

## ***Behavior of Indonesian Nurses Toward Non-Reported Needle Stick Injury in Saudi Arabia: A Phenomenological Study***

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**Abstract :** *Non-reported needle stick injury (NSI) is still a major problem faced by nurses when working in health services in Saudi Arabia viewed from the perspective of occupational health and safety (OHS). Knowing the behavior of nurses in the workplace can have implication for the OHS culture. Objective: To explore the behavior of Indonesian nurses towards non-reported NSI in health services in Saudi Arabia. This study used a qualitative method with a phenomenological approach. The research subjects used typical case sampling of 12 Indonesian nurses who had work experience regarding NSI. In-depth interviews with structured questions were conducted with respondents following guidelines for data analysis using a seven step analysis by Colaizzi and Nvivo software. There were 13 categories from 4 themes found in this research about knowledge, behavior and skills also management of exposure and post exposure. The behavior of Indonesian nurses towards non-reported needle stick injury based on experience has been carried out even though on the behavior especially knowledge, attitude and skills also policy on management of needle stick injury needs improvement.*

**Keywords:** *health services, needle sticks injury (NSI), nurses, Saudi Arabia*

### **INTRODUCTION**

As a developed country, The Kingdom of Saudi Arabia (KSA) is still experiencing an increase in the incidence of needle stick injury (NSI). Much research showed a significant number of NSI reports including prevalence and factors associated with NSI. In fact, there is some incidence in the health services neither at primary health level nor secondary health level that increase unreported NSI. (Abalkhail et al., 2022). Recent research shows the number of unreported needle sticks in health services in Saudi Arabia was 52.7% (Alsabaani et al., 2022). There were 58.3% of health workers who did not report needlestick incidents even though 92.4% of health workers were aware of it (Al-qahtani et al., 2022). The results of research in a city in Saudi Arabia on 786 health workers who working in hospitals in the last 12 months showed that the incidence of needle stick injuries was around 11.5% (Alsabaani et al., 2022).

Needle Stick Injury (NSI) is a wound caused by a medical syringe (Ismara Ima et al., 2018). The incidence of NSI is still a major problem faced by many health workers in the world (Qureshi et al., 2021). Apart from the impact that can cause injury, it also causes infections such as hepatitis B virus (HBV), hepatitis C virus (HCV) and even the Human Immunodeficiency Virus (HIV) (Bouya et al., 2020). Protecting healthcare from NSI is part of occupational safety and health (OHS) aspect that must be considered and implemented by health services and companies as service providers in protecting workers (Almasoud, 2021). OHS aspects are not only related to humans but also a work environment that is able to provide comfort for employees to avoid work-related illnesses (Herlinawati et al., 2021).

Hospitals and clinics from previous research have a high level of health and safety hazards (Goekcimen et al., 2023). Workers in health care centers such as doctors, nurses and laboratory personnel have a vulnerability to work accidents such as muscle and joint disorders, contact with blood or patient fluids (Manal et al., 2018). Data from 2014 to 2018 stated that there were around 16.000 health workers infected with hepatitis B and 66.000 infected with hepatitis C, while HIV transmission due to needle sticks was around 1.000 cases (Alfulayw et al., 2021). The Center for Disease Control and Prevention (CDC) in the United States in its statistics with the European Agency for Safety and Health at Work (EU-OSHA) revealed that there were around 35.000 to 1 million cases of needle sticks occurring in health services in the last 10 years (Makeen et al., 2022).

The results of research conducted by Al Shaikh *et.al* in a retrospective study at government hospitals in Saudi Arabia from 2016 to 2018 found 2.165 health workers stated that nurses were the health workers who experienced the most incidents of needle sticks with a rate of 52.5%, followed by doctors by 24.9% and laboratory staff by 16.6% (Al Shaikh et al., 2019). Meanwhile, research conducted in a primary healthcare in December 2021 in Saudi Arabia showed that needle stick injuries dominated with a prevalence of 124 per 1000 health workers (Al-qahtani et al., 2022).

Data for 2016-2018 shows the number of nurses in Saudi Arabia reached 184.565 people consisting of 70.319 nurses with Saudi nationality (38%) and 114.246 non-Saudi nurses (62%). The large number of expatriate nurses in Saudi Arabia makes health services filled with nurses from India, Philippines, Indonesia and Malaysia (Alluhidan et al., 2020). The Indonesian National Nurses Association (INNA) in Saudi Arabia released the data stating that there were 210 Indonesian nurses who were registered and had member registration identification numbers in Saudi Arabia (Fahrudin, 2022).

Although there has been no research that explains the separation between non-Saudi nurses, especially Indonesian nurses and other foreign nurses in cases of needlestick unreported. Some quantitative studies showed the significant unreported NSI in the primary and secondary health level while one qualitative research showed the experience of nurses in secondary health level experienced of NSI but not specific explained about foreign nurses. The further studies in the form of a qualitative approach really need to be carried out in order to provide an overview based on the personal experiences of Indonesian nurses in Saudi Arabia. This research conducted in-depth interviews with semi structured questions to explore nurse experience about knowledge, attitudes and skills as well as management exposure and post exposure of NSI.

## **METHODS**

### **Research Design**

This study used a qualitative design with a phenomenological approach. A qualitative research design with a phenomenological approach is a study that focuses on real experiences or descriptions how other people experience and what it means for them (Utarini, 2022). The phenomena of unreported NSI was significant in health service in Saudi Arabia that affected serious injury for nurses based on the previous research. The aim of this phenomenological study is to explore the experiences of Indonesian nurses toward non-reported NSI in health services in Saudi Arabia.

### **Setting and Samples**

The sampling technique used was purposive sampling by grouping participants according to selected criteria among the existing population. The population was 210 nurses based on the data from The Indonesian National Nurses Association (INNA) in Saudi Arabia. The selection of 12 nurses was carried out through a questionnaire in which nurses were asked to participate in this research. There were 75 nurses filled out the form and 20 nurses were selected. The data was filtered according to the inclusion criteria and 12 nurses agreed to participate. The inclusion criteria were Indonesian nurses who work in hospitals and clinics and were willing to become informants in this research, have a SCFHS license in Saudi Arabia, registered nurses based on a Member Registration Identification Number (MRIN) and had work experience more than 3 years. Exclusion criteria were nurses who recently work, did not have a license and were not willing to become informants in the study.

### **Study Procedure**

Primary data were obtained from in-depth interviews and observation of secondary data. Interviewed guidelines were created to evaluate all research information. Instruments in the form of cell phones, voice recorders, and stationery. Interviewed were conducted one in one interview by telephone and the audio transcript was conducted during interviews above 30-40 minutes for each respondents. Coding was used to make different for each respondent e.g Informan 1, Informan 2, Informan 3, etc.

### **Data Analysis**

The data were carefully analyzed after transcription following seven steps of Colaizzi's (1978) which include 1). Reading and re-reading all transcripts and finding the goals from what the participant expressed. 2). Identifying significant statement about NSI. 3). Formulating meaning from the significant statement. 4). Identified meaning into themes. 5) Developing an exhaustive description. 6). Producing the fundamental structure. 7). Seeking verification of the fundamental structure (Morrow et al., 2015). This study also used Nvivo software to analyze both data for transcript which include 1). Transcripts interview audio made in one file for each informant. 2). Saved the file in internal folder through Nvivo system for data transcripts. 3). Coding was used to identify theme, topic and category that related to NSI. 4). the queries future used to find phrase, theme and pattern that appears in transcripts. 5). the analysis result was interpreted based on coding, phrase and pattern.

### **Rigor and Trustworthiness**

According to Lincoln and Guba (1985), there are four criteria for assessing and improving the results of qualitative study which refer to the principle of credibility, transferability, dependability and confirmability (Utarini, 2022). The research began when the ethics clearance process was completed from

The Medical and Health Research Committee FK-KMK Gadjah Mada University and research approval from Indonesian National Nurses Association (INNA) Saudi Arabia. The process of implementing the research begins with informed consent from researcher to the participants as a form of information and explanation related to the flow, aims and time of the research. After the participant knows as a whole, it is agreed through a consent sheet.

### Ethical Considerations

This study was approving by The Medical and Health Research Ethics Committee of Faculty of Medicine, Public Health and Nursing Gadjah Mada University with number KE-FK-0566-EC-2023.

### RESULTS

This research was conducted in Saudi Arabia on 12 Indonesian nurses who work in health services including hospitals and clinics. Those informants work in emergency departments, wards departments, Intensive Care Unit (ICU) departments. A total of 12 nurses agreed to become informants for interviews with semi structured questions and electronic recording was used to perform the interview. A total of 6 nurses with a bachelor degree in nursing, 1 nurse with a diploma IV in nursing and 5 nurses with a diploma III in nursing. A total of 5 nurses works in the emergency department, 1 nurse works in the Intensive Care Unit (ICU) department and 6 nurses work in the ward department. The average age of informants is 36 years old and the average of work experience is 10 years. All nurses have a license from the Saudi Commission for Health Specialties (SCFHS).

**Table 1. Indonesian Nurse Informan**

No	Informant	Gender	Age (Year)	Room	Length of Work (Year)	Working Unit
1	Informant 1	Female	27	Emergency	4	Clinic
2	Informant 2	Female	27	Emergency	5	Clinic
3	Informant 3	Female	42	ICU	16	Hospital
4	Informant 4	Female	36	Ward	8	Hospital
5	Informant 5	Female	42	Ward	7	Clinic
6	Informant 6	Female	45	Ward	12	Clinic
7	Informant 7	Female	40	Ward	12	Hospital
8	Informant 8	Male	33	Emergency	10	Clinic
9	Informant 9	Male	35	Emergency	7	Hospital
10	Informant 10	Female	43	Emergency	15	Hospital
11	Informant 11	Female	42	Ward	18	Hospital
12	Informant 12	Female	27	Ward	6	Hospital

### Knowledge

#### Scooping Technique

Knowledge is closely related to the cognitive abilities of nurses in working based on nursing knowledge. The results of the analysis on the theme of knowledge found that on average nurses did not know the scooping technique, which is a technique for preventing needle stick injuries. Some informants said:

Informant 2: "Scooping, I don't think so".

Informant 3: "Scooping I've heard of it but I don't really understand".

Informant 5: "I've heard of the scooping technique, but in terms of technique, Miss Devi, maybe it's the same as massaging, right? When we are exposed to what is scooping, it is massaged like that".

The Scooping technique is basically a way of inserting a used syringe into the cover using one hand without touching the cover (Veronesi et al., 2018).

#### Standard Operational Procedure of NSI

The second categorization obtained from the theme of knowledge that informants did not know the Standard Operating Procedure (SOP) of NSI. Some informants said:

Informant 2: "First what's the name, for example the finger gets hit, what is it immediately pressed on by finger earlier the water flows continuously, cleaned with soapy water too until the blood doesn't come out anymore".

Informant 8: "Until now we do not know the SOP of being pricked by a needle at work, yesterday we were taught how to roughly run water if you get stabbed, wash it quickly".

Informant 5: "The first treatment we immediately open the gloves, if possible we use alcohol swab".

There were 3 informants said that they did not know the SOP for handling NSI while 2 informants knew the SOP but had never implemented because it was detailed and complex.

### **Sharp Container**

In the sharp container categorization, some nurses do not know the sharp container for disposal of syringes after treatment. Some informants said:

Informant 1: "The bulleted one, yes, for example, if it smells bad, throw it away, for example it's 75% or there are liquids like that, you have to throw it away".

Informant 2: "Yes, by default a special box is provided for ampoules, syringes, and blades that's it, separate from other waste".

There were 4 informants who specifically did not know the box standard which included box color, type and provisions for using box labels if it full. Others 2 nurses knew the standard box but were not specifically able to explain the color and type.

### **Behavior**

#### **Not Reporting**

Nurses as professional healthcare are required to be honest, humans and have empathy. Attitude is shown by the emotional ability to act on everything internally and externally. In responding to needle sticks, Indonesian nurses who work in Saudi Arabia based on theme analysis explicitly do not report being stuck with new needles that have not been used. As the following statement:

Statement of informant 1: "No, because it's new, isn't it, there's no need".

Statement of informant 2: "Whether it's new or not, if it's me personally, if e...if I get pricked by a needle, I won't report it, unless after a week or a few days it has an effect on myself but I immediately clean it up according to the procedure that was previously taught".

Informant 10 statement: "There is no need to report new syringes, if new needles that have not been opened are still sterile and have not been contaminated, either infectious or non-infectious diseases must still be reported, because that's the procedure".

Referring to the rules and standard operating procedures in the hospital, new needle stick cases must still be reported. It is no different from the case of needle sticks from patients diagnosed with an infectious disease or not diagnosed with an infectious disease.

### **Discipline**

In the discipline category, nurses are required to behave towards NSI by reporting everything that is written down from the work. Discipline is closely related to the attitude aspect and determines the health and safety. Some nurses said:

Informants 12: "Yes, it must be reported, because those of us who were stabbed will report to the laboratory, check-up of vaccine history whether we have been vaccinated or not, there are vaccinations".

Informants 11: "Must reported, if it is detected or un-detach, what is the serology, its still has to be reported including patients or needle stick accident, are of duty, and so on".

On average, nurses who are disciplined in implementing rules related to handling NSI were nurses who work in hospitals.

### **Management of NSI**

In the sharp container management category, nurses were faced how to manage syringes, sharp containers and reporting system. Some nurses said:

Informants 11: "Yes, we give to the yellow man, that's the one who exchanged and collected until pick it up later".

Informants 2: "Throw it away, call the officer or cleaning services replace with new container. They always replace it every shift".

Informants 9: "In my room, cleaner was given the task of replacing the sharp container when it is full".

The attitude of nurses who asked cleaner to replace the sharp container will be dangerous. There is an authority from infection control based on MOH laws about who person collected the syringes or sharp container.

### **Skills**

#### **Training**

Nurses must prioritize expertise and skills because what they face is humans who have different needs. Skills when providing action on patients is a must to ensure standard operating procedures are carried out. Analysis of data from the skills theme of Indonesian nurses working in health services in Saudi Arabia shows that training as a management effort encourages nurse skills improvement. As the following statements:

Informant 4: "Yes, here it is usually combined with the basic infection control course"

Informant 6: "For training we were not given certificates, but for classes, there were many. That class is the handling of injecting needles class".

Informant 11: "For training every year sometimes twice and sometimes once depending on the number of staff, sometimes twice a year there is basic infection control".

### **Open New Needle**

In category of opening new needles, some nurses still do not know the flow according to existing standard. Some nurses said:

Informant 2: "I usually open it with two hands. The syringe is inserted, for example we want to enter liquid or normal saline".

Informant 10: "I always open the needle with two hands, if you want to close it, throw it straight into the sharp container, that's a habit that i often do, it's pretty safe".

Informant 11: "It depends on, in my room we usually use two hands but in OR room, we usually used one hand".

The opening and closing of new syringes based on the rules of the basic infection control skills license is carried out using a one-handed technique as well as closing using a one-handed technique without holding the needle cover immediately disposing it into sharp container.

### **Recapping**

In the recapping category, it was found that some nurses used recapping techniques in syringe management. Some nurses said:

Informant 4: "After used the needles, there is no more recapping technique for syringes, that's not allowed. So, the syringe used directly throw to sharp container".

Informant 12: "When I want to use it, I used one handed technique and throw it to sharp container".

Several informants already knew the flow of NSI prevention by not taking recapping actions or not re-closing needles that had been used.

### **Management of Exposure And Post Exposure**

Based on data analysis of stick injury exposure and post exposure management, the average Indonesian nurse carries out exposure and post exposure management following the rules and standard procedures. There are 4 categories were found, namely responses to NSI, PPE, reporting system and NSI experiences. In the first category, some nurses stated:

Informant 1: "In the past, for example, if we were pricked by a needle, we immediately said rinse it with running water after a few seconds until the blood was clean, then we had to report it to the IPCLN and also report it to the doctor or staff at the hospital. for further thorough examination whether the patient, for example, has HIV or not".

Informant 4: "If we were pricked by a syringe, if there really is a wound, the first thing to do is clean it with running water, never press it. After that we can use the antiseptic band. After that, yes, we will report to the supervisor and the procedure must be carried out, but the first thing must be cleaned with running water, you can't press it and you can't give anything".

Informant 12: "Yes, yes, rinse immediately with running water, if it's bleeding, if the needle stick causes heavy bleeding, it must be bandaged completely, fill out the form and incident report on the OVR, send an email and fill in the form and report it to the charge nurse and infection control, it must be within 24 hours. Usually it happens a lot at night and the infection control is until the afternoon, right?".

NSI management at the time of exposure and post exposure to needle sticks is closely related to the system and awareness of nurses to implement rules following standard operating procedures in each health service. The procedure has standards that need to be followed based on the patient's needs.

In the second category that related to PPE, some nurses said:

Informant 4: "Sure, I always wearing gloves in all action".

Informant 7: "Yes, using gloves because to avoid infection contamination between patients and nurses".

Informant 5: "Yes, if we are going to a patient, for example, yes we should wear gloves, do not forget what to wear, gloves, like when we go to a patient, our hands must be clean, right especially if we have to be sterile in this room".

Almost all nurses following the rules regarding wearing PPE during duty.

In the third category, we found about reporting system when nurses need to report NSI. Some nurses said:

Informant 7: "We have to make OVR as a system, then we have to go to emergency room for the injection".

Informant 9: "For the flow, there is already a form that usually report to the head nurse, then the preventive measures for hepatitis are checked, then tracking the patient".

Informant 10: "We filled out the needle stick injury form, there was a form, all the data was entered, the nurse's data and patient data, blood samples were taken both patient and nurse".

In the fourth category, nurses telling their experiences regarding NSI at work. Some nurses informed:

Informant 3: "I have never had an incident during working in hospital, I hope there is no incident related NSI, because I scared".

Informant 4: "No, I never had either new or infectious, the important this is we just clean it with running water according to the flow and then we use an antiseptic bandage, that's all".

There were 3 nurses' experiences NSI at work and followed reporting procedures but 9 nurses based on their information revealed that they had never had NSI experiences while working. Most of the informants who had NSI experiences work in the hospital.

## DISCUSSION

### Nurses Behavior Towards Non-Reported NSI

Behavior is closely related to the emotional and intellectual aspects of humans, thus influencing decision making. Health workers who experience decreased self-confidence, low emotional abilities in maintaining self-safety while working are at risk of experiencing work accidents (Majdabadi et al., 2022). Nurses as one of the health workers in hospitals still dominate in the incidence of needle sticks. A study of 486 nurses at a university hospital in Egypt showed that nurses who had low awareness of safety behavior from needle sticks were very significant, namely 79.1% (Sabaa et al., 2022).

Research at a hospital in South Korea on 177 nurses in the treatment room showed an increase in the incidence of needle sticks by up to 85% for nurses. One of the causes of the high incidence of needle sticks is the low knowledge of nurses in preventing accidents. This study also suggests that nurses can be given education and training related to needlestick management as an effort to increase knowledge and awareness at work (Huang et al., 2022).

This study supports the results of a qualitative study of Indonesian nurses working in health services in Saudi Arabia which shows that behavioral factors, especially the knowledge of nurses, affect the way of work which impacts skills in work. In the knowledge category, it was found that the average nurse did not know the scooping technique, even though this technique is a technique used to prevent needle sticking by inserting the needle into the cover using a one-handed technique after use. Other ways, some nurses lacks of knowledge about standard operational procedure (SOP) of NSI and sharp container.

In the behavior category, it turns out that Indonesian nurses who work in health services in Saudi Arabia as a whole report incidents of needle sticks, but if the needles are new they do not report it. The attitude of not reporting any incidents of needle sticks, both new and after use, is an attitude that is not justified based on the Basic Infection Control Skills License (BICSL) implemented by the Ministry of Health of Saudi Arabia. Research at a hospital in Abha City, Mecca Province, Saudi Arabia on 786 health workers from 2019-2020 showed that almost half of the population or 52.7% of health workers did not report needle stick incidents (Alsabaani et al., 2022). This study supports the results of a qualitative study of Indonesian nurses working in Saudi Arabia, but the results of this study do not specifically explain whether they were pricked with new needles before treatment or during treatment.

Referring to the BICSL standard, every accident caused by needle sticks must be reported to superiors, then the person concerned fills out an incident form and performs control techniques so that the same incident does not happen again. Improving the attitude of using personal protective equipment (PPE) is highly recommended as an effort to mitigate needle stick accidents. The role of education and training in increasing awareness of danger is very important in implementing universal precaution (Andriani, 2018).

In the skills category, on average, Indonesian nurses working in Saudi Arabia have received training on needle stick injuries. Training is carried out periodically for different periods of time between nurses who work in hospitals and nurses who work in clinics. Overall based on interviews, Indonesian nurses receive training 1-2 times in 1 year. Meanwhile, infection control training is carried out during lectures held in each care service unit by designated nursing staff.

This finding reinforces the results of a study conducted by (Alharazi et al., 2022) on 209 nurses working in hospitals in Jeddah, Saudi Arabia. The results showed that 19.7% of nurses still experienced

needle stick injuries so that educational training related to needle stick injury was a must given by hospital management.

While the results of other studies on the impact of training on the knowledge, attitudes and actions of nurses in preventing needle stick injury show that the continuation of the implementation of training does not have an impact on the prevention of needle sticks but must be accompanied by other factors such as health service policies and modifications to safety rules in the workplace which become a necessity (Dessalines, 2021).

This research, associated with the results of research conducted on Indonesian nurses working in health services in Saudi Arabia on the incidence of needle sticks, provides progress in aspects of the pattern of nursing resource development. In reality, health services only provide education and training, but forget other aspects related to work accident incidents such as work rules, implementation and mitigation of work safety and reporting innovations when nurses experience work accidents.

### The Reporting System of Exposure and Post Exposure

NSI reporting management is closely related to the policies and implementation of rules in each health service. Based on the research themes that emerged in the aspects of exposure management and post exposure, the average nurse knows and follows the rules applied both at the clinic and hospital levels.

In sharp injury management related to NSI as applied to every hospital in the Basic Infection Skills License (BICSL). It is explained that the management of being exposure and post exposure of needle stick is carried out according to the policies of the Saudi Arabian Ministry of Health or the health service facility where the nurse works. Management of NSI exposure as the policy of the Ministry of Health (MOH) of Saudi Arabia must follow the following procedure: Do not panic when you get pricked by a needle, Stop the patient care activity that is being carried out, Discard used gloves and syringes in the available containers, Wash the injured area in clean running water, Use waterproof dressings, If the liquid gets into the eyes, nose and mouth, clean it as soon as possible, Identification of patients if incidents occur during treatment through incident reporting forms and report as soon as possible to superiors.

Post exposure management according to the Basic Infection Skills License (BICSL) is divided into 2 categories: First, HBV post-exposure prophylaxis (PEP), namely determining the status of nurses based on the history of HBSAg vaccine and immune status based on the history of other vaccine administration. Second, Post exposure prophylaxis with Hepatitis B Immunoglobulin (HBIG) or administration of vaccines as soon as possible within 24 hours after being reported.

**Table 2. Duration of NSI Vaccines**

Pathogen	Baceline	6 weeks	3 months	6 months
Hepatitis B	HBs Ag	-	-	HBs Ag
	Anti HBs			Anti HBs
Hepatitis C	Anti HCV	-	Anti HCV	Anti HCV
	Liver Function test			Liver Function test
HIV	Anti-HIV	Anti-HIV	Anti-HIV	Anti-HIV

**Source: (General Directorat of Prevention Control, 2023)**

Nurses are not only able to identify work hazards but also work management to avoid work accidents. To encourage increased knowledge, behaviour and skills, an effort or model is needed to ensure the safety of nurses at work. One of the models applied based on research in China revealed that the KAP Mode-Based Approach framework was able to encourage changes in nurse behavior, especially knowledge, attitudes and practices in the management of needle stick hazards in the workplace (Yang et al., 2022).

Components in the KAP Mode - Based Approach encourage improvements in 3 important elements of nurse safety against needle stick hazards such as developing hospital practice standards, implementing safety practices accompanied by quality control of work and implementing quality control against established standards (Yang et al., 2022). The results of this study strongly support the qualitative research conducted on Indonesian nurses working in health services in Saudi Arabia. The implementation of exposure and post exposure management has been carried out by nurses based on the rules set by MOH Saudi Arabia.

### CONCLUSION

The behavior of Indonesian nurses towards non-reported needle stick injury (NSI) is closely related to knowledge with categories such as scooping techniques, standard operating procedure and sharp container. In the attitude we found 3 categories such as non-reporting, discipline and management

of sharp container. In the skills category, there were 3 found such as training, reporting system and recapping.

Knowledge is the nurse's ability to know how to prevent needle sticks, while behavior is the nurse's effort to report any incidents of needle sticks both on new and used needles. This can encourage an honest attitude as well as avoid the attitude of not reporting incidents of needle sticks. The impact of the skills of nurses will be able to encourage nurses to implement a healthy and safe work.

The management of exposure and post exposure of needle stick shows that Indonesian nurses carry out NSI exposure and post exposure procedures. Policies and rules related to NSI both nurses in clinics and hospitals have been implemented such as management at the time of needle sticks and reporting for getting vaccinations after needle stick incidents. It can be concluded that safe behavior based on the experience of Indonesian nurses working in health services in Saudi Arabia has been implemented even though the attitude aspect needs attention for future improvement.

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