

MEDICAL STUDENT'S PERCEPTION ON INCIDENCE OF NEEDLE STICKS INJURY AND PREVENTIVE MEASURES

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ABSTRACT: Needle stick injury (NSIs) is major cause of blood borne infections transmitted among health care personals. World Health Report mentioned that more than 2 million cases of infectious disease from sharp injuries occurred annually. The medical students throughout the world show a similarly high rate of sharp exposures and the study in Malaysia found the high incidence (23.5%) of sharp injuries among medical students over one year. Lack of experience and technical expertise is also related to risk of needle-stick injuries. The objective is to find out the perception of medical students on incidences of needle sticks injury and preventive measures among final year medical students in Melaka, Malaysia. The study design was qualitative method in the form of focus group discussion. We selected two discussion groups from final year students, group of students who had exposure to needle sticks injury before and the other group contain of those who do not have injury before by simple random sampling. Each group contains about nine students. The data were analyzed by content analysis. Initially, discussion transcripts were read for emergent themes, which were then coded. Care was taken to ensure the codes accurately captured the respondent's meaning. The study revealed that most of the participants had knowledge on the diseases transmitted by contaminated sharp objects but information on hepatitis B immunization needed to be promoted (Less awareness about immunization and not immunized yet although medical students are in risk groups). For universal precaution measure, students uncertain about the needle should be recapped or not and also disposal of sharp or surgical waste in specific disposal bin. Discussion based on perception, all participants who had needle sticks injury before or not agree that every health care workers have a risk of needle sticks injury but it can protect by following universal precaution measures stated by WHO but still have a chance to get infection depend on some favorable conditions. They all agree on the issue that after getting infection due to occupational related needle stick injury, the health care workers should not resign but can change the job that has less exposure to blood and the information about injury should not be confidential. In conclusion, in-depth focus group discussion found out that the students have positive perception on needle stick injury and universal precaution measures but their awareness relating universal precaution and needle sticks injury need to be promoted among them.

Keywords: Needle sticks injury, Medical students, Universal precaution

INTRODUCTION

Needle stick injury (NSIs) is major cause of blood borne infections transmitted among health care personals. There are more than 20 types of blood borne pathogens and the most common hepatitis B; hepatitis C and human immune deficiency (HIV) virus can be transmitted through needle stick injuries [1, 2]. World Health Report

mentioned that more than 2 million cases of infectious disease from sharp injuries occurred annually [3]. The risk of transmission of HIV to health care workers after exposure to percutaneous HIV infected blood has been estimated as 3 per 1000 [3]. The estimated incidence of infection through needle stick injuries includes hepatitis B 37.6%, hepatitis C 39% and HIV 4.4% [4]. Administering injection, withdrawing blood, recapping needles, disposing needles, handling of trash and dirty linens and transferring blood or

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body fluid from syringe to specimen containers are common activities associated with sharp injuries [5]. Needle sticks injury is one of the constant threat to health care workers, especially medical students who are at high risk because of their relatively lack of experience during their clinical years. According to studies, 11% to 50% of students had history of exposure to infection related to sharp injuries during their undergraduate training period [6].

The medical students throughout the world show a similarly high rate of sharp exposures and the study in Malaysia found the incidence (38.3%) and (24.7%) of sharp injuries among medical students over one year [7-9]. Another study found that 84% of surveyed medical students suffered at least one occupational sharp exposure during their clinical training [10]. Lack of experience and technical expertise is related to risk of needle-stick injuries [11]. This suggested that unskilled students may be at a highest risk during their medical training and this is also related to their perception on risk of needle stick injury [12].

Based on the base line data collected in Melaka Manipal Medical College regarding the prevalence, knowledge and perception on needle sticks injuries among students, the prevalence was (7.2%) under report compare with the other medical universities in Malaysia, University Karbinasen Malaysia (16.3%) but knowledge concerned with universal precaution and blood safety measure were found to be encouraged [13].

There were no qualitatively study that aim on the perception of student on risk of needle stick injury and preventive measure and need exploratory assessment before conducting health education intervention regarding needle stick injury and universal precaution measure. By doing health education intervention, that can promote the students interests on the universal precaution measures on needle sticks injury and that will prevent future transmission of infection through needle stick injuries and from them knowledge and distributed to the future medical students and all health care workers.

The objective is to find out the perception of medical students on incidences of needle sticks injury and preventive measures. Public health interest of this study is prevention of risk of needle stick injury that can prevent consequences such as transmission of communicable diseases.

METHODOLOGY

This study was taken at Melaka Manipal Medical College which is located in the Melaka,

Malaysia. The target population was the medical students in Melaka, Malaysia. Total 115 final year medical students from Melaka, Malaysia were participated in the study. Qualitative focus group discussion method was conducted from October 2012 to December 2012.

Sampling technique and procedure

There were total 115 students in final year of the 2012 academic year. For sampling, simple random sampling was conducted. The students were requested to answer the questionnaire that contained information about experienced previous needle sticks injury present or not. Informed consent was taken together with questionnaires. Total 95 students' responded and among them we found out that there were 12 students who had injury before. We requested the students to take part in focus group discussion. Among 12 students, 9 students were agree and gave inform consent for participation in study. From the rest 83 students who did not have needle sticks injury, we selected the 12 students by simple randomization and informed them to participate in focus group discussion. 10 students reply for the consent but during the day of discussion one student drop out and only nine students taken part in group discussion. So we did focus group discussion for two groups, group one contained 9 students who had needle sticks injury and group two contained nine students who did not have needle sticks injury.

Focus Group Discussions (FGDs)

Focus Group Discussions was used for getting in-depth qualitative information and beliefs of medical students about their knowledge, practice on universal precaution and perception on risk of needle sticks injury.

A series of questionnaires related with perception was developed as a guide. The questionnaires was based on their awareness on the universal precaution of blood safety and needle sticks injury and their attitude regarding risk of transmission of injury and post exposure prophylaxis like reporting procedure.

There were two discussion groups, group of students who had exposure to needle sticks injury before and the other group contain of those who do not have injury before to compare the difference in knowledge and perception between two groups which did separate discussion groups.

Facilitator was trained researcher but not the researcher to promote rapport and reduce bias by use of leading questions. The researcher explained the facilitator about how to conduct FGD, the purpose, technique and about the nature of the question ask. The discussion was performed in both

Table 1 Information about needle sticks injury

Injury information		Number N=8
Total number of injuries	One	7
	Five	1
Clinical ward that occurred injury	Family /Community medicine OPD	5
	Medicine	3
Type of needle	Hollow bore needle	8
Mechanism of injury	Needle recapping	4
	IV withdrawal	3
	IM injection	2
Perceived cause of injury	Excited due to inexperience	7
	Rushed	1
Post exposure prophylaxis	Hand washing	8

Malay and English combine for one session each least for about 2 hours.

Needle stick injury is defined as percutaneous injury caused by hollow bore needles, that is, the type of needle used for giving injection or drawing of blood which has the bore that the blood can remain inside after use and also suturing needles.

Perception was defined as way of understanding upon risk factor and precautions of needle stick injury by the students.

Data management and analysis

Qualitative data analysis

The data which will be obtained from FGD through tape recorder will be transcribed and crosschecked with the respondents before translating into English. Translation into English language will be done by interpreter and will be checked for consistency before finalization. The data were coded, cleansed and then analyzed.

The interviews were analyzed by content analysis. Initially, interview transcripts were read for emergent themes, which were then coded. Care was taken to ensure the codes accurately captured the respondent's meaning. The codes in each interview were then compared with those in each other interview to create broader categories that linked codes across interviews (constant comparison¹³). Again, care was taken to ensure that these broader categories did not distort the respondent's meanings. For example, would be the category serving to link these themes which is followed the steps for content analysis.

Ethical approval was acquired from Ethical Review Board, Research Committee, MelakaManipal Medical College on August 2012.

RESULTS

Those students who have no injuries, there is no data for injury and knowledge. For perception

aspect, both groups are described.

Information about needle sticks injury

There were eight students participated in discussion and their information about needle sticks injury were shown in Table 1. Majority of needle stick injuries occurred at family medicine and community medicine OPD followed by medicine ward. Majority of injuries were due to hollow bore needle and most of injuries were self-inflicted and all of the victims were wearing a glove during the injury. Regarding perceived cause of injury the students admit that it was due to lack of experience.

They all stated that they had taken immediate post exposure action after injury but they perceived as it was complete post exposure action, and actually some more steps are needed. The immediate post-exposure action taken was washing the wound with soap and water and application of aseptic solution.

Knowledge concerning needle sticks injury by two groups discussion

Most of the students had knowledge on the diseases transmitted by contaminated sharp objects e.g. HBV, HCV and HIV. But regarding hepatitis B immunization they are aware of the immunization schedule but could not discuss properly about booster doses, pre-vaccination test and post vaccination test were necessary for hepatitis B immunization or not.

Regarding procedure dealing with syringe, some of the students were unaware about universal precaution (Do not recap the needle "and one student discussed, "If there is no disposal bin near around, recapping is safe". Regarding colour coding of hospital waste disposal, they can define well about red and yellow (red for sharp waste and yellow for clinical waste). Regarding universal precaution measures, they all follow the guidelines

Table 2 Perception of students on needle sticks injury

Statements
1. Every health care workers have chance to get needle stick injury.
2. Needle stick injury is unavoidable things for health care workers.
3. The increase workload can lead to needle stick injury.
4. If health care workers get infected with HIV infection, they don't have to resign from their profession; can change the work example teaching.
5. The standard precaution to handle the sharp objects must always follow because improper handling can lead to get the infection.
6. The infections transmitted from needle stick injuries are life threatening and some have no vaccine and treatments.
7. We haven't got proper lecture about the standard precaution about needle stick injury but learned from media and from hospital.
8. Although there is a risk of infection, confident and skillfulness can prevent injury.
9. Handle needle without wearing glove is better than wearing glove, I don't think so I always wear glove every time handling with needle
10. Unavailability of protection equipment can prone to get needle stick injuries.
11. Reporting after needle stick injury is not much useful. We have no idea about reporting but it will definitely be useful
12. Every health care worker should be immunized with Hepatitis B vaccine. But some of my friends were still unimmunized.
13. Health education for universal precaution to NSIs to the students and health care workers can reduce the prevalent of needle stick injuries among them.

hand washing, wearing the glove, safe disposal of sharp and immunized with hepatitis B.

Based on post exposure prophylaxis, the students who got injury follow hand washing with soap and water but encourage bleeding, and reporting procedure steps by steps needed to be encouraged. One student discussed "I informed to house officer but he said no need", mean all the junior health workers should aware of reporting procedure and important of it.

Perception of students on needle sticks injury

Discussion about perception of students on risk of needle stick injury and universal precaution measure based on thirteen statements and the student's perception were shown in Table 2.

DISCUSSION

Focus Group Discussions was conducted among two groups of students one those had exposure to needle stick injury and the other those who hadn't. The main aim is to get in-depth qualitative information and beliefs of medical students about their knowledge, practice on universal precaution and perception on risk of needle sticks injury.

According to the content analysis results, the knowledge and the perception of students of two groups were similar and not much difference were found.

Knowledge of needle sticks injury

Most of the students had knowledge on the

diseases transmitted by contaminated sharp objects e.g. HBV, HCV and HIV. A study by Saleem et al. [14], most of the students from each class were aware of the possibility of acquisition of Hepatitis B, Hepatitis C and HIV from needle stick injuries. Only one third of final year students knew the full details of needle stick injury prevention protocols [14, 15]. A similar study on health science students in northern china reported that the students displayed a general lack of knowledge of occupational exposure standards [16]. In a study by Norsayani et al. [11], most of the student acquired knowledge of blood borne disease mainly from the lectures, books and through informally. The percentage of students who acquired knowledge of universal precaution was 70.3% [17], but in the study by Deisenhammer et al. [16], general, students' knowledge about the transmission risks of HIV, hepatitis B and C through a needle stick injury with a contaminated needle was poor. Similar results were found for hepatitis B and C. Overall, the students tended to overestimate the transmission risks [14]. But regarding hepatitis B immunization they are aware of the immunization schedule but could not discuss properly about booster doses, pre-vaccination test and post vaccination test were necessary for hepatitis B immunization or not.

Regarding procedure dealing with syringe, some of the students were unaware about universal precaution (Do not recap the needle "and one student discussed, "If there is no disposal bin near

around, recapping is safe". Regarding colour coding of hospital waste disposal, they can define well about red and yellow (red for sharp waste and yellow for clinical waste). Regarding universal precaution measures, they all follow the guidelines hand washing, wearing the glove, safe disposal of sharp and immunized with hepatitis B.

Based on post exposure prophylaxis, the students who got injury follow hand washing with soap and water but encourage bleeding, and reporting procedure steps by steps needed to be encouraged. One student discussed "I informed to house officer but he said no need", mean all the junior health workers should aware of reporting procedure and important of it.

Perception of students on needle sticks injury

In a study by Lal P et al. [17], majority of the interns perceived themselves to be at a very high/high risk of acquiring HIV infection during their medical career. The common reasons for perceived risk of acquiring HIV infection were due to needle pricks during surgical procedures the most, frequent exposure to the secretions of patients and insufficient availability of gloves. Some were of the opinion that students in future might lose interest in the medical profession due to the increasing risk of HIV infection and few were even considering to leave the medical profession for the same reason.

In a study by Hanafi et al. [18], it was identified that the common reasons for not reporting of NSIs that warrant attention and there is little perceived benefit to reporting occupational exposure, especially when reporting can result in punishment, blame or even job loss. In addition, health workers commonly perceived the risk of the exposure to be low. Barriers to reporting should be appropriately identified and eliminated in order to ensure appropriate counselling and treatment of health workers after exposure (needle sticks injury).

CONCLUSION AND RECOMMENDATION

It was concluded that the students who had injury before or not, their knowledge and risk perception are similar and it is not effect on their knowledge. The students had knowledge on universal precaution guidelines such as hand washing and wearing the glove and proper disposal of sharps. But hepatitis B immunization, post exposure prophylaxis measures should be encouraged among the student as well as health care workers. It was recommended that the importance of hepatitis B immunization and importance of

reporting and other post exposure prophylaxis should be add in further needle stick injury guidelines and curriculum and training among the students such as lectures related with universal precaution and short courses on infection control measures.

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