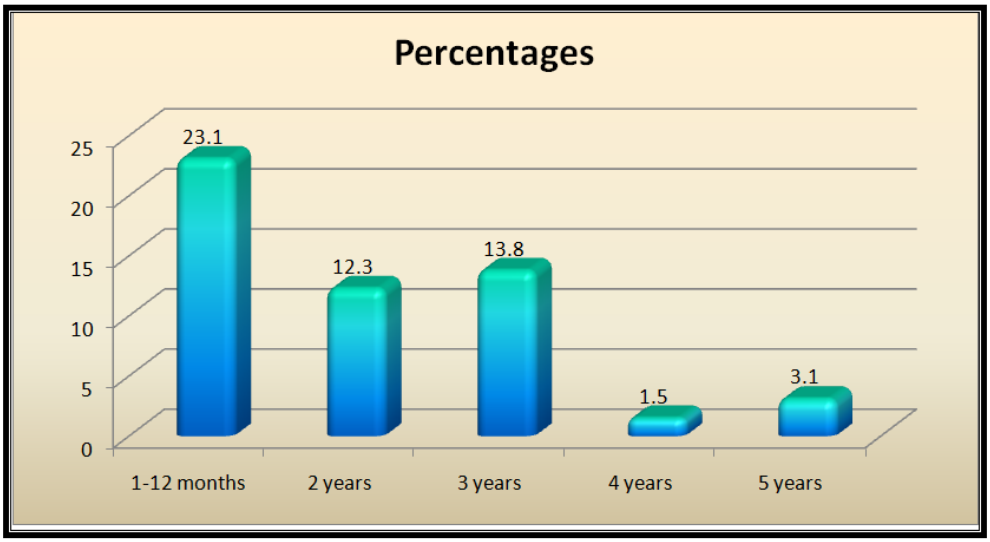
The Figure 3: Nurses knowledge regarding needle stick injuries:



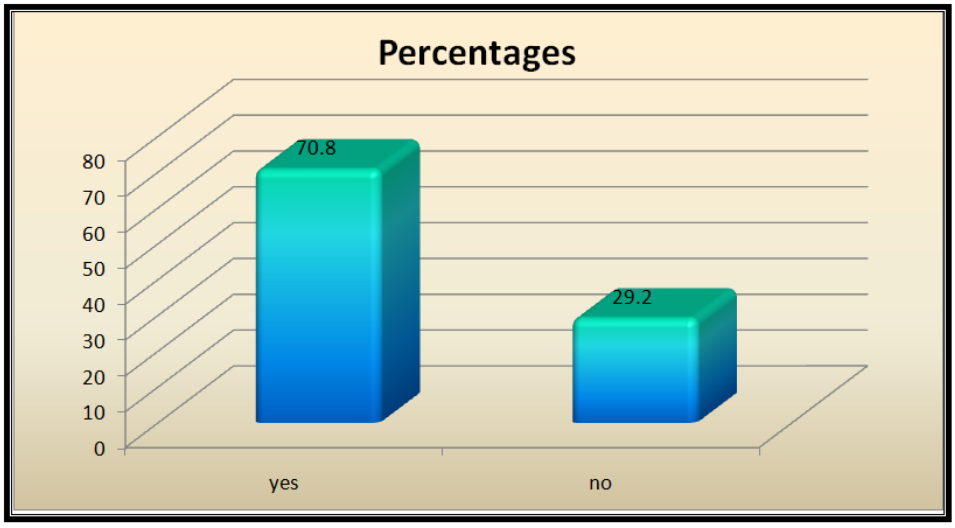
Duration of workingin ward /Unit/department where you got needle stick injury



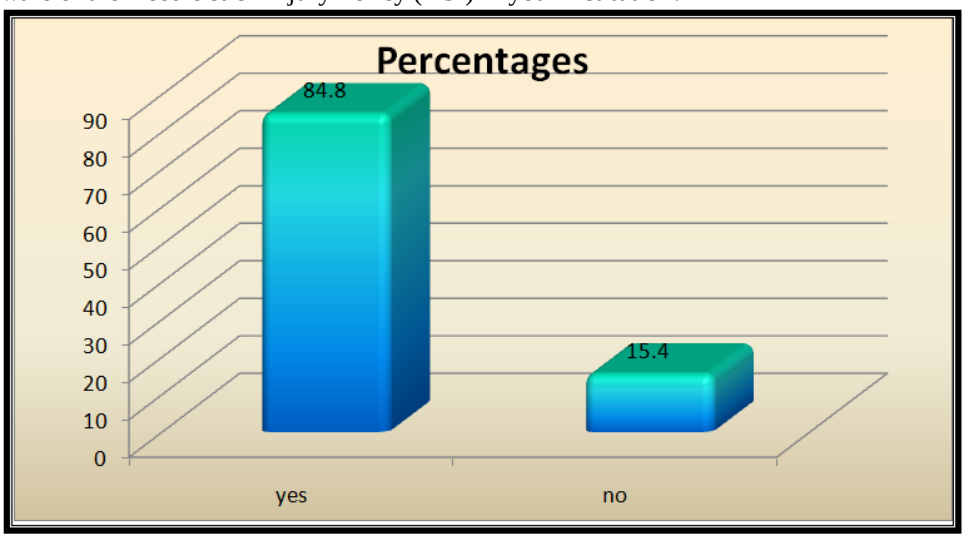
When last did you receive Hepatitis B immunization?



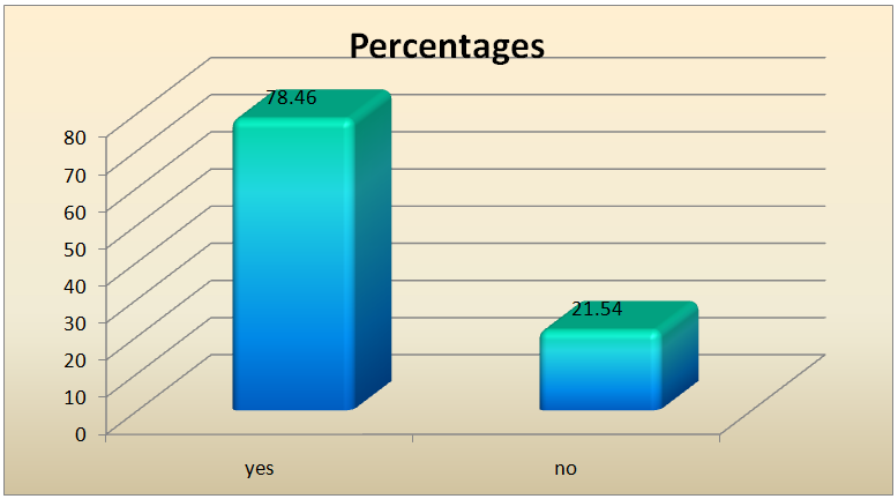
Was this your first exposure to a needle stick injury?



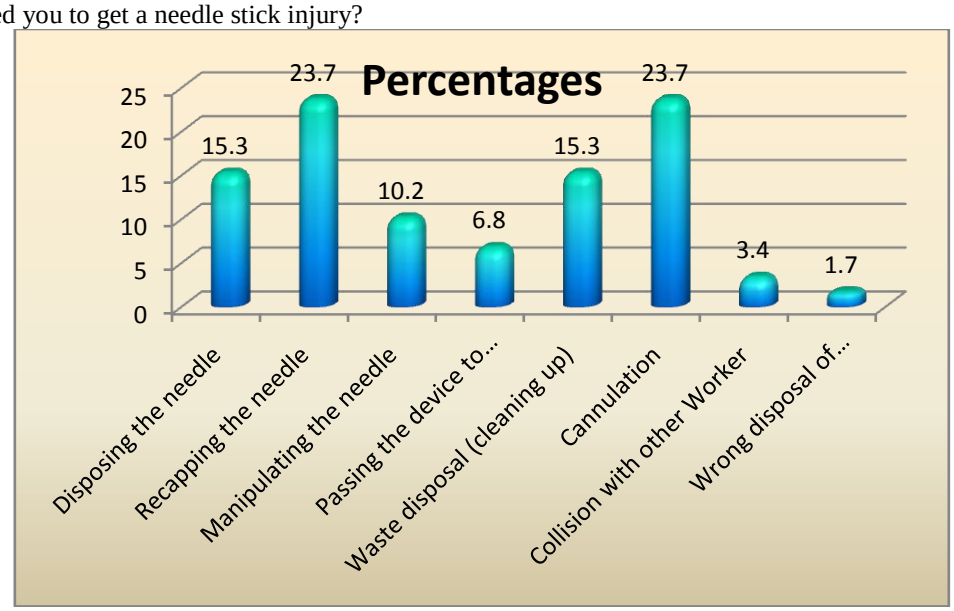
Were you aware of the Needle stick Injury Policy (NSI) in your institution?



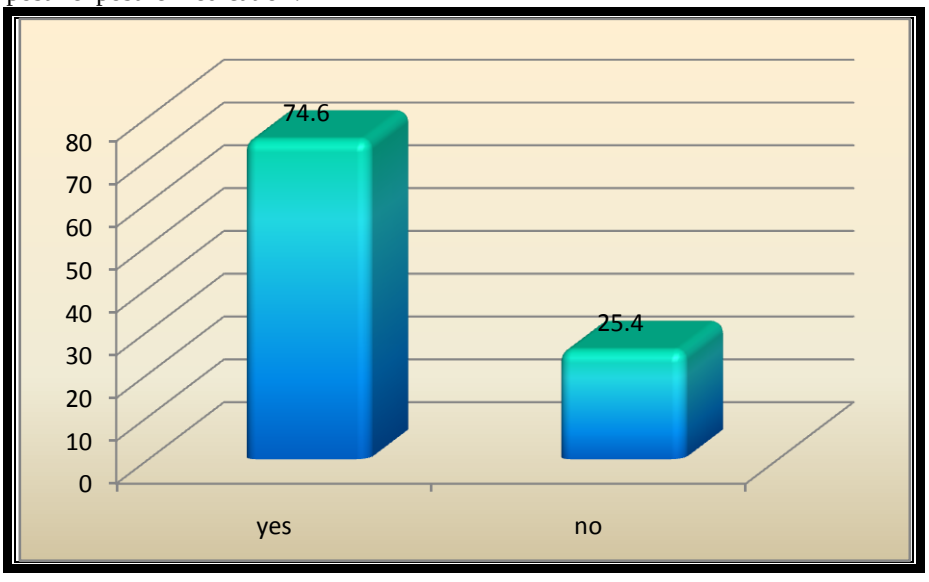
Did you get Pre- test counseling after your exposure to a needle stick injury?



What caused you to get a needle stick injury?



Did you take post –exposure medication?



III. Discussion

Needle Stick Injuries (NSI) have been considered and identified as one of the most serious occupational hazards among health care workers (HCW) and it may affect their health and well-being [(15)]. The Centers for Disease Control and Prevention (CDC) reported that 385,000 needle sticks and other sharps related injuries are sustained by hospital-based HCW each year. However, the occurrence of needle stick injuries is underreported which leads to difficulty in estimating the true magnitude of this problem. Approximately 60% to 95% of all the NSI fail to be reported by the healthcare workers ([16].

According to Ashat et al. (2011) the numbers of NSI are significantly higher than current estimates and for that reason a low incidence or prevalence of NSI should not be interpreted as a non-existing problem [(17)]. Mehrdad et al., (2014) found that more than half of the nurses did not report a NSI after exposure [(15)]. A study by Fourie and Keogh (2011) in New Zealand revealed that lack of experience and inadequate communication were two major barriers to report needle stick injuries [(18)].

One of the most common health hazards that can occur following a NSI is the transmission of blood-borne infection such as Human Immunodeficiency Virus (HIV), Hepatitis B, and Hepatitis C viruses [(19)]. The World Health Organization (WHO, 2002) indicated that NSI were responsible for approximately 40% of Hepatitis B and Hepatitis C infections and 2.5% of HIV infections among healthcare workers worldwide [(20)].

The danger of NSI on the health of healthcare workers is serious due to the fact that only 1/10,000 ml of infected blood plasma with Hepatitis B virus is enough for the microorganism to be transmitted to the blood stream of a human being [(19)] . Adams (2012) stated that the financial costs of NSI are also high, including the costs of post-exposure prophylaxis (PEP), serological investigations, healthcare consultations and/or assessments, and time associated with attending clinic appointments [(20)].

Among all health occupational groups providing direct care to the patients inside hospitals, nurses are the most frequent group to have NSI , which put nurses under the threat of acquiring a serious blood-borne diseases like Hepatitis B, Hepatitis C and/or HIV[(20)] . Memish et al. (2013) conducted a study in Saudi Arabia in the Middle East reported that nurses were the major occupational group to have NSI and he explained it by the fact that nurses are the most occupational group responsible for blood sampling and other intra-venous procedures among hospital inpatients.

Nurses also provide a lot of high risk activities that can lead to NSI, for example; administering medication, withdrawal of blood, suturing, and inserting intravenous lines [(21)]. Several factors that were found to contribute to NSI among nurses are recapping needles after use, lack of experience, not using sharp containers properly, and working under emotional distress.

Hence, in order to understand and identify solutions to prevent this type of injures, identifying the contributing factors associated with NSI becomes crucial. As previous study have shown that approximately 80% of NSI can be prevented through the use of appropriate precautionary measure (Zaidi et al., 2010).emphasis on such research can no longer be ignored. It is important to address that about 80% of NSI are preventable using appropriate precaution measures.

Analysis of the NSI prevalence showed that almost two thirds of the nurses (68%) suffered at least one NSI occurred in the past three months period. This is considered as a significant finding which clearly indicates the presence of concerns regarding the magnitude of the problem . This current finding supports the previous findings from Hassan &Wahsheh (2009) who found in their study that 92% of nurses in Jordan have had at least one NSI in a period of 12 months. Irmak et al., (2012) reported that only 30% of the nurses included in his study in Turkey reported acquiring at least one NSI in the past 12 months of his study, which is considered lower than similar studies. The majority of the NSI occurred during the morning shift, which can be attributed to the high volume of procedures performed on the morning shift compared to evening and night shifts, thus increasing the probability of error.

V. Conclusions and recommendations:

- This study revealed that knowledge of hemodialysis nurses in Al jouf region about the risks associated with needle-stick injuries and use of preventive measures was inadequate.
- Comprehensive program should be done for nurses including appropriate prevention strategies for NSI. As factors such as recapping of needle is associate to one's knowledge, this factor must also be explored in assessing nurses knowledge, attitude and work practices on NSI hazards and its relation to blood-borne diseases As NSI is a preventive health issue, identifying these gaps will facilitate the government to have better understanding in developing strategies customized for saudian nurses.

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