Nurses' Attitude towards Sharp Object Injuries: A Study in Lam Dong, Viet Nam

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Abstract. The objective of the study was to describe nurses' attitudes toward sharp object injuries based on the health belief model. The study subjects are nurses working at the clinical departments of Lam Dong General Hospital, Vietnam. Collecting data in the form of interviews based on a set of pre-designed questionnaires. The result showed that most of the nurses had positive attitude toward the seriousness of the injuries caused by sharp objects. The rate of nurses who had positive attitude toward the susceptibility of the disease is more than 90%. In general, the belief of nurses on preventive measures is quite high (> 75%). Whereas, in some areas, the percentage of nurses with negative attitudes still accounts for more than 16%. In general, the majority of nurses had positive attitude toward sharp object injuries. Therefore, there is a high possibility that almost all nurses will be involved in preventive behaviours caused by sharp objects. However, the study also pointed out some factors that are considered barriers to affect the practice of nurses such as work overload, lack of staff, equipment, and knowledge.

Keywords: Injury, sharp objects, attitude, nurses, Viet Nam

Introduction

Exposure to infectious diseases through blood-related to sharp object injuries is a common problem and it has caused serious consequences to the nurses. According to the American Centres for Disease Control and Prevention, there is an estimation of 385,000 injuries caused by sharp objects associated with health workers each year. It can spread more than 20 infectious diseases, of which the three most common are hepatitis B vaccination, hepatitis C vaccination and HIV (CDC. 2015). Although sharp object injuries can be found in any medical staff, especially clinical nurses have the highest incidence rate (Huang, et al., 2017). Nurses who had been diagnosed with sharp object injuries reported that after the problem, they felt very nervous and stressed. These health problems have greatly affected their working quality and efficiency (Cooke & Stephens, 2017).

Attitude is considered to be the strongest predictor of sharp object injuries; nurses who have a negative attitude toward the prevention of sharp object injuries have the risk of injuries nearly twice as likely as those with positive attitudes. (Honda, et al, 2011). Knowledge, attitude, and practice are three factors that are closely related to each other. An individual will engage in and maintain healthy behaviours if they are "aware" of the risk to a health problem. Their health will be threatened by problems caused by their behaviour (Rosenstock, 1974). This means that if a person has a positive attitude toward sharp object injuries, it is possible to predict that they will implement well the prevention measures. Therefore, the study of nurses' attitudes can help predict their behaviours so that it is possible to develop appropriate prevention strategies.

Up to now, there have been many descriptive studies of nurses' attitudes to sharp object injuries in different countries. However, most studies have not fully described the components related to nurses' beliefs about this issue (beliefs about risk level, beliefs about sensitivity, beliefs about importance. of prevention and beliefs about preventive implementation barriers) (Mohamed et al, 2018; Ogoina et al, 2015; Pavithran et al., 2015; Madhawan et al., 2015). Besides, at the moment the data on this issue is still insufficient in Viet Nam. Therefore, the goal of this study is to describe nurses' attitudes toward sharp object injuries basing on the health belief model.

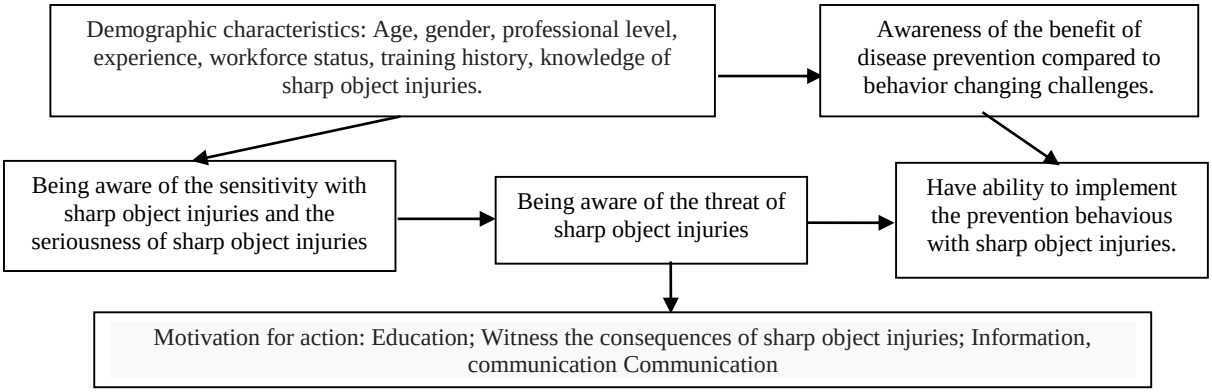

Figure 1. Health belief model applying nurses' predictive behaviour with sharp object injuries

Materials and Methods

Research Subjects

A cross-sectional study was conducted from December 2018 to September 2019 at Lam Dong General Hospital - a mountainous province in the South Central Highlands of Vietnam. The subjects of the study are nurses who take care of patients in Medical Department A, Medical Department B, Medical Department II, Trauma surgical Department, Mental surgical Department, General Surgical Department, Emergency Department, Intensive Care Unit - Poison Control Unit, Paediatric Department, Tropical Disease Infection Department, and Oncology. These are the departments that perform many injections and infusions, with the risk of being exposed to sharp objects during care. All nurses from the above departments of the hospital are invited to participate in the research and have access to basic information such as the design, purpose, and meaning of the study as well as their rights when joining. The anonymity of the participants was maintained throughout the study. They were sent a written consent form before enrolling in the study. A total of 149/158 nurses agreed to participate in the study (accounting for 94.3%).

Research Tools

The toolkit was developed based on WHO best practice guidelines (2010), infection control by the Viet Nam Ministry of Health (2012), safe injection documents of the Viet Nam Ministry of Health (2012) and Rosenstock's health trust model (Rosenstock, 1974). The questionnaire consists of 22 questions divided into 04 parts: (i) The belief about the degree of danger of injuries caused by sharp objects consists of 5 sentences; (ii) The belief about sensitivity to sharp object injuries consists of 5 sentences; (iii) The belief about the importance of preventive measures consists of 7 sentences; (iv) Belief about barriers to implementation of preventive measures includes 5 sentences. The evaluation scale consists of 5 steps built according to the Likert scale. In which, strongly agreement with 5 points, agreement with 4 points, normally correspondence to 3 points, disagreement with 2 points and strong disagreement with 1 point.

The research toolkit is tested for reliability by content validity index (CVI) - content specificity index. The toolkit was sent to 05 experts with expertise and experience in conducting research in this area. Testing results show that all tools have CVI index> 0.8 (the level indicates that the tool has good content specificity). The alpha Cronbach index is used to check the reliability of the scale. Testing the reliability of over 30 questionnaires gets results of the alpha index of Cronbach> 0.7 which indicates that the toolkit has good reliability.

Data Collection

To collect the full data, the research team first contacted the Human Resources department of the hospital to get a list of nursing staff at the researching faculties. The next step is contacting the Dean, Head Nurses to collect data at the department. From Monday to Friday, investigators will come to the faculties and rooms at the right time to avoid affecting the subjects 'work. The investigators first presented the reason, purpose, and meaning of conducting the study. If the subject agrees to participate in the study, the interviewer starts conducting the interview based on the built-in toolkit. The investigators are the main researchers to ensure data quality.

Evaluation Criteria

Nurses' attitudes toward sharp object injuries are classified into three levels: positive, neutral and negative. With the content "Dangerous level of sharp object injuries" and the content "Attitude about the importance of preventive measures with sharp object injuries": The object has a positive attitude if they choose level 4 and 5, their attitude is neutral if they choose 3, the rest are negative. With the content "sensitive attitude toward sharp object injuries": The objects have a positive attitude if they choose 1 and 2, they belong to a neutral group if they choose 3, and the remaining is negative. The content of "Attitude about the barrier to implementation of preventive medicine with sharp object injuries" is not classified because it depends on the real situation and the nurses' working environment (This content is not mentioned in the study). The interview cards are cleaned and entered into the computer using Epidata software. The data was then analyzed and processed using SPSS software. The frequency distribution table and the percentage are used to describe the variables.

This research was approved by the Ethics Council of Nam Dinh University of nursing and the leaders of Lam Dong General Hospital. Participants in the study were clearly explained about the study's purpose and they voluntarily participated in the study. The information on the subject is kept confidential. The questionnaire does not include private questions, sensitive issues so it does not affect the participants' psychology or health. This data is only for research purposes, and the results are provided with the real situation and proposed solutions to minimize the risk of exposure to sharp object injuries and improve health for nursing staff.

Results

Through the process of investigating and understanding the attitudes of 149 nurses at Clinical departments in Lam Dong General Hospital, Vietnam on sharp object injuries, the study obtained the following results.

Table 1. General information about research subjects (n = 149)

Information		**Quantity**	**The rate (%)**
Age	< 30	64	43.0
	30 – 39	74	49.7
	≥ 40	11	7.4
Gender	Male	20	13.4
	Female	129	86.6
Qualification	Intermediate level	74	49.7
	College level	53	35.5
	Graduated level	22	14.8
Working experience	≤ 5 years	62	41.6
	From 6 – to 10 years	31	20.8
	From 11 – to 20 years	52	34.9
	More than 20 years	4	2.7

Information		Quantity	The rate (%)
Payroll status	Official status	85	57.0
	Contracted status	59	39.6
	Apprentice status	5	3.4
Have been trained	Being trained	149	100
	Not being trained	0	0.0
The times trained in the past years	Not yet	78	52.3
	1 time	68	45.6
	2 times	3	2.0
	> 2 times	0	0.0
Department	Medicine	116	77.9
	Surgery	33	22.1

Table 2. Nurses' attitude to the danger level of sharp object injuries (n = 149)

Information	Negative	Neutral	Positive
	%	%	%
Sharp object injuries can cause serious health effects.	6	1.3	92.6
20 infectious diseases can be exposed including HIV, hepatitis B vaccination, hepatitis C vaccination.	8.1	2.7	89.3
Sharp object injuries can cause stress, anxiety, and emotional disturbances.	4.7	11.4	83.9
Sharp object injuries can affect work.	5.4	8.1	86.5
Sharp object injuries can waste time and expenses for treatment	2.7	8.1	89.2

Table 3. Nurses' attitude to the sensitivity of injuries caused by sharp objects (n = 149)

Information	Negative	Neutral	Positive
	%	%	%
I believe that I will never be damaged by sharp objects.	6.7	2.0	91.3
I believe that I will not be exposed to dangerous infectious diseases caused by sharp objects.	4	2.7	93.3
I believe that I will not be worried, stressed or disturbed when I have sharp object injuries.	3.3	6.0	90.7
I believe that I will not waste time and expenses for the treatment of sharp object injuries.	3.3	6.0	90.7
I believe that sharp object injuries will not affect my work.	6	2.7	91.3

Table 4. Nurses' attitude to the importance of preventive measures with sharp object injuries (n = 149)

Information	Negative	Neutral	Positive
	%	%	%
Remove needles and syringes, unnecessary sharp objects to help reduce the risk of sharp object injuries.	16.1	11.4	72.5
Mustn't close the needle caps with both hands to reduce the risk of sharp object injuries.	14.1	2.0	83.9
Put immediately sharp objects in sharp object container to reduce the risk of injuries.	4.7	1.3	93.9

Classify and manage rubbish properly to reduce the risk of injuries caused by sharp objects.	4.7	5.4	89.9
Report the sharp object injuries to reduce the exposures with dangerous infectious diseases.	12.1	12.8	75.2
Hepatitis B vaccination is necessary to prevent exposure for all health care workers	16.1	4.0	72.5
Apply preventive measures with sharp object injuries will reduce the risk of exposures	14.1	3.4	83.9

Table 5. Attitude to the barriers to implement preventive measures with sharp object injuries (n = 149)

Information	**Totally disagree**	**Disagree**	**Neutral**	**Agree**	**Really agree**
	%	**%**	**%**	**%**	**%**
I have difficulty in preventing sharp object injuries due to lack of medical equipment and safety equipments	2.7	18.8	18.8	47.0	12.8
I have difficulty due to a lack of preventive knowledge with sharp object injuries.	0.7	56.4	28.2	12.8	2.0
I don't have time to apply preventive measures of sharp object injuries due to working overload.	1.3	38.9	20.1	35.6	4.0
I have difficulty in preventing sharp object injuries because the patients don't cooperate.	2.7	43.6	42.3	8.1	3.4
Lack of personnel increases the risk of encountering sharp object injuries.	6.7	25.5	10.7	45.6	11.4

Discussion

Awareness of the Severity of the Problem

According to the health belief model (HBM), people who realize a serious health problem are more likely to engage in behaviours to prevent health problems from occurring (or reduce its severity) (Hayden, 2009). In our study, the majority of nurses were positively aware of the severity of sharp object injuries. The rate of nurses who have a positive attitude to the criteria of this content is> 83%, of which the highest is the criterion "The cause of sharp object injuries can seriously affect the health" reaches to 92.6%. Similarly, in the study of Beleke and his co-workers (2015) showed that health workers had a positive attitude about the danger level of sharp object injuries, 98.2% knew about the risk of exposure with sharp object injuries. 99.4% knew that the diseases could be transmitted through exposure with sharp object injuries, 81.1% of health care workers reported that there were at least three diseases including HIV, hepatitis B vaccination and hepatitis C vaccination which were transmitted by sharp object injuries (Suliman et al., 2016). Anitha Madhavan's research and her co-workers on 100 nurses working at a tertiary care center in Kerala, India found that 80% of the respondents thought that sharp object injuries were a common problem; 95% thought that it was necessary to declare immediately if they are injured by sharp objects (Madhavan et al., 2015). These figures are similar to those of Suliman and co-workers while investigating nurses in Sudan (Suliman et al., 2016).

Our research results are in the context of previous studies consistently agreeing that the attitude of nurses to the severity of sharp object injuries is very positive. Nursing is an integral part of the health care staff working in clinical units. In the process of caring for the sick, nurses face a lot of risk from sharp objects (needles, syringes, glass pills, etc.). Nurses themselves have also reported having suffered from sharp object injuries and witnessed their colleagues suffering from this (Khue, 2015; Akyol & Kagin, 2016; Abebe et al., 2018; and Van, 2013). In addition, previous studies have shown that the knowledge of nurses on issues related to sharp object injuries is relatively good (Khue, 2015; Suliman et al., 2016; and Gupta et al., 2019). The content just listed can partly explain the rate of positive attitude of nurses in this study on sharp object injuries. By being aware of the dangers of sharp object injuries, nurses will be able to take preventive measures to reduce the risk of exposure with sharp object injuries. However, being able to implement preventive measures well depends on many factors such as their level of knowledge about preventive measures, supporting conditions, working environment, etc.

Beliefs about Sensitivity to Injuries Caused by Sharp Objects

According to HBM prediction, people who are aware that they are susceptible to a specific health problem will engage in behaviors to reduce the risk of suffering health problems. Individuals with low cognitive sensitivity may deny that they are at risk for health problems and are more likely to engage in unhealthy or risky behaviors. In contrast, individuals who perceive a high risk that they will be affected by a particular health problem are more likely to engage in behavior to reduce the risk of suffering from this issue (Hayden, 2009). In our research results, nurses are largely positive when expressing a completely disagreeing attitude and disagreeing that they will not suffer from sharp object injuries, which means they believe they have a high chance of suffering from sharp object injuries.

Specifically, 91.3% disagree that they will not suffer from sharp object injuries, 93.3% disagree that they will not be exposed to a dangerous disease, 90.6% disagree that they will not be worried or stressful, 73.2% disagree that they will not waste time and money for treating sharp object injuries and 72.5% disagree that sharp object injuries will not affect their work. A recent study by Anitha Madhavan and co-workers with more than 100 nurses working at a tertiary care centre in Kerala, India found that 49% of nurses were always there and were constantly worried that they would suffer from sharp object injuries. The number of nurses who are always worried about it accounts for 60% (Madhavan et al., 2015). This figure in the study of Suliman and co-workers on 249 health care workers at a tertiary care hospital in Khartoum, Sudan is up to 83.5% (Suliman et al., 2016).

From the above findings, it is likely that the majority of nurses are sensitive in their perception that they are at risk of sharp object injuries, which can predict that they will take measures to reduce the risk of injury. According to the World Health Organization (WHO, 2010), there are many causes of sharp object injuries such as abuse of injections, lack of supplies, equipment, insufficient staff, lack of skills, lack of awareness and training. As mentioned above many previous studies have shown that the knowledge of nurses in this issue is relatively good. Therefore, it is understandable that they are aware of the sensitivity to sharp object injuries. From this connection, it can be seen that improving the knowledge of nurses on problems related to sharp object injuries is a solution to help them have a more positive attitude, thereby better implementing the preventive measures.

Awareness the Benefit of Preventive Measures with Sharp Object Injuries

According to HBM, if an individual believes that specific actions will reduce their sensitivity to health problems or reduction of their severity, she/ he is likely to engage in the behaviour regardless of the facts related to the effectiveness of the action (Hayden, 2009). In our research results, nurses generally had a positive attitude toward preventive measures with

sharp object injuries. 83.9% of nurses thought that taking preventive measures would help them reduce the risk of exposure to the disease. Similarly, Dimie.O's study found that 95% of the study participants believed that standard precautions would prevent them from getting an infection from the hospital (Ogoina et al, 2015). Arif and his colleagues also reported that 94% of nurses with positive attitude said that they could reduce occupational risks for HIV and hepatitis B vaccination infections by following preventive measures (Arif et al., 2018).

More specifically from our research, 83% of nurses thought that needle caps should not be closed with two hands, 93.9% of nurses thought that sharp objects should be put into sharp object containers after being used, 89.9% agreed that the waste classification was right, 75.2% agreed that the report on exposure and hepatitis B vaccination accounting for 80.6%. Results from other studies also show that nurses have a good attitude to preventive measures from sharp object injuries in similar content. A reverent study by Olufemi O.A found that 98.2% of the respondents thought that sharp objects should be disposed of in sharp object boxes, while 99% said that all exposures should be reported (Aluko et al., 2016). Another study by Mohammed. G also found that the majority of nurses agreed with the hepatitis B vaccination, with the necessary views accounting for 92% (Mohamed et al., 2018)

Many previous studies have shown that most health workers have a positive attitude towards reporting sharp object injuries but in fact, the reporting is still low, mainly due to fear of facing trouble or being blamed due to time constraints. The sharp objects that caused injuries were not used for any patient (Bekele et al., 2015). Therefore, nurses are largely aware of the importance of exposure prevention measures with sharp object injuries, preventive measures are implemented adequately or not based on their knowledge of the issues. Other barriers may prevent the use of their preventive measures.

Barrier awareness is an individual's assessment of obstacles to behaviours change. Even if an individual realizes a threatening health condition, he believes that a specific action will effectively reduce the threat; barriers can prevent health-promoting behaviour (Hayden, 2009). In our study, 59,8% of nurses said that there was a lack of safety equipment and devices, approximately 40% said that there was work overload, 57% of nurses said that there was a shortage of staff and 14.8% said that they lacked knowledge about prevention with sharp object injuries. These are factors that were determined by nurses that it will hinder the preventive practice of sharp object injuries during patient care. Many previous studies have also pointed out nurses' barriers including lack of appropriate equipments to practice standard preventive measures, lack of regular training on injection control, lack of controlling committee and work overload (Mohamed et al., 2018; Ogoina et al., 2015; and Arif et al., 2018).

Some other barriers that have been reported including a sharp handling bin that does not change often (Suliman et al., 2016), preventive activities are not regularly concerned (Madhavan et al., 2015). Finally, according to health belief theory, in order to help individuals to engage in health protection behaviours, it is necessary to give signals for the actions and self-efficacy of each nursing individual. In the signal for action, it could be the organization of hospital training on occupational risk prevention, the supervision of the nursing department in the nursing practice. However, many hospitals have not really focused on training staff, the safety injection segment for patients has been supervised but safety for nursing has not been focused. In addition, the level of self-efficacy of individuals is different. Individuals can engage in health-protection behaviours, they need to fight the harmful habits that existed before and overcome the working barriers such as overload, lack of personnel, lack of safety equipment... Moreover, to carry out the most sufficient and best behaviours, nurses need to have comprehensive knowledge of sharp object injuries.

Sharp object injury is one of the common occupational health problems in nursing care. Studying attitudes toward sharp object injuries is a necessary issue to predict behaviour as well as to develop interventions that help control this health problem in nursing. The present study

has applied the health belief model in assessing attitudes of nurses toward sharp object injuries and it provided very useful data from a health care facility area in Vietnam. However, the study did not mention the nursing attitude about individual self-efficacy and signals for action when applying the health belief model.

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