EFFECTS OF MELAKA MANIPAL MEDICAL COLLEGE NEEDLE STICKS INJURY PREVENTION MODEL ON NEEDLE STICKS INJURY PREVENTION AMONG MEDICAL STUDENTS IN MELAKA, MALAYSIA

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ประสิทธิผลรูปแบบการป้องกันอุบัติเหตุการใช้เข็มฉีดยาของนักศึกษาแพทย์วิทยาลัยแพทยศาสตร์มะละกา เมืองมะละกา ประเทศมาเลเซีย

นางสาวคเย มอน มิน ซเว

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คเย มอน มิน ซเว : ประสิทธิผลรูปแบบการป้องกันอุบัติเหตุการใช้เข็มฉีดยาของนักศึกษาแพทย์ วิทยาลัยแพทยศาสตร์มะละกา เมืองมะละกา ประเทศมาเลเซีย. (EFFECTS OF MELAKA MANIPAL MEDICAL COLLEGE NEEDLE STICKS INJURY PREVENTION MODEL ON NEEDLE STICKS INJURY PREVENTION AMONG MEDICAL STUDENTS IN MELAKA, MALAYSIA) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: รัตนา สำโรงทอง, 5 หน้า.

ประสิทธิผลรูปแบบการป้องกันอุบัติเหตุการใช้เข็มฉีดยาของนักศึกษาแพทย์ วิทยาลัยแพทยศาสตร์มะละกา เมืองมะละกา ประเทศมาเลเซีย

อุบัติเหตุจากเข็มฉีดยา เป็นสาเหตุสำคัญที่นำไปสู่การติดเชื้อผ่านทางเลือดในบุคคลกรทางการแพทย์ทั่วโลก ซึ่งนักศึกษาแพทย์เป็นกลุ่มเสี่ยงที่อาจเกิดการติดเชื้อจากอุบัติเหตุจากเข็มฉีดยาในขณะที่รักษาผู้ป่วยได้ การป้องกันการติดเชื้อจากอุบัติเหตุจากเข็มฉีดยาในนักศึกษาแพทย์การมีความรู้ในเรื่องการป้องกันการติดเชื้อที่เป็นมาตรฐานสากล การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อศึกษาถึงประสิทธิผลของโมเดลการป้องกันการติดเชื้อจากอุบัติเหตุจากเข็มฉีดยา ของวิทยาลัยแพทยศาสตร์มะละกา เมืองมะละกา ประเทศมาเลเซีย

การศึกษาแบบสุ่มตัวอย่างโดยมีกลุ่มควบคุม โดยจัดให้มีกิจกรรมแทรกแซงด้วยการให้ความรู้เรื่องการป้องกันการติดเชื้อจากอุบัติเหตุจากเข็มฉีดยา และการป้องกันการติดเชื้อที่เป็นมาตรฐานสากลแก่นักศึกษาแพทย์ วิทยาลัยแพทยศาสตร์มะละกา ได้มีการจัดการสนทนากลุ่มเพื่อหาข้อมูลชิงลึกในการพัฒนาโมเดลและสร้งแบบสอบถาม แบ่งนักศึกษาแพทย์เป็น 2 กลุ่มตามหน่วยงานที่นักศึกษาฯ ฝึกปฏิบัติงาน ในกลุ่มทดลองกลุ่มตัวอย่างได้รับกิจกรรมแทรกแซง โมเดลในการป้องกันการติดเชื้อที่เป็นมาตรฐานสากล ของวิทยาลัยแพทยศาสตร์มะละกา แมนิปาล การวัดประสิทธิผลของโมเดลฯโดยวัดก่อนและหลังกิจกรรมแทรกแซง การวิเคราะห์ใช้ McNemar’s test เพื่อเปรียบเทียบความแตกต่างของตัวแปรต่างๆ Pair- T test ใช้วิเคราะห์เปรียบเทียบก่อนและหลังในกลุ่มเดียวกัน และ student t test ใช้วิเคราะห์เปรียบเทียบก่อนและหลังระหว่างกลุ่ม

จากกลุ่มตัวอย่าง 316 คน แบ่งเป็น กลุ่มทดลอง 136 (ร้อยละ 43) กลุ่มควบคุม 180 (ร้อยละ 57) พบว่าความชุกของอุบัติเหตุจากเข็มฉีดยาในกลุ่มทดลองลดลงหลังจากการให้กิจกรรมแทรกแซง จากร้อยละ 18.4เป็นร้อยละ 2.9 อย่างมีนัยสำคัญทางสถิติ พบว่าความรู้และการรับรู้เรื่องการป้องกันการติดเชื้อจากอุบัติเหตุจากเข็มฉีดยาเพิ่มขึ้นหลังจากการให้กิจกรรมแทรกแซงอย่างมีนัยสำคัญทางสถิติ สรุปได้ว่าโมเดลการป้องกันการติดเชื้อจากจากเข็มฉีดยา ของวิทยาลัยแพทยศาสตร์มะละกา แมนิปาล มีผลในการเพิ่มความรู้ อันนำไปสู่การปฏิบัติตนเพื่อลดการเกิดอุบัติเหตุจากเข็มฉีดยาในกลุ่มนักศึกษาแพทย์

สาขาวิชา สาธารณสุขศาสตร์ ลายมือชื่อนิสิต .....

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5479153253 : MAJOR PUBLIC HEALTH
KEYWORDS: NEEDLE STICK INJURY / MEDICAL STUDENTS / PERCEPTION

KYE MON MIN SWE: EFFECTS OF MELAKA MANIPAL MEDICAL COLLEGE NEEDLE STICKS INJURY PREVENTION MODEL ON NEEDLE STICKS INJURY PREVENTION AMONG MEDICAL STUDENTS IN MELAKA, MALAYSIA. ADVISOR: ASSOC. PROF. DR RATANA SOMRONGTHONG, 5 pp.

Needle stick injury (NSIs) is the major transmission source of blood borne infection among health care workers all over the world. Medical students are at a risk of needle stick injury with acquisition of blood-borne infection by pathogens while performing their clinical activities in the hospitals. To prevent from transmission of disease through injury, medical students should have knowledge on universal precaution of needle stick injury and preventive measures. This study was aim to study the effectiveness of Melaka Manipal Medical College (MMMC) needle stick injury prevention model on accidental needle sticks injury prevention among medical in Melaka, Malaysia.

The study design was randomized control trial, intervention program emphasize on health education on needle stick injury prevention and universal precaution measure was carried out among the students of Melaka Manipal Medical College. Focus group discussion was carried out to develop the model and to evaluate the questionnaires. The students were randomized into two group based on their clinical posting. Intervention groups received the health education intervention based on the model and the effectiveness was measured by using pre and post test questionnaires. McNemar's test was used to compare the difference of categorical variables. For pre and post intervention analysis for same population, Paired T test wasused and for comparison between intervention and control group, student t test wasused.

There were total 316 medical students participated in this study, 136 (43.0%) in intervention and 180(57.0%) in control groups. The prevalence of needle stick injury in intervention groups was decreased from 25(18.4%) to 4(2.9%) after intervention and it was statistically significant. The finding reveals that both the knowledge and perception of students on needle stick injury was increased after intervention and it was statistically significant Implementing the MMMC needle stick injury model to medical students gave them increased in knowledge regarding needle stick injury prevention measure and motivates them to apply this knowledge in their daily clinical practice, which would lead to decrease incidence of needle stick injury among the students.

Field of Study: Public Health Student's Signature .....

Academic Year: 2013 Advisor's Signature .....

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ABBREVIATION

FGD - Focus group discussion

HBM - Health Belief Model

HE - Health education

HIV - Human Immunodeficiency Virus

HBV - Hepatitis B

MMMC - Melaka Manipal Medical College

NSI - Needle sticks injury

PPE - Post exposure prophylaxis

SPSS - Statistical Package for Social Science

UKM - UniversitiKebangsaan Malaysia

Df - Degree of freedom

Chi - Chi square

P - P value

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CHAPTER I

INTRODUCTION

1.1 Background

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 mainly of hepatitis B; hepatitis C and human immune deficiency (HIV) virus can be transmitted through needle stick injuries. (Yang et al. 2004, Ng and Hassim 2007)World Health Report mentioned that more than 2 million cases of infectious disease from sharp injuries occurred annually. The risk of transmission of HIV to health care workers after exposure to per-cutaneous HIV infected blood has been estimated as 3 per 1000 .(Shariati et al. 2007) 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 body fluid from syringe to specimen containers are common activities associated with sharp injuries.(WHO 2011) 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 luck 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. (Patrick 1993)

The World Health Organization has estimated that in developing regions, 40%–65% of Hepatitis B virus and Hepatitis C virus infections in health care workers are attributable to per-cutaneous occupational exposure.(WHO 2003)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. (Shen et al. 1999)Another study found that 84% of surveyed medical students suffered at least one occupational sharp exposure during their clinical training. (Pruss-Ustun et al. 2005)Lack of experience and technical expertise is related to risk of needle-stick injuries. (Norsayani and Hassim 2003). This

suggested that unskilled students may be at a highest risk during their medical training and this is also related to their risk perception (Kwee and Ka'anehe 1999, English 1992). According to Jantanet al most of the sharps injuries were due to the absence of sharps bin at the site of the procedure and neglected needles are left in trays, kidney dishes, among drapes and among trash. It also stated that noncompliance or failure to adhere to guidelines can become a contributory factor to needle stick injuries (Jantan 2000).

Davies et al stated that in the operating theatre, 39% of the injuries were self-inflicted while 61% were inflicted by the surgeon or assistant and the majority of the injuries occurred during transfer of sharps between personnel for e.g. direct hand transfer of needles or scalpel blades on handle(Davis 1999).

1.2 Rationale of the study

Medical Schools in Malaysia generally offer a five-year undergraduate program for future doctors. It is compulsory for students who have graduated from medical school to work in the Government Hospital under horsemanship program for duration of three years. Under section 40 of the Malaysian Medical Act 1971, every practitioner has to serve a minimum period of continuous total period of not less than three years within the public services upon being given full registration as a doctor.

There were total 28 medical colleges in Malaysia nine in government and nineteen in private sector. There were studies regarding needle stick injuries of medical students in Malaysia (10) but there were no structured prevention model for the students. MelakaManipalMmedicalcollege in one of private medical college situated in Melaka Malaysia.Itwas the twin medical university with Manipal University, India. The students from Malaysia who are eligible to pursue the medical profession, the first five semesters (two and a half year) have to be studied in Manipal campus India and the second five semesters (two and a half year) are in Melaka campus Malaysia. Total number of students in the year 2012 is 503 students in medicine.

Base on the base line data 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 KarbinasenMalaysia (16.3%) but knowledge and practice concern with universal precaution and blood safety measure were found to be encouraged. (Kye Mon Min Swe 2012)

The introduction of health educational programs can produce positive changes in both knowledge and attitudes toward safety protocols[13] and inclusion of blood and body fluid safety precautions in medical college curricula resulted in a more compliant attitude towards safety procedures that protect against accidental blood borne pathogen transmission(Wiwanitkit 2002).

Medical students are the future doctors and they have underlying high intelligent level to learn medical profession. So that rather than given them ordinary health talk, I would like to promote their underlying knowledge by introducing Melaka Manipal Medical College needle stick injury prevention model.

There is no specific intervention program for the medical students who are studying in Melaka Manipal Medical College, and they have less exposure to topic regarding universal precaution of needle sticks injury and no specific lecture topic for their curriculum. By doing so, Health Education Intervention will be conducted among the students regarding universal precaution for preventing needle sticks injury. The model is introducing health talk regarding needle stick injury prevention for three consecutive times with one month interval to randomly selected students together with performing role play and hand on training total half day workshop. And access their knowledge and perception by using the questionnaires.

By doing this 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. This study will find out the effectiveness of Melaka Manipal medical college needle stick injury prevention model and can apply especially for health profession during their student's life.

1.3 **Research question**s

Is there decreased in prevalence of needle sticks injury after introducing MMMC NSI prevention health education model?

Are there any changes in knowledge of needle stick injury after introducing MMMC NSI prevention health education model?

Are there any changes in perception of riskof needle stick injury after introducing MMMC NSI prevention health education model?

1.4 Research Objectives

General Objective

To study the effectiveness of MMMC needle stick injury prevention model on accidental needle sticks injury prevention among medical students in Melaka, Malaysia

Specific Objectives

1. To determine the prevalence of needle stick injury among medical students in term of number of cases and episodes of injuries among intervention and controlled group
2. To determine the knowledge of needle stick injuryamong intervention and controlled group
3. To find out the risk perception of needle stick injury among intervention and controlled group
4. To determine the practice of needle stick injury preventive measures before and after intervention
5. To compare the knowledge of needle sticks injury before and after intervention
6. To compare the risk perception of needle stick injury before and after intervention

1.5 Research Hypothesis

- There are increased in knowledge of needle stick injury after MMMC NSI prevention health education intervention.
- There are increased in risk perception of needle stick injury after MMMC NSI prevention health education intervention.
- The prevalence of needle stick injury was decreased in the students who have exposure to MMMC needle sticks injury prevention model

1.6 Operational definition

- **Needle stick injury**

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.

- **Cases of needle stick injuries**

Cases of needle stick injuries were respondents who had one or more experiences of needle stick injury. The episodes of needle stick injury are the total number of injuries which were experienced by the respondents previously.

- **Knowledge**

The student's ability to answer the transmission route of blood borne pathogen, procedure dealing with syringe, universal precaution measure and post exposure prophylaxis after needle sticks injury.

- **Perception**

It was defined as way of understanding upon risk factor and precautions of needle stick injury by the students. Perception of student, on their perceived susceptibility, seriousness, threat, benefit and barrier on needle stick injury.

- **Perceived susceptibility**

It was defined as one's belief regarding the chance of getting an infection, trouble or danger due to NSIs such as HCV, HBV and HIV infection.

- **Perceived seriousness**

One's belief of how serious a condition and its squeal of needle stick injury.

- **Perceived threat**

It was defined as one's belief regarding the possibility of trouble, danger or social impact such as transmission of HIV, Hepatitis B infection. It is the combine effect of perceive susceptibility and perceive seriousness

- **Perceived benefit**

It was defined as one's belief in the efficiency of the advised action to reduce risk or seriousness of impact. E.g. wearing the glove

- **Perceived barrier**

It was defined as one's belief about psychological barrier towards needle stick injury. (E.g. Reporting about injury or not)

- **Cue to action:**

It was strategies to activate one's readiness to prevention measure regarding needle stick injury.

- **Health education intervention**

  It was to give health education concerning needle stick injury and prevention to medical students by using MMMC NSI prevention model, pamphlets and procedures.

- **Medical Students**

  Students who have undergone preclinicaltraining in medicine and are now pursuing clinical training at hospital and clinic at Melaka (i.e. third year to final year students at Melaka, Manipal Medical College).

- **Hepatitis B immunization**

  Routine immunization of health workers against infection with HBV is an effective way to protect them.

- **Personnel protection**

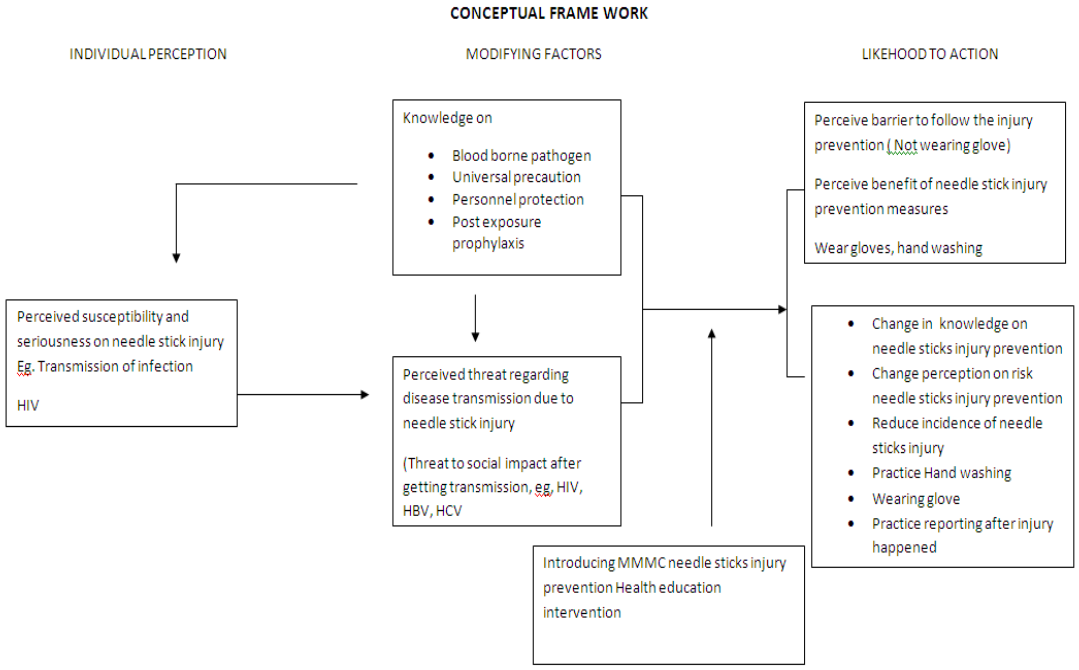
  Personnel protection is aapplication of personal protective equipment such as gloves, goggles or glasses, masks, gowns and plastic aprons for transmission of blood borne pathogen.

- **Universal precaution**

  Universal Precautions are a simple set of effective practices designed to protect health workers and patients from infection with a range of pathogens including blood borne viruses. E.g. .Hand washing , Preventing recapping of needles, Safe collection and disposal of needles, Wearing gloves and mask, eye protection and a gown etc.

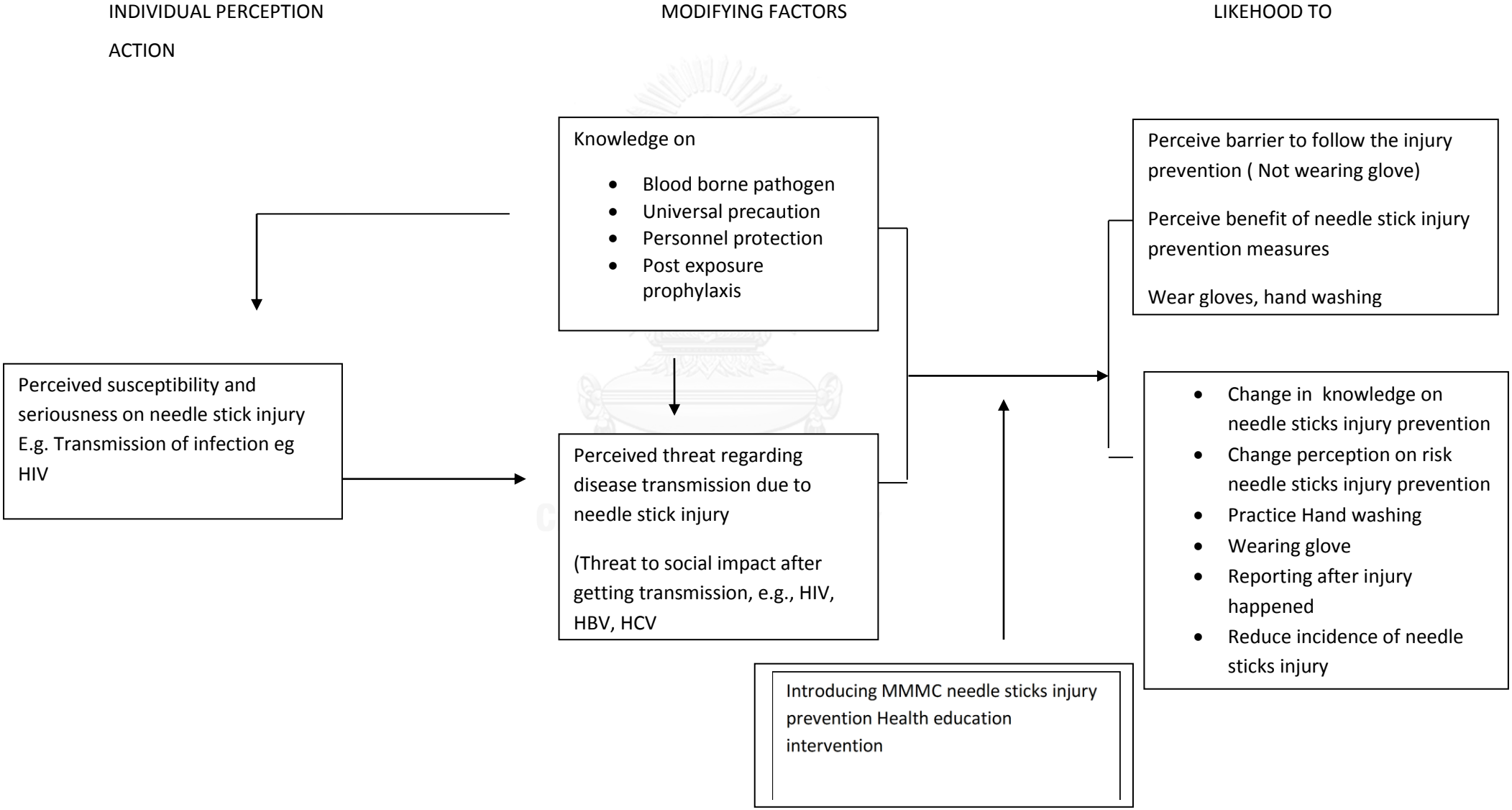
- **Melaka Manipal Medical College needle stick injury prevention model**

In MMMC NSI prevention health education intervention model, principle of health belief model is used and the training module produced by WHO and current practice done in the General Hospital in Melaka, MMMC NSI prevention health education intervention modelfor the medical student'swas produced.



1.7 Conceptual Framework

CONCEPTUALFRAME WORK (Modified Health Belief Model)



CONCEPTUAL TRAMEWORK

INDEPENDENT VARIABLE

VARIABLE

Intervention groups

Socio demographic characteristic of students

- Age
- Gender
- Exposure to health education
- Clinical posting

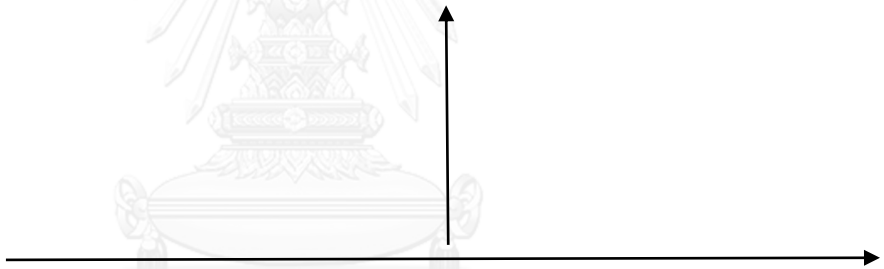
Underlying knowledge

Control groups

Socio demographic characteristic of students

- Age
- Gender
- Exposure to health education

Introducing MMMC needle sticks injury prevention Health education intervention



DEPENDENT

Knowledge on needle sticks injury prevention

- Blood borne pathogen
- Universal precaution
- Personnel protection
- Post exposure prophylaxis

Perception

- Perceived susceptibility and seriousness on needle stick injury E.g. Transmission of infection eg HIV

Prevalence of needle sticks injury

Practice / Behaviour

- Practice Hand washing
- Wearing glove
- Reporting after injury

No intervention

III. THEORATICAL FRAMEWORK

Explanation of theoretical framework

The framework is based on the Health Belief Model and Precede-Proceed model

Individual Perception

Regarding individual perception, the students have their own individual perception based on their knowledge on needle stick injury, risk of transmission of diseases and practice of reporting procedure and universal precaution measures.

(1) **Perceived susceptibility** (one's belief regarding the chance of getting an infection, trouble or danger due to NSIs such as HCV, HBV and HIV infection)
(2) Perceived seriousness (One's belief of how serious a condition and its squeal of needle stick injury). Ones can have underlying perceived susceptibility and seriousness on needle stick injury complication and if he/she get some more knowledge regarding particular subjects that can leads to perceived threat that'smotivate behavioral change.

Modifying factors

The factors leading to motivation to practice including the student' knowledge toward needle sticks injury prevention measure such as universal precaution, post exposure prophylaxis and safe injection practice.
(3) Perceived threat (one's belief regarding the possibility of trouble, danger or social impact such as transmission of HIV, Hepatitis B infection)

Cue to action is the availability and accessibility to needle stick injury prevention health education service and here by conducting needle stick injury prevention health education intervention by using MMMC needle sticks injury prevention model such as health education talks, lectures training.

Likelihood to action

Health education intervention promote increase awareness regarding transmission of infection through needle stick injury, universal precaution measures, personnel

protection and post exposure prophylaxis measures. That promotes reduction in incidence of needle injury and change to their positive risk perception.

CHAPTER II

LITERATURE REVIEW

2.1 Needle stick injury

Definition of needle sticks injury

Needle stick injury is a penetrating stab wound from a needle (or other sharp object) that may result in exposure to blood or other body fluids. The main concern is exposure to the blood or other body fluids of another person who may be carrying infectious disease. The pathogens of primary concern are the human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV) (Jeffe et al. 1997).

2.2 A strategy to protect health workers from infection with blood borne viruses

In the course of their work, health care workers are exposed to blood and other body fluids. And they are at risk of infection with blood borne viruses including human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV). (WHO 2003)

Occupational exposure to blood can result from per-cutaneous injury (needle-stick or other sharps injury), muco-cutaneous injury (splash of blood or other body fluids into the eyes, nose or mouth) or blood contact with non-intact skin. The most common form of occupational exposure to blood and the most likely to result in infection is needle sticks injuries. The most common causes of needle-stick injury are two-handed recapping and the unsafe collection and disposal of sharps waste. Health workers in areas such as operating, delivery and emergency rooms and laboratories have a higher risk of exposure. Among the 35 million health workers worldwide, about 3 million experience percutaneous exposures to blood borne pathogens each year; two million of those to HBV, 0.9 million to HCV and 170 000 to HIV. These injuries may result in 15 000 HCV, 70 000 HBV and 1 000 HIV infections. More than 90% of these infections occur in developing countries.(WHO 2003)

Most of the blood exposures in health care settings are preventable. Strategies to protect health workers include implementation of Universal Precautions, immunization against hepatitis B, provision of personal protection and the management of exposures. Elimination of unnecessary sharps and injections also minimizes the potential for exposure. Successful implementation of these strategies requires an effective infection control committee with support from the health setting management team.

The guidelines contain to set up and empower an Infection Control Committee, to use surveillance to identify risk situations and procedures and modify them wherever possible, to achieve compliance with Universal Precautions though ongoing commitment, training of all staff members and provision of supplies, to immunize health workers against hepatitis B early in their career, to ensure availability of personal protective equipment, to manage cases of exposure to blood and body fluids and to enforce safe practices though monitoring and supervision.(WHO 2003)

2.2.1 Universal Precaution

Universal Precautions are a simple set of effective practices designed to protect health workers and patients from infection with a range of pathogens including blood borne viruses. These practices are used when caring for all patients regardless of diagnosis. They are applied universally.[7]

Universal Precautions includes the following interventions:

- Hand washing after any direct contact with patients
- Prevention of two-handed recapping of needles
- Safe collection and disposal of needles (hypodermic and suture) and sharps (scalpel blades, lancets, razors, scissors), with required puncture- and liquid-proof safety boxes in each patient care area
- Wearing gloves in any contact with body fluids, non-intact skin and mucous membranes
- Wearing a mask, eye protection and a gown (and sometimes a plastic apron) if blood or other body fluids might splash

- Covering all cuts and abrasions with a waterproof dressing
- Careful cleaning up spills of blood and other body fluids
- Using a safe system for health care waste management and disposal

2.2.2 Hepatitis B immunization

Routine immunization of health workers against infection with HBV is an effective way to protect them. HBV is the most infectious blood borne virus and in many parts of the world, the most prevalent. The long-term squeal of HBV infection includes cirrhosis and hepatocellular carcinoma. (WHO 2010)

- Immunize health workers early in their career
- Pre-vaccination serological testing is unnecessary but may save resources if feasible and if prevalence of immunity is high
- Use a 0, 1 and 6 months schedule of three injections
- If possible, control antibody levels between two to six months after the last dose
- Do not administer boosters routinely as protection is lifelong

2.2.3 Personal protection

Personal protective equipment includes gloves, goggles or glasses, masks, gowns and plastic aprons. Where possible, use needle-stick prevention devices (i.e., devices where the sharp is sheathed or retracted after use)

- Ensure adequate supplies of personal protective equipment in all areas
- Involve staff in the selection of personal protective equipment as equipment that is of poor quality or uncomfortable to wear will not be used
- Train staff in the correct use of personal protective equipment
- Use influential senior staff as role models to promote personal protective equipment
- Monitor compliance and inappropriate use. Inappropriate glove use wastes resources.

- Compliance with eye protection often requires additional efforts
- Dispose of used personal protective equipment safely

2.2.4 Post-exposure management

The risk of infection following a needle-stick injury with needle from an infected source patient is ~ 0.3% for HIV, 3% for hepatitis C and 6- 30% for hepatitis B. An effective response to occupational exposure to blood or other body fluids involves the following:

- Development guidelines outlining the first aid required, reporting mechanism and procedure to be followed for post-exposure prophylaxis and follow-up testing
- Dissemination of guidelines
- Information, education and communication
- Provision of support and counselling
- Where possible and indicated, provision of post-exposure prophylactic medication
- Analyse reported cases of exposure to improve practices (WHO 2003)

2.3 Health education

Health education is a process that informs, motivates and helps people to adopt and maintain healthy practice and life styles, advocates environmental changes as needed to facilitate this goal and conducts professional training and research to the same end (Somers 1997).

Health education is concerned with promoting health as well as reducing behaviours induced diseases. In other words health education is concerned with establishing or inducing changes in personal and group attitudes and behaviours that promote healthier living (Park 2010).

2.3.1 Practice of health education

Health education is carried out at three main levels – individual, group and general public through mass media of communication. For effecting changes in attitudes and behaviours, we rely on individual and group approach.

1. **Individual and family health education**

There are plenty of opportunities for individual health education. It may be given in personal interviews in the consultation norm of the doctor or in the health centre or in the homes of the people. The individual comes to the doctor or health centre because of illness. Opportunity is taken in educating him on matters of interest – diet, environmental hygiene etc: Topics for health counselling may be selected according to the relevance of the situation. By such individual health teaching, we will be equipping the individual and the family to deal more effectively with the health problems. (Motarjemi 2014)

2. Group health education

Our society contains groups of many kinds – school children, mothers, industrial workers, patients etc. Group teaching is an effective way of educating the community. The choice of subject in group health teaching is very important, it must relate directly to the interest of the group. For example, we should not broach the subject of tuberculosis control to a mother who has come for delivery: we should talk to her about child birth and baby care. Similarly school children may be taught about oral hygiene, tuberculosis patients about tuberculosis and industrial workers about accidents. We have to select also the suitable methods of health education including audio – visual aids for successful group health education.

(a) Lecture

(b) Group Discussion

Group discussion is a very effective method of health teaching. It is a ‘two way’ communication. People learn by exchanging their views and experiences. The method is useful when the group have common interest and similar problems.

The group discussion is a very effective method of bringing about changes in the health behaviour of people. When a group of people decide collectively to accept an idea and act on it, the group acceptance and is strengthens and reinforces and gives the individual member courage to do the same. A well conducted group discussion is usually effective in reaching the right decisions and securing desirable action.(Park 2010)

C. Panel Discussion

In a panel discussion, 4 to 8 person who are qualified to talk about the topic sit and discuss a given problem or the topic, in front of a large group or audience. The panel comprises, a chairman or moderator and from 4 to 8 speakers. T he chairman opens the meeting , welcomes the group and introduces the panel speakers .He introduces the topic briefly and invites the panel speakers to present their points of view . There is no specific agenda, no order of speaking and no set speeches. Panel discussion can be an extremely effective method of education, provided it is properly planned and guided (Garland 1951, Kelley 1950) .

D. Symposium

A symposium is a series of speeches on a selected subject. Each person or expert presents an aspect of the subject briefly. There is no discussion among the symposium members unlike in panel discussion. In the end the audience may chairman makes a comprehensive summary at the end of entire session(Garland 1951)

E. Workshop

The work shop is the name given to a novel experiment in education. It consists of a series of meetings, usually four or more, with emphasis on individual work, within the group, with the help of consultants and resource personnel. The total workshop may be divided into small groups and each group will choose a chairman and a recorder. The individuals work, solve a part of the problem through their personnel effort with the help of consultants, contribute to group work and group discussion and leave the workshop with a plan of action on the problem.

Learning takes place in a friendly, happy and democratic atmosphere, under expert guidance. The workshop provides each participant opportunities to improve his effectiveness as a professional worker.(R. 1996)(Garland 1951, Kelley 1950)

(F) Role Playing

Role playing is valued in a situation cannot be expressed in words, and the communication can be more effective if the situation is dramatize by the group. The group members who take part in socio-drama exact their roles as they have observed or experienced them. The audience are supposed to pay sympathetic attention to what is going on. Suggest alternative solutions at the request of the leader and if requested come up and take an active part by demonstrating how they feel a particular role should be handled, or the like. It is a useful technique to use in providing discussion of problems of human relationship.

Among all those methods of health education, our MMMC NSI prevention health education model will conduct by means of workshop with health talk, role play performances, and focus group discussion methods.

2.4 Qualitative research

Qualitative research is a type of scientific research. In general terms, scientific research consists of an investigation that: seeks answers to a question, systematically uses a predefined set of procedures to answer the question, collects evidence, produces findings that were not determined in advance, produces findings that are applicable beyond the immediate boundaries of the study.

Qualitative research shares these characteristics. Additionally, it seeks to understand a givenresearch problem or topic from the perspectives of the local population it involves. Qualitativeresearch is especially effective in obtaining culturally specific information about the values,opinions, behaviours, and social contexts of particular populations.(Bernard 1995)

What can we learn from qualitative research? The strength of qualitative research is its ability to provide complex textual descriptions of how people experience a given research issue. It provides information about the "human" side of an issue – that is, the often contradictory behaviours, beliefs, opinions, emotions, and relationships of individuals. Qualitative methods are also effective in identifying intangible factors, such as social norms, socioeconomic status, gender roles, ethnicity, and religion, whose role in the research issue may not be readily apparent. When used along with quantitative methods, qualitative research can help us to interpret and better understand the complex reality of a given situationand the implications of quantitative data.

Although findings from qualitative data can often be extended to people with characteristics similar to those in the study population, gaining a rich and complex understanding of a specific social context or phenomenon typically takes precedence over eliciting data that can be generalized to other geographical areas or populations. In this sense, qualitative research differs lightly from scientific research in general. The three most common qualitative methods, explained in detail in their respective modules, are participant observation, in-depth interviews, and focus groups discussion. Each method is particularly suited for obtaining a specific type of data. Participant observation is appropriate for collecting data on naturally occurring behaviours in their usual contexts. In-depth interviews are optimal for collecting data on individuals' personal histories, perspectives, and experiences, particularly when sensitive topics are being explored.(Denzin 2000, Bernard 1995)

Focus Group Discussion (F G D)

Focus groups are effective in eliciting data on the cultural norms of a group and in generating broad overviews of issues of concern to the cultural groups or subgroups represented.

Participants should be the same socioeconomic group or have a similar background in relation to the issue under investigation (in this study all medical students). The age and gender of the group should facilitate free discussion. To obtain information on a topic from several different perspectives, a focus group for each major category

should be organized. Participants should be invited at least one or two days in advance; and the general purpose of the F G D should be explained.

Regarding physical arrangements, Communication and interaction during the F G D should be encouraged in every way possible. Arrange the chairs in a circle at quiet area, adequately lighted. Try to hold the FGD in a neutral setting that encourages participants to freely express their views.

During Preparing a discussion guide, first should be a written list of topics to be covered. It can be formulated as a series of open ended questions. Guides for different groups gathered to discuss the same subject may vary slightly. Depending on their knowledge or attitudes and how the subject can first be explored with them. One of the members of the research team should act as facilitator for the focus group. One should serve as a recorder.(McDowell 2006)

Functions of the facilitator

The facilitator should not act as an expert on the topic. His or her role is to stimulate and support discussion. The facilitator introduce himself and the recorder .Introduce the participants by name or ask them to introduce themselves. Put the participants at ease and explain the purpose of the FGD, the kind of information needed, and how the information will be used. The discussion will be encouraged by enthusiastic, lively, and humorous and show your interest in the groups ideas. Formulate questions and encourage as many participants as possible to express their views. Remember there are no ‘right’ or ‘wrong ‘answers. React neutrally to both verbal and non verbal responses.

The involvement of participants was encouraged by using one participant’s remark to direct a question to another and by using the person’s name, requesting his opinion, making more frequent eye contact when dealing with a reluctant participant.

Observe non verbal communication by ‘what are they saying? What does it mean to them? Tone of voice, facial expressions, body language of participant should be aware. Avoid being placed in the role of expert. Do not try to comment on everything

that is being said. Do not feel you have to say something during every pause in the discussion. Wait a little and see what happens.

The rhythm of the meeting should control, but in a un- obstructive way by listen carefully and move the discussion from topic to topic .Subtly control the time allocated to various topics so as to maintain interest. If participants spontaneously jump from one topic to the other, let the discussion continue for a while because useful additional information may surface and then summarize the points brought up and reorient the discussion. Take time at the end of the meeting to summarize, check for agreement and thank the participants. (McDowell 2006)

The recorder should keep a record of the content of the discussion as well as emotional reactions and important aspects of group interaction. Assessment of the emotional tone of the meeting and the group process will enable you to judge the validity of the information collected during the FGD.

Items to be recorded include date, time, and place, names and characteristics of participants, general description of the group dynamics (level of participation, presence of dominant participant, level of interest), opinions of participants recorded as much as possible in their own wards, especially for key statements, emotional aspects (e. g reluctance, strong feelings attached to certain opinions) and vocabulary used particularly in FGDs that are intended to assist in developing questionnaire or health education materials. (Moretti et al. 2011)

It is highly recommended that a tape recorder be to assist in capturing information. Even if a tape recorder is used, notes should be taken as well, in case the machine mal functions and so that information will be available immediately after the session. A supplementary role for the recorder could be to assist the facilitator (if necessary) by drawing his or her attention to missed comments from participants and missed topics (the recorder should have a copy of discussion guide during the FGD) .If necessary, the recorder could also help resolve conflict situations that the facilitator is having difficulty handling.

The number of focus group sessions to be conducted depends upon project needs, resource and whether new information is still coming from the sessions. One should plan to conduct at least two different FGDs for each subgroup (for example two for males and two for females).

A focus group session typically lasts up to an hour and a half. Generally the first session with a particular type of group is longer than the following ones because all of the information is new. Thereafter, if it becomes clear that all the groups have the same opinion on particular topics. The facilitator may be able to move the discussion along more quickly to other topics that still elicit new points of view.

Analysis of results

After each focus group session, the facilitator and recorder should meet to review and complete the notes taken during the meeting. This is also the right moment to evaluate how the focus group went and what changes might be made when facilitating future group. Then a full report of the discussion should be prepared that reflects the discussions as completely as possible: using the participants own words. List the key statements, ideas, and attitudes expressed for each topic of discussion. After the transcript of the discussion is prepared code the statements right away, using the left margin? Write comments in the right margin. Formulate additional questions if certain issues are still unclear or controversial and include them in the next FGD. Further categorize the statements for each topic, if required. Compare answers of different sub groups. Summarize the date in a matrix, diagram, flow chart, or narrative, if appropriate and interpret the findings. Select the most useful quotations that emerged from the discussions to illustrate the main ideas. (McDowell 2006)

Report writing

Start with a description of the selection and composition of the group of participants and commentary on the group process. So the reader can assess the validity of the report finding. Present your findings, following your list of topic and guided by the objectives of your FGD. Include quotations whenever possible, particularly for key statement.

2.5 Health Belief Model

Perception and behaviour

Perception

Perception is "the way you notice things, especially with the sense or an idea, a belief or an image you have as a result of how you see or understand"

Encounters between individuals and the health system are mediated by perception. Perceptions include beliefs, expectations, evaluations, and other cognitive elements. Patients and clients enter the encounter with their own personal – often-idiosyncratic-perceptions of their conditions, of medical and other health professionals and of the institutions in which care is sought or provided (Goham J 1988)

Perception related to behaviour

Human's health behaviour is motivated primarily by a desired to protect him against threats to the health and safety. A person's way of life is closely related to the illness that he perceives as threatening. Whether or not a person takes, a particular health action depends on whether he believes that he can contract the disease and whether he believes that the disease would have some undesirable consequence.

Perception of "undesirable consequences" may encompass any direct physical effects, such as inability to work, costs of treatment, or discomfort. However, perception of threat usually is latent_ it is there, it is below the threshold of awareness. Yet, under the impact of special events, the threat is suddenly brought to his awareness by a stimulus. The "threatened" person is likely to experience a desire to protect himself against the threat. However, in order to do anything about it, he must perceive some action that he believes will provide him with such protection. Moreover, that he sees as one that he is able to take.(Goham J 1988)

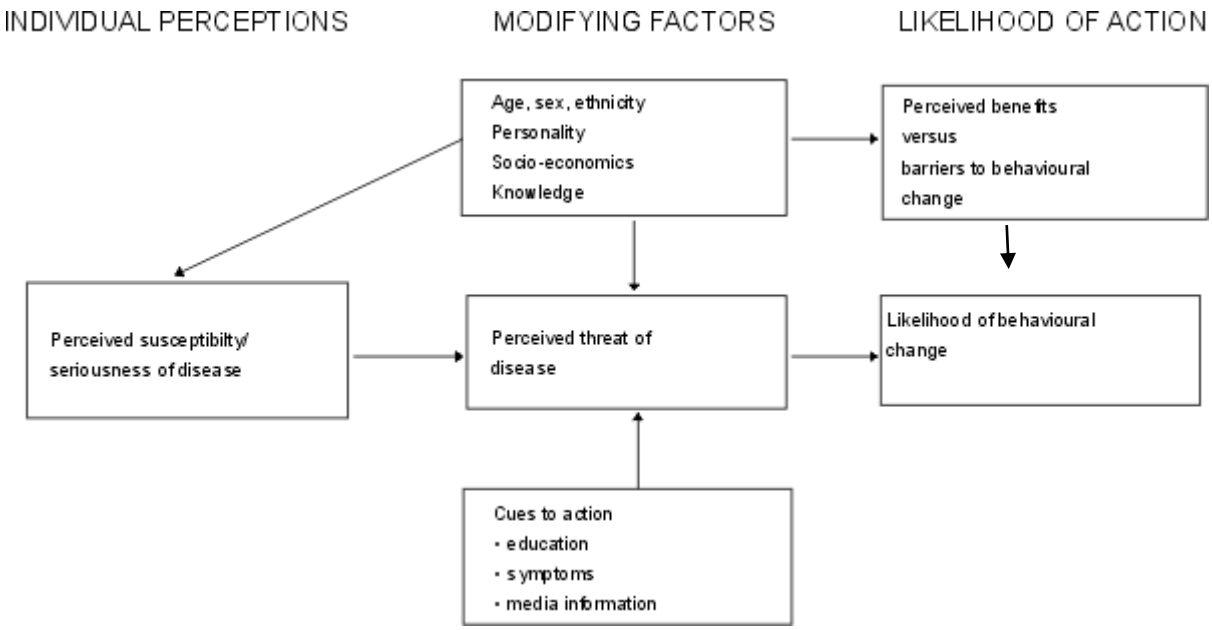
Sometimes, the action that a person perceives as effective and available may be easy and convenient. But, it may be inconvenient, undesirable, and unpleasant. If such negative characteristics seem to outweigh the presumed benefits to his health, he may choose some other less unpleasant action, or he may not do anything. Another

factor to be considered is individual's sense of urgency. It means that he believes the action to be needed immediately. The further in the future a threat to one's health lies, the less urgent it tends to appear. Considering all of these factors, one can recognize how people are torn between conflicting beliefs and motives. The most crucial conflicts are those that occur between contradictory emotions and those arise between a person's emotions and what he knows right. What an individual will ultimate do depends on how he resolves such conflicts. Some of perceptions and beliefs stem from early childhood experiences and the influences of parents' attitudes and practices; and these, in turn are greatly influenced by cultural influences. Others are learned later from peers.(Nicole Firlotte 1995)

All of the factors relate to health behaviour, a person must make his own decisions. Every individual must decide whether see a physician or try his first taste of tobacco. But, a decision made and actions taken lead to repetition and may become habitual. From them on, a person lose some control over the particular action. Thus, certain kinds of habit become established. Even though habituated or addictive person feels highly threatened by a danger created by their habit and is deeply motivated to protect him by breaking the habit (Nicole Firlotte 1995).

2.5.1 Health Believed Model

Conceptual Model

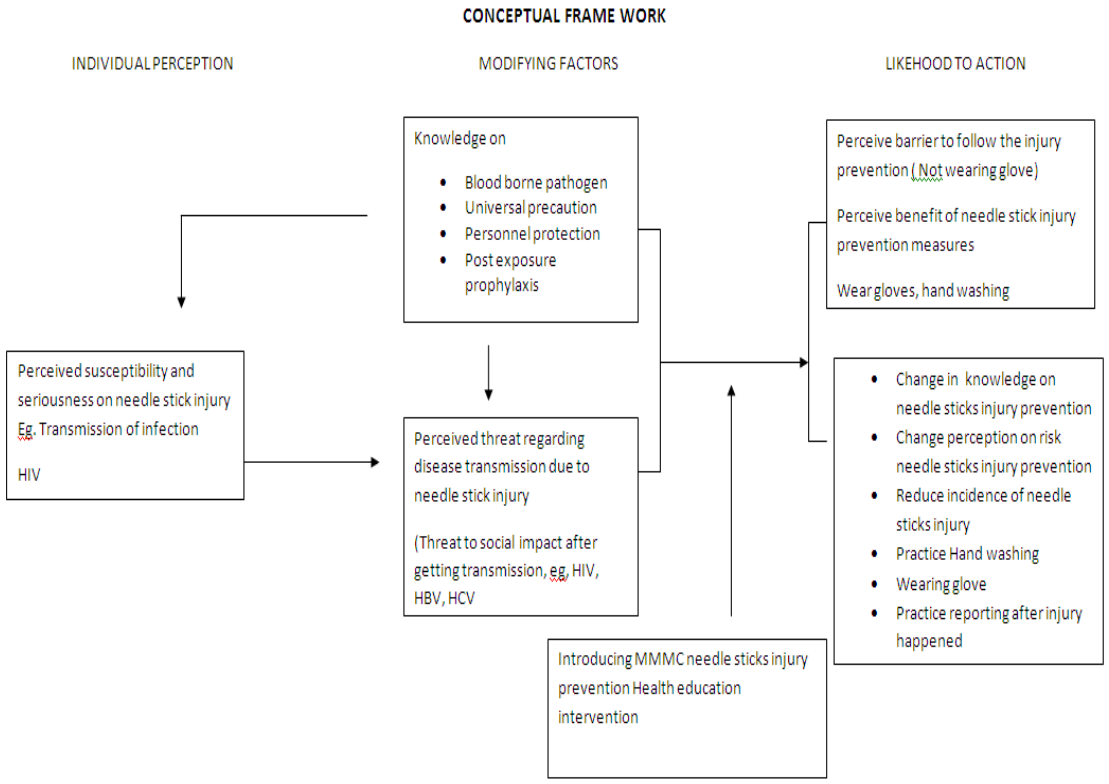


The Health Belief Model (HBM) is a psychological model that attempts to explain and predict health behaviours. This is done by focusing on the attitudes and beliefs of individuals. The HBM was first developed in the 1950s by social psychologists Hoch Baum, Rosenstock and Kegels working in the U.S. Public Health Services. The model was developed in response to the failure of a free tuberculosis (TB) health screening program. Since then, the HBM has been adapted to explore a variety of long- and short-term health behaviours, including sexual risk behaviours and the transmission of HIV/AIDS.(Glanz K 2005)

The HBM was spelled out in terms of four constructs representing the perceived threat and net benefits: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. These concepts were proposed as accounting for people's "readiness to act." An added concept, cues to action, would activate that readiness and stimulate overt behaviour. A recent addition to the HBM is the concept of self-

efficacy, or one's confidence in the ability to successfully perform an action. This concept was added by Rosenstock and others in 1988 to help the HBM better fit the challenges of changing habitual unhealthy behaviours, such as being sedentary, smoking, or overeating. (Glanz K 2005, Corner 2010)

In MMMC NSI prevention health education intervention model, principle of health belief model is used.



The students perceived susceptibility that is his belief regarding the chance of getting an infection, trouble or danger due to NSIs such as HCV, HBV and HIV infection and perceived seriousness that is his belief of how serious a condition and its squeal of needle stick injury

These perceived susceptibility and seriousness combine to perceived threat that is his belief regarding the possibility of trouble, danger or social impact such as transmission of HIV, Hepatitis B infection and these factor can be modified depend

on the knowledge of the students upon the prevention of needle stick injury, universal precaution measure and post exposure prophylaxis.

Perceived benefit is the belief in the efficiency of the advised action to reduce risk or seriousness of impact. E.g. Wearing the glove and perceived barrier (one's belief about the tangible and psychological barrier towards needle stick injury) E.g., Not wearing glove that effect on the likelihood to action or behavioral change that is

- Change in knowledge on needle sticks injury prevention
- Change perception on risk needle sticks injury prevention
- Practice Hand washing
- Wearing glove
- Reporting after injury happened
- Reduce incidence of needle sticks injury

For the behavioral change, availability and accessibility to needle stick injury prevention health education services are needed among students and here by introducing MMMC needle sticks injury prevention model in form of workshop that contain health education talks, lectures and training.which will promote increase awareness regarding transmission of infection through needle stick injury, universal precaution measures, personnel protection and post exposure prophylaxis measures.

2.6 THE MELAKA MANIPAL MEDICAL COLLEGE (MMMC)

MMMC was the twin College of Manipal University India. MMMC was established in 1997 through the vision of Dr. RamdasPai, Chancellor of Manipal University, and the instrumental efforts of the late Datuk K Pathmanaban, former Malaysian Deputy Minister of Health. They recognized that the problem of a shortage of doctors in the country at the time could be effectively addressed if more Malaysian students were given the opportunity to achieve their aspirations of becoming doctors and healthcare professionals. (MMMC 2012)

MMMC admitted its first batch of MBBS students in 1997 with the support of experienced medical educationists from Manipal University who helped in the implementation of the medical programme. This consistency in the quality of education is one of the reasons behind the strategic tie-up that resulted in the formation of MMMC, and it is a relationship that has proven extremely successful due to MMMC's own vision of serving the nation by providing quality medical education and producing highly competent doctors. The cornerstone of any education provider is by and large its teaching faculty and it is no different with MMMC. The college's commitment to continuity and culture of building on its consistency is apparent in the long tenures of its teaching faculty.

The medical students from MMMC have to pursue first two years (non clinical training) in India and last three years clinical training in Malaysia. In academic year 2012 there were 503 students from year three to year five studying in MMMC.(MMMC 2012)

Figure (2) Melaka Manipal Medical College

CHAPTER III

RESEARCH METHODOLOGY

3.1 Site of Study

This study wasconducted at Melaka Manipal Medical College which is located in the Melaka, Malaysia.

3.2 Target Population

The target population was the medical students in Malaysia. There were total 28 medical colleges in Malaysia 9 in public and 19 in private sectors.

3.3 Study population

Medical students from Melaka Manipal Medical College, Melaka, Malaysia (Third year to final year who are pursuing clinical training)

(Melaka Manipal Medical College is twin medical university with Manipal University, India. The students from Malaysia who are eligible to pursue the medical profession, the first two and a half year have to be studied in Manipal campus India and the second five two and a half year are in Melaka campus Malaysia. Total number of students in the year 2012 is 503 students in medicine.

3.4 Research design

Randomized controlled trial with pre-test and post-test design was conducted. Intervention group was evaluated the effectiveness of MMMC needle stick injury prevention model

MMMC needle stick injury prevention model introduced to experimental group and no intervention in control group

3.5 Study Period

From September 2012 to September 2013

3.6 Sample size calculation

$$n = \frac{2(Z_{\alpha/2} + Z_{\beta})^2 \, p(1-p)}{\Delta^2}$$

For 0.05 significance level, Zα = 1.96

For 80% power, Zβ = 0.84

P_T = 0.7 (Proportion of students who have high knowledge in needle stick injury prevention after intervention)

P_C = 0.5 (Proportion of students who have high knowledge in needle stick injury prevention before intervention)

$Z_{\alpha/2}$= 1.96 at α = 0.05 Z_β = 0.84 at β = 0.2 (power 80),

P = $(P_T+P_C)/2$= 0.6 Δ = 0.2

$$\mathbf{n = \frac{2\,(1.96+0.84)^2 \times 0.6(0.4)}{(0.2)^2}}$$

= 94.08 (+ 10% attrition) = 115

= 115 in each group

(Lemeshow S 1990)

3.7 Sampling technique and procedure

There are total 503 students from year 3 to year 5 among medical students

Randomization for experimental group

Selection Procedure

Total 503 students from year 3 to 5
Year 3 133
Year 4 250
Year 3 120

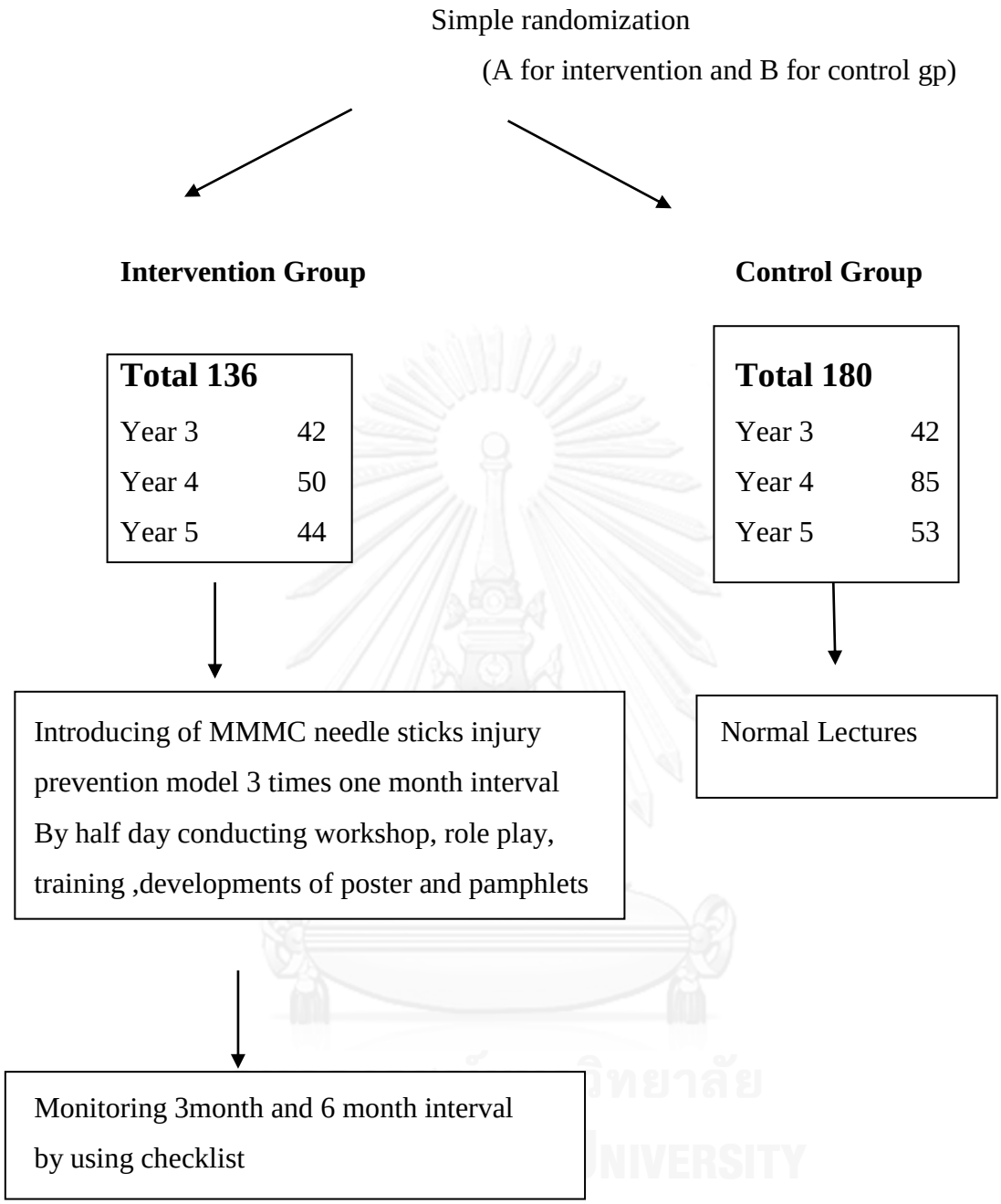
Assessed for eligibility criteria

After that, simple randomization by selecting students ID according to their clinical posting to get uniform clinical exposure (total 6-8 posting depend on clinical year)

Year 3 have 6posting – 7 from each posting = 42

Year 4and 5 have 8 posting – 5 from each posting= 40

Posting	**Med**	**Surgery**	**O&G**	**Paed-diatric**	**Orthopae-dics**	**Community medicine**	**ENT**	**Eye**	**Psychia-try**	**Total**
Year 3	23	21	23	22	No	22	No		22	**133**
Sample	7	7	7	7	students	7	students		7	**42**
Year 4	28	27	28	28	28	27	28	28	28	**250**
Sample	6	5	6	6	6	5	5	5	6	**50**
Year 5	14	14	14	13	14	11	13	14	13	**120**
Sample	5	5	5	5	5	4	5	5	5	**44**
Total	18	17	18	18	11	16	10	10	18	**136**



503 students from Year 3, 4 and 5 MBBS students were randomized by their clinical posting. There are total 6-8 posting during their clinical year for example 6 clinical posting rotation in year 3(Medicine, Surgery, Obstetric, Community medicine and Psychiatry) and two more Orthopedics and Pediatrics in year 4. Because the students have different chances of performance depend on the posting for example

more exposure to needle in emergency outpatient department and family medicine compare with surgery.

Intervention group received two 40-minute health talk on the topics "Transmission of infection and handling of needle" for first intervention, after one month, "Universal precaution and hepatitis B immunization for second intervention and then after one month, " Post exposure prophylaxis" for third intervention and the other group received the topic but not concern with needle stick injury. For intervention group, after the health talk, role play by the students regarding "Transmission of infection and handling of needle" Universal precaution and hepatitis B immunization" and Post exposure prophylaxis, for about 45 minutes performed and training on hand washing step by step, training on how to fill up the report and training on disposal of waste product was conducted. And then, pamphlets and material developed by the students was introduced.

The content of three intervention program is different to avoid contamination among the intervention and control group.

Inclusion criteria

MMMC students from year 3 to 5 who are in clinical years

Exclusion criteria

Student who are not willing to participate in study

3.8 Data collection tools and method

Data Collection Tools

Qualitative Data Collection Methods

Qualitative data was collected in the form of Focus Group Discussion among students of final year who were not participated in intervention because they will be graduated soon.

Focus Group Discussions (FGDs)

Focus Group Discussions was utilized 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 that can apply on development of poster and pamphlet and modifying the questionnaires.

A focus group discussion guidelinewas developed as a guide whichwere based on their de 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 FGD groups. Each group contains eight students. One group with those students who exposed to needle sticks injury before with both male and female students and the other group with those who are unexposed. In both group students from each year was equally distributed.

Facilitator was senior house officer instead of researcher to promote rapport and reduce bias by use of leading questions. The researcher trained the students about how to conduct FGD, the purpose, technique and about the nature of the question ask. The discussion was in Malay and English as the students preferred and have to translate to English from the information recorded by tape recorder.

Quantitative data collection

Quantitative data was collected in the form of pretested self-administered questionnaires and the questionnaires were developed based on the health belief

model (Glanz K 2005). Each questionnaire consists of four sections. Section (A) consist of questions concerning socio demographic character, Section (B) consist of questions concerning practice of needle stick injury (C) Knowledge on risk of the needle stick injury, Section (D) consist of questions concerning risk perception towards needle stick injury.

Data Collection Method

For the base line data, the pretested structured questionnaires weredistributed to all the students. The purpose of the study was explained and inform for their consent to participate in the study. For the reliability and validity of questionnaires pilot study was done 30 on the final year medical students of Malaysia. Moreover, the content validity waschecked by experts after constructing the questionnaires.

MMMC Health Education Intervention model

Health Education Intervention wasconducted among the students regarding universal precaution for preventing needle sticks injury. Base on the training module produced by WHO and current practice done in the General Hospital in Melaka, training module for the medical student'swasproduced. In this module, detail training procedure and objectives and timetable of the program was added.

Health education material

1. Brochure/pamphlet
2. Reporting form by Ministry of Health Malaysia
3. Hand washing materials
4. Gloves
5. Needles and syringe
6. Disposal bins of needle and blood products

Procedures detailed

1. Health education talks by the specialist doctors.

   Each health talk was last for 45 minutes about Needle stick injury, transmission of diseases through needle injury, handling of needle and syringe, universal precaution measure and hepatitis B immunization, reporting after injury and other post exposure prophylaxis measures given by specialist from different disciplines such as surgeons, orthopaedic surgeon and community medicine.
2. Performing a play by the students on the needle stick injury and reporting procedure.The students from student's council werevoluntarily participated in performance.

   The scenario made by the researcher regarding delay reporting procedures, transmission of infection through needle injury when ones have not taken the precautions
3. Training regarding safe injection practice, post exposure prophylaxis (Reporting procedure and universal hand washing procedure step by step.

Handling and disposal of hospital waste and sharp objects by hand on training.

Activity

The activity contained firstly established the committee for Melaka Manipal Medical College Needle Stick Injury Prevention intervention program.

Committee members were,

Chaired by Head of department of Community Medicine, deputy chair by the researcher and surgeon, orthopaedic surgeon, representative from college administrative office, representative from hospital needle stick infection control team, student representative from each batch wasthe members of the committee.

Objectives of committee were,

1. To discuss about the focus group discussion
2. To give training for the facilitator students
3. To conduct the FGD
4. To draw the agenda for the workshop
5. To prepare the materials used in workshop example prepare slides, prepare scenario for performance, prepare material for training

Secondly, MMMC NSI prevention health education intervention workshop was implementation among intervention group three times in one month interval for three month

The first intervention: Intervention group received

1. Two 40-minute health talk on the topics “Transmission of infection and handling of needle”

2. Students performance about the story of HIV infected medical worker due to needle stick injury and

3. Training on proper handling of syringe and disposal according to WHO guidelines.

Second intervention after one month,

1. Healthtalks on “Universal precaution and hepatitis B immunization,

2. Student’s performance about importance of immunization for health care workers
3. Training on Hand washing procedure detail

Third intervention after one month,

1. Health talks on “Post exposure prophylaxis”

2. Student’s performance on injured medical students undergoing procedure detail for reporting and post exposure prophylaxis and

3. Training on filling up the report by the students.And then, pamphlets and material developed by the students will be introduced.

The control group received the topic but not concern with needle stick injury.

Then, monitoring and process evaluation of MMMC NSI prevention health education intervention program in 3 month and 6 month interval by using check list for needle stick injury precaution measure at the hospital and clinic.Check list was monitored by In charge nurses and content of checklist contain,

1. Hand washing before and after handling of needle
2. Wearing glove during handling with needle and blood products
3. Needle recapping after withdrawal of blood or not
4. Proper disposal of sharp into specific bin or not
5. Reporting after needle injury if needle stick injury occur

3.9 Data management and analysis

Quantitative Data Analysis

All the collected data was screened for accuracy. Incompleteness and inconsistency will be corrected by examining answers to all questions at the same time. Data will be analyzed by using SPSS, version 18.0.

Descriptive statistics such as mean, median and range wasdetermined. Paired T-test was used to compare the difference of continuous variables. McNemar's test wasused to compare the difference of categorical variables. Multiple logistic regression models will be used to adjust possible confounding variables. 95% Confidence Interval wascalculated with the level of significance wasset at 0.05. For pre and post intervention analysis for same population, Paired T testwasused and for comparison between intervention and control group, student t testwasused.

For knowledge and perception variable, several questions concerning about the opinion of the by respondents wasasked. The score wasgiven according to the respondent's answer and then the scores wassummed up. The knowledge part consists of 24 questions and the score is 1 or 2 for correct answer according to importance and 0 for incorrect or no response or missing value answer. The level of knowledge wascategorized into two groups high and moderate according to the distribution of knowledge score.

Perception wasmeasured in 5 categories according to the Likert scale(McDowell 2006). The attitude part consists of 13 questions and the questions consist of both negative and positive aspects. For positive questions, the score wasgiven 5 for strongly agree, 4 for agree, 3 for uncertain, 2 for disagree and 1 for strongly disagree. For negative questions, the score will be given 5 for strongly disagree, 4 for disagree, 3 for uncertain, 2 for agree and 1 for strongly agree. The level of perceptionwasdivided into 3 levels such as positive and negative.

Qualitative Data Analysis

The data which was from FGD through tape recorder was transcribed and crosscheck with the respondents. Translation into English language was done by interpreter and was checked for consistency before finalization. The data were coded, cleansed and then analysed.

The interviews were analysed by content analysis. Initially, interview transcripts were read for emergent themes, which were then coded.Care were taken to ensure the codes accurately captured therespondent's meaning. The codes in each interviewwere then compared with those in each otherinterview to create broader categories that linkedcodes across interviews (constant comparison13).Again, care was takento ensure that these broadercategories did not distort the respondent's meanings.For example, would be the category serving to linkthese themes.

3.10 Ethical Consideration

Both in quantitative and qualitative data collection, the purpose of survey was explained before data collection and oral consent was taken from each respondent.

The respondents were feel free to participate or withdrawal any time throughout the research. The name of the respondent was recorded and data will be coded in survey form. All the data were kept confidentially and none of the questionnaires could be traced back to the respondents.

Ethical approval was acquired from Ethical Review Board, Research Committee,Melaka Manipal Medical College and Chulalongkorn University.

CHAPTER IV

RESULTS

This study was a randomized controlled trialwascarried out to study the effectiveness of MMMC needle stick injury prevention model on accidental needle sticks injury prevention among medical and dental students in Melaka, Malaysia.

4.1 SOCIO DEMOGRAPHIC CHARACTER OF ALL STUDENTS

Table (1) showed that the majority of the students (44.6%) were age of 23years old. Mean age was (23) years. Youngest students were 20 years and oldest ones were 27 years old.Among 316students,(45.3%) were male and (54.7%) were female students.Regarding ethnicity among the respondents, most of the students, (41.8%) was Malay followed by (34.2%) Chinese, (20.9%) was Indian and others 3.2%.Regarding religion among the respondents, most of the students, (42.7%) was Islam followed by Buddhist (25.9%), Hindu (17.4%) and others 13.9%.. Regarding thehepatitis B vaccination among the respondents, immunization status by the students were increased from (76.9%) to (90.5%) and it was statistically not significant.

Regarding Distribution of exposure to health education about needle sticks injury prevention among the respondents, 79.4% of intervention group, 70.6% of control group and total 74.4% of students do not have exposure to health education about needle sticks injury prevention.

Table (1) Socio economic characteristics of students (N=316)

	Intervention Group		**Control group**		**P value**
Age	Frequency	Percentage	Frequency	Percentage	0.68
20	3	2.2	1	0.6	
21	22	16.2	24	13.3	
22	39	28.7	54	30	
23	57	41.9	84	46.7	
24	8	5.9	10	5.6	
25	7	5.1	7	3.9	
Range ; 20 to 27,Mean age; 23, SD- 1.25					
Gender					
Male	63	46.3	80	44.4	0.42
Female	73	53.7	100	55.6	
Ethnicity					
Malay	52	38.2	80	44.4	0.51
Chinese	51	37.5	57	31.7	
Indian	30	22.1	36	20.0	
Others	3	2.2	7	3.9	
Religion					
Islam	53	39.0	82	45.6	0.32
Hindu	28	20.6	27	15	
Buddhist	37	27.2	45	25	
Christian	17	12.5	20	11.1	
Others	1	0.7	6	3.3	
HBV immunization					
Yes	109	80.1	134	74.4%	0.23
No	27	19.9	46	25.6%	
Exposure to HE on NSI					
Yes	28	20.6	53	29.4	0.07
No	108	79.4	127	70.6	
Total	**136**		**180**		

4.1.1 Effect of intervention on hepatitis B immunization of the students before and after intervention among intervention and control groups

Table (2) Distribution of hepatitis B immunization of students before and after intervention among intervention and control groups

Hepatitis B immunization	Intervention gps(n=136)		Control gps(n=180)		P-value
	Pre	Post	Pre	Post	
Yes	109(80.1%)	125(91.9%)	134(74.4%)	161(89.4%)	0.000
No	27(19.9%)	11(8.1%)	46(25.6%)	19(10.6%)	0.000

The effect of intervention on hepatitis B immunization of the students before and after intervention among intervention and control groups were shown in table 2.It was found out that the percentage of hepatitis B immunization among the students in both intervention and control groups were increased and it was statistically significant.

4.2 KNOWLEDGE OF NEEDLE STICK INJURY AND PREVENTION MEASURE

Knowledge of needle stick injury was assessed by (24) questionnaires, allowing response with 'True' or 'False' or 'Don't know'. Questions were summarized in order of 4 section such as “Disease transmitted by sharp injury ", Procedure on dealing with syringe" “Standard precaution", "Hepatitis B immunization " and “Post exposure prophylaxis”. Per cent of student who responded to questions were shown in table (2).

Students' knowledge were summed up by transforming it into knowledge score and grouped into three level such as poor knowledge level, fair knowledge level and good knowledge level according to individual values.

4.2.1 EFFECT OF KNOWLEDGE ON MMMC NEEDLE STICK INJURY PREVENTION MODEL

Table (3) Effect of intervention on Knowledge of needle sticks injury and universal precaution among intervention and control groups

N=136 Correct response

Variables	Categories	Intervention gps(n=136)		Control gps (n=180)	
		Pre (%)	Post (%)	Pre (%)	Post (%)
Disease transmitted by sharp injury	Hepatitis A	61.8	83.1	50.6	75.0
	Hepatitis B	93.4	99.3	95	98.9
	Hepatitis C	80.1	93.2	77.2	88.3
	Hepatitis E	48.5	68.4	43.9	66.7
	HIV	92.6	97.1	93.3	96.7
	Vaccination can prevent hepatitis C	47.8	67.6	46.1	53.9
Procedure dealing with syringe	The used syringes disposed into regular trash can cause needle stick injury	91.9	88.2	87.8	89.4
	It is necessary to recap the used syringes before you discarding them away	47.8	70.6	52.2	62.2
	Sharp needle should be discarded into black colour container.	83.1	84.4	79.4	77.2
	Soiled bandage and dressing should be discarded into yellow colour bin	84.6	89.4	78.9	85.0

Standard precaution	Hand washing after direct contact with patient	86.0	91.2	83.3	86.1
	Needle recapping	44.1	61.6	44.4	52.8
	Safe collection and disposal of sharp	96.3	98.3	93.9	95.6
	Wearing glove	85.3	89.8	72.8	88.3
	Safe hospital management	94.9	96.3	95	97.8
Hepatitis B immunization	Prevaccination test not necessary	38.2	45.6	40	63.3
	Schedule 0,1,6 is used	74.3	86.1	79	77.8
	Post vaccination test necessary	44.9	55.1	42.2	43.3
	Not administer booster routinely	25.0	49.3	35.0	39.4
Post exposure prophylaxis	Hepatitis B immunization	67.6	65.4	72.2	61.7
	Wash wound with water	86.0	89.1	80.6	87.8
	Put pressure to arrest bleeding	36.8	46.3	35	25.6
	Test blood of patient	80.9	85.3	79.4	89.4
	Maintain confidentiality on injury	67.6	72.8	59.4	62.2

Most of the students had knowledge on the diseases transmitted by contaminated sharp objects e.g. HBV, HCV and HIV. But (46.8%) of the students reported that Hepatitis C infection could be prevented by vaccine. Only, (50.3%) of students aware that needle should not be recapped after exposure to blood. (39.2%) of the students correctly answered that pre-vaccination test was not necessary while (43.4%) believed that post vaccination test was necessary regarding to hepatitis B immunization (Table 3).

Table (4) Mean score of Knowledge of needle stick injury and universal precaution among intervention groups

N=136

	Pre-intervention Mean(SD)	Post intervention Mean(SD)	P value
Diseasestransmitted through needle injury (4 questions)	3.76(1.25)	4.41 (0.81)	0.013
Procedure dealing with syringe (5 questions)	3.07(0.76)	3.21(0.91)	0.41
Universal precaution (5 questions)	4.06(1.04)	4.29(1.09)	0.032
Hepatitis B immunization (4 questions)	1.82(0.94)	2.31(1.06)	0.001
Post exposure prophylaxis (5 questions)	3.39(1.21)	4.55(1.14)	0.000

Mean score of Knowledge of needle stick injury and universal precaution among intervention groups was analysed by groups of questions and it was found out that questions regarding Diseases transmitted through needle injury, Universal precaution, Hepatitis B immunization and Post exposure prophylaxis were significantly increased pre and post intervention except questions regarding Procedure dealing with syringe.

Table (5): Knowledge difference among intervention and control group before and after intervention

Pair sample test N=136

Knowledge difference	Pre Mean(SD)	Post Mean(SD)	Mean difference	P value
Intervention gps	16.54(2.467)	18.60(2.049)	2.06	0.000
Control group	16.17(3.59)	13.32(3.83)	-2.86	0.000

Regarding Knowledge difference among intervention group before and after intervention were analysed by Independent T test and the results were shown in table (5). It was found out that the mean knowledge of students was increased from 16.54 (+_2.47) to 18.60(+_ 2.05) post intervention and it was statistically significant with P value (0.000). In control groups, mean knowledge was 16.17 (+_ 3.59)inpreinterventionto 13.32(+_3.38) post intervention and it was statistically significant with P value (0.000).

Table (6) Level of knowledge on needle stick injury and universal precaution among intervention groups pre and post intervention

Knowledge	Pre-intervention	Post intervention	P-value
Range- 5-23			**Chi square-13.1**
Good(23-18)	**30(22.1%)**	**80(58.8%)**	**0.010**
Fair(17-12)	**101(74.3%)**	**55(40.4%)**	
Poor(less than 12)	**5(3.7%)**	**1(0.7%)**	

Table (6) shown that the students' knowledge were divided into three groups based on their maximum and minimum score and compares pre and post intervention by using chi square analysis. It was found out that the percentage of students in good category have become more after intervention and it was statistically significant P= 0.010.

4.3 PERCEPTION OF STUDENTS ON NEEDLE STICK INJURY

Scoring system for level of Perception of students on needle stick injury

Thirteen statements were constructed to detected perception of the students on needle stick injury in following areas; perceived susceptibility, perceived seriousness, perceived threat on risk of needle stick injury, perceived benefit and perceived barrier on risk of needle stick injury. Each statement was score as following.

Agreement scale	Score for Positive statements	Score for negative statements
Strongly agree	**5**	**1**
Agree	**4**	**2**
Uncertain	**3**	**3**
Disagree	**2**	**4**
Strongly disagree	**1**	**5**

Individual groups of score were sum. Percent based on possible maximum total score were then calculated for each groups of individual perception. Then, the scores were divided into low, fair and good perception score.

4.3.1 Perception on risk of needle sticks injuries and universal precaution

Thirteen statements were constructed to detected perception of the students on needle stick injury in following areas; perceived susceptibility, perceived seriousness, perceived threat on risk of needle stick injury, perceived benefit and perceived barrier on risk of needle stick injury. The results were shown in table 7.

Table (7) Perception on risk of needle sticks injuries and universal precaution

SA – strongly agree, A- agree, U – uncertain, DA- disagree, SDA- strongly disagree

Statement	Intervention gps(n=136)						Control gps(n=180)					
	Pre (%)			Post (%)			Pre (%)			Post (%)		
	SA/A (%)	U (%)	SDA/ DA (%)	SA/A (%)	U (%)	SDA/ DA (%)	SA/A (%)	U (%)	SDA /DA (%)	SA/A (%)	U (%)	SDA/ DA (%)
Every health care workers has chance to get needle stick injury	97	0.7	2.2	92.6	3.7	3.7	95	0	5	92.2	1.7	6.1
Needle stick injuries are unavoidable things for health care workers	54.4	13.2	32.4	49.3	16.2	34.6	49.4	17.2	23.3	52.2	4.4	33.3
Increase workload can lead to needle stick injury	80.2	13.2	6.6	82.3	7.4	10.3	76.6	15	8.4	72.8	13.9	13.3
If health care workers get infected with HIV infection, they should resign from their profession?	19.9	28.7	51.5	12.1	23.5	54.4	26.1	29.4	44.5	19.5	27.8	52.8
The standard precautions to handle the sharp objects must always follow as improper handling can lead to get the infection	96.3	3.7	0	93.4	3.7	2.9	97.8	1.7	0.6	93.9	3.9	2.3
The infection transmitted from needle stick injuries are life threatening	82.3	11	6.6	85.3	11	3.7	80.0	13.2	6.7	83.9	10.0	13.4
Although there is a risk of infection, confident and skilfulness can prevent injury	88.9	4.4	6.6	83.1	8.1	8.8	85.6	7.8	6.7	83.9	10.0	6.1
We haven't learned about standard precaution for needle stick injury	26.4	33.1	40.7	36.7	27.9	35.3	26.7	26.1	47.2	37.7	24.4	37.8

	83.1	**11**	**5.9**	**79.1**	**12.5**	**7.4**	**84.4**	**6.7**	**3.9**	**76.1**	**13.3**	**10.6**
Unavailability of protective equipment can predispose a person to get needle stick injuries												
Handle needle without wearing glove is better than wearing glove	**77.9**	**8.1**	**14**	**72.8**	**14.7**	**12.5**	**77.8**	**9.4**	**12.8**	**80.0**	**7.2**	**12.8**
Reporting after needle stick injury is not much useful	**78.7**	**21.3**	**11.8**	**80.2**	**6.6**	**13.2**	**82.8**	**8.9**	**7.8**	**82.2**	**7.2**	**10.5**
	97	**2.2**	**0.7**	**95.7**	**3.6**	**0.7**	**93.9**	**3.9**	**2.3**	**92.2**	**4.4**	**3.3**
Every health care worker should be immunized with Hepatitis B												
Health education for universal precaution on NSIs to the students and health care workers can reduce the prevalence of needle stick injuries among them	**89.7**	**8.1**	**2.2**	**94.4**	**6.6**	**0**	**90.0**	**6.7**	**3.4**	**87.8**	**8.3**	**3.9**

4.3.2 Perception difference among intervention group before and after intervention

Table (8) Perception difference between Intervention group and Control group

	Pre Mean(SD)	Post Mean(SD)	Mean difference	P value
Intervention group	48.94(4.35)	51.54(4.58)	2.60	0.000
Control group	51.62(5.07)	50.03(5.63)	-1.58	0.000

Regarding perception difference among intervention group before and after intervention were analysed by independent T test and the results were shown in table (8). It was found out that the mean perception of students was increased from 48.94 (+_4.35) to 51.54(+_4.58) after intervention in intervention groups and it was statistically significant with P value (0.00) and the mean perception of students was decreased from 51.62 (+_5.07) to 50.03(+_5.63) after intervention in control groups and it was statistically not significant with P value (0.00). It was believed that the perception of students were varied depends on the condition.

Table (9) Level of Perception on risk of needle sticks injury in Intervention group pre and post intervention

N=136

Perception	Pre-intervention	Post intervention	P-value
Range- 23-65			Chi-4.1
Good	135(42.7%)	139(44.0%)	0.39
Fair	179(56.6%)	175(55.4%)	
Poor	2(0.6%)	2(0.6%)	

Table (9) shown that the students perception were divided into three groups based on their maximum and minimum score and compares pre and post intervention by using chi square analysis. It was found out that the percentage of students in good category has not much difference before and after intervention and it was not statistically significant.

4.4 INFORMATION REGARDING NEEDLE STICK INJURY

4.4.1.1 Prevalence of needle sticks injury in all students before intervention

In this study, there were total of (19.9%) reported episodes of needle stick injuries in past one year. Majority of needle stick injuries occurred at medical ward(81.0%), followed by family medicine and community medicine posting (15.9%). Majority of injuries were due to hollow bore needle (87.3%) and (77.8%) of injuries were self-inflicted. Among them (85.7%) were wearing a glove during the injury. Site of injury revealed that (71.4%) of respondents have injuries in the finger. Multiple responses were taken for perceived cause of injury and majority (50.8%) due to lack of experience, due to excitement (23.8%) and (19%) occurred during their hurried procedure. Only (50.8%) cases had taken immediate post exposure action after injury, but (49.2%) had not taken any appropriate action. The immediate post-exposure action taken was washing the wound, drug consumption, and encouraged bleeding and blood sent for investigation. Majority of those who did not take any immediate action perceived that there was no need to take any action.

4.4.1.2 Prevalence of needle sticks injury in all students after intervention

There were total of (4.1%) reported episodes of needle stick injuries in this study. Every respondent got the needle stick injuries during his or her medical career. Majority of needle stick injuries occurred at family medicine and community medicine posting (54.5%) followed by medical ward (36.4%). Majority of injuries were due to hollow bore needle (63.6%) and (90.9%) of injuries were caused by someone else. Among them (90.9%) were wearing a glove during the injury. Site of injury revealed that (63.6%) of respondents have injuries in other part of hand and (36.4%) were occurred at finger. Multiple responses were taken for perceived cause of injury and majority (72.7%) occurred during their hurried procedure. There were7 (63.6%) cases had taken immediate post exposure action after injury, but (36.4%) had not taken any appropriate action. The immediate post-exposure action taken was washing the wound, drug consumption, and encouraged bleeding and blood sent for

investigation. Majority of those who did not take any immediate action perceived that there was no need to take any action.

4.4.2 Prevalence of needle sticks injury among intervention and control groups

Table (10) Prevalence of needle sticks injuryamong intervention and control groups

		Intervention			Control		
Total		**Pre**	**Post**	**P value**	**Pre**	**Post**	**P value**
injury	Yes	25(18.4%)	4(2.9%)	0.00	38(21.1%)	7(3.9%)	0.00
	No	111(81.6%)	132(97.1%)		142(78.9%)	173(96.7%)	

The prevalence of needle stick injury among intervention group pre intervention was (18.4%) and it was reduced to (2.9%) post intervention. And it was statistically significant (P=0.00).

4.2.3 Effect of intervention on needle stick injury among intervention groups

There were a total of (18.4%) reported episodes of needle stick injuries in past one year and, during post intervention after 3 month, it was reduced to (2.9%) episodes of needle stick injuries in intervention groups.

The place that needle stick injury occurred

Before intervention, majority of needle stick injuries occurred during Medicine posting (76.0%), followed by family medicine and community medicine posting (20.0%) in intervention groups and after intervention, needle stick injuries occurred during Medicine posting (50.0%) and family medicine and community medicine posting (50.0%).

Type of Instruments that caused injury different groups

Majority of injuries were due to hollow bore needle (87.3%) and (12.7%) were due to solid needle before intervention. After intervention is the same pattern injury by hollow bore needle (63.6%) is more than the solid needle (36.4%).

Mechanism of injury that caused injury among different groups

Multiple responses were taken for mechanism of injury and majority of injuries are occurred during recapping the needle (40.0%) in intervention groups and during withdrawing blood (50.0%) after intervention.

Cause of injury

Regarding cause of injury, it was found out that (77.8%) of students who injured were because of self-infliction before intervention but caused by someone else 90.9% after injury.

Wearing a glove during injury

During pre-intervention period, (92.0%) ofstudent swore a glove andafter intervention (100.0%), all the students follow the precaution by wearing gloves.

Site of injury occurred

Site of injury revealed that (71.4%) of respondents have injuries in the finger, (72.0%) and after intervention most of the injuries occurred at other area of hand compared with finger that is (63.6%), (50.0%).

Contribution factor to get an injury

Multiple responses were taken for perceived cause of injury and majority (36.0%) due to excitement, (28.0%) lack of experience, and (32.0%) occurred during their hurried procedure and after intervention, excitement (50.0%) and occurred during their hurried procedure (50.0%) were contributing factors

Action taken after injury among the groups

There were(50.8%) cases that had taken immediate post exposure action after injury, intervention group (56.0%). The immediate post-exposure action taken was washing the wound, drug consumption, and encouraged bleeding and blood sent for investigation. Majority of those who did not take any immediate action perceived that there was no need to take any action.

Table (11) Effect of intervention on needle sticks injury among intervention and control groups

		Intervention gps(n=136)		Control gps(n=180)	
Needle stick injury		**Pre (%)**	**Post (%)**	**Pre (%)**	**Post (%)**
Total injury	Yes	18.4	2.9	21.1	3.9
	No	81.6	97	78.9	96.1
Clinical posting	Medicine	76	50	84.2	28.6
	Surgery	4	-	2.6	14.3
	Paediatric	-	50	-	-
	Family medicine,	20	-	10.5	57.1
	Community medicine, A&E, OPD	-	-	2.6	-
Type of injury	Solid needle	12	50	13.2	28.6
	Hollow needle	88	50	86.8	71.4
Mechanism of injury	Blood withdrawal	32	50	57.9	57.1
	Recapping needle	40	-	18.4	28.6
	IM injection	24	50	7.9	14.3
	IV injection	4	-	2.6	-
	Assist in theatre	-	-	1	-
Cause of injury	Self-inflicted	80	100	76.3	14.3
	Injured by others	20	-	23.7	85.7
Glove intact or not	Yes	92	100	81.6	85.7
	No	8	-	18.4	14.3
Reason of Injury	Rush	32	50	4	85.7
	Lack of experience	36	50	25	-
	Excitement	38	-	-	-
	Lack of assistant	4	-	9	14.3
Immediate post exposure action	Yes	56	50	47.4	57.1
	No	44	50	52.6	42.9

4.4 FINDING OF QUALITATIVE DATA ANALYSIS

4.4.1 Information about Needle sticks injury

There were eight students participated in discussion and their information about needle sticks injury were shown in Table (12). Majority of needle stick injuries occurred at family medicine and community medicine OPD followed bymedicineward. 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.

Table (12) Information about needle sticks injury among FGD groups

N=8

Injury information		Number
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

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 asepticsolution.

4.4.2 Knowledge concerning needle stick 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 (two among eight) 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

Discussion about perception of students on risk of needle stick injury and universal precaution measure based onFGD guidelines and the student's perception were shown in below.

The student's perceptions

- Every health care workers have chance to get needle stick injury.
- Needle stick injury is unavoidable things for health care workers.
- The increase workload can lead to needle stick injury.
- If health care workers get infected with HIV infection, they don't have to resign from their profession; can change the work example teaching.
- The standard precaution to handle the sharp objects must always follow because improper handling can lead to get the infection.

- The infections transmitted from needle stick injuries are life threatening and some have no vaccine and treatments.
- We haven't got proper lecture about the standard precaution about needle stick injury but learned from media and from hospital.
- Handle needle without wearing glove is better than wearing glove, I don't think so I always wear glove every time handling with needle
- Unavailability of protection equipment can prone to get needle stick injuries.
- Reporting after needle stick injury is not much useful. We have no idea about reporting but it will definitely be useful
- Every health care worker should be immunized with Hepatitis B vaccine. But some of my friends were still unimmunized.
- Health education for universal precaution to NSIs to the students and health care workers can reduce the prevalent of needle stick injuries among them.

- Although there is a risk of infection, confident and skilfulness can prevent injury

CHAPTER V

DISCUSSION AND RECOMMENDATION

This study was a randomized controlled trial carried out to study the effectiveness of MMMC needle stick injury prevention model on accidental needle sticks injury prevention among medical and dental students in Melaka, Malaysia.

Socio demographic character of all participants

Age distribution of students

There were total 503 medical students in the academic year belonging to third year to final year and 316 students participated in this study with (43.6%) in intervention groups and (56.4%) in control groups. The majority of the students (44.6%) were age of 23years old. Age of 23 years old is the age grown up from adolescent and reach to mature age so that as medical students their concern is thinking on adopting healthy behaviour is maximum in that age. In this study, all of the students were under clinical training and they have undergone all the procedures already so that by giving them well-structured health education intervention that help them during their daily practice and future work place motivate them to participate in this study. And there were other similar studies such as in a study Norsayani et al. the age of the students were as same as this study Mean age 23.9 and in a study such as, the students are elder than this study.

Regarding gender distribution of the students, among 316students, (45.3%) were male and (54.7%) were female students.Regardingethnicity among the respondents, most of the students, (41.8%) was Malay followed by (34.2%) Chinese, (20.9%) was Indian and others 3.2%.The relation of gender and ethnicity and change in knowledge and behaviour have shown in other studies and female students were more prone to get injury than male students because of their nature of nervousness and it is similar in this study.(Norsayani and Hassim 2003)

Regarding hepatitis B vaccination among the students,immunization status by the students were increased from (76.9%) to (90.5%) and it was statistically significant(P= 0.000). It was facilitated by the intervention and changes their perception from perceived susceptibility to perceived threat that was lead to change in behaviour and reduces risk of getting hepatitis B infection after immunization. (Glanz et al)

There were similar studies such as in a study Norsayani et al (93%) (Norsayani and Hassim 2003) immunized with hepatitis Band the immunization status of medical students in other studies was 67.7%, 86.2% and 97% accordingly (Talas 2009, Askarian and Malekmakan 2006, Elliott et al. 2005).

The student's immunization status on hepatitis B immunization was based on their perceived threat to get transmission if needle stick injury occurred. Melaka Manipal Medical college encouraged the students to get immunized during their induction training as first year medical students and in other countries, hepatitis B immunization was one of entry criteria to medical students.(Stanford 2014)

Regarding Distribution of exposure to health education about needle sticks injury prevention among the respondents, 79.4% of intervention group, 70.6% of control group and total 74.4% of students do not have exposure to specific health education about needle sticks injury prevention. They have gain knowledge from poster at hospital, internet and part of discussion with lecturers but there was no specific topic on needle stick injury and universal precaution in their curriculum.

Information regarding Needle sticks Injury

There were total of 63(19.9%) of students experienced needle stick injury during their clinical training. The incidence of needle stick injury among intervention groups before intervention was 24 (18.4%) that was reduced to 4(2.9%) after intervention. However other research on medical students reported higher incidence rates of injuries i.e. 33%, 26.1%, 23%, 30.8% and 39.4% respectively (Shen et al. 1999, Saleem et al. 2010, Deisenhammer et al. 2006, Kebede et al. 2012, Dehghani

Zahedani et al. 2006). And lower incidence in these studies 11%, 14.1% and 13.84% respectively(Varsou et al. 2009, Norsayani and Hassim 2003, Memish et al. 2013). Base on the study result, the prevalence of needle sticks injury is not very high compare with other studies.

In this study, injuries were caused by hollow bore needle were (87.3%) and majority was self-inflicted (77.8%). Hollow bore needle also known as wide bored needle was mainly used for injection of drug and withdrawal of blood. Wide bore needle included syringe, canula, and butterfly needle. Hollow bored needles were more infectious than solid needles because they have area to contain infectious blood and when it was injured on someone the infected blood were directly injected into the body. Solis needles did not have a hollow and they are less infectious than wide bore and surgical sutures were good example of wide bored needle.

In a study by Talas MS, the injuries due to hollow bore needle were 72.2%and in a study by Shen et al self-inflected injury is (34%) (Shen et al. 1999). In a study by Markery et al, 699 residents in surgical training participated in study and 99% of them had needle stick injury. The injuries were self-inflicted in 67%, and another member of the operating team inflicted 33%. Fifty-two percent of injuries occurred during suturing, and the perceived cause of the injury was being in a hurry in 57% of cases.(Makary et al. 2007). But in our study, for the medical students, there were fewer chances to involve in operation and so most of the cases are found in patient ward or OPD during withdrawing of blood.

Wearing a glove is important criteria of universal precaution measure and all the health care personnel who are dealing with blood, other body fluids and dealing with patients must wear a glove as personal protective measure. In this study, there were 54(85.7%) of students were wearing the glove during injury. In comparison with other studies there were (43%) and (62.2%) respectively (Talas 2009, Deisenhammer et al. 2006). Some students thought that wearing gloves was of no benefit, as the needle would penetrate the glove.

The incidence of getting needle stick injury is related with the hospital wards or posting that the students was posted. The place of injury occurred was different

depend on the exposure to have practice in specific department. For example in paediatric wards, medical students have less chances to do the procedures because handling to paediatric cases were done by house officer or senior medical officers.

In this study, majority of incidence of needle sticks injuries occurred at medical ward (81%) but a study by Norsayani MY et al, needle stick injuries mainly happened in O& G ward followed by medicine and surgery(Norsayani and Hassim 2003)and in a study by Shen et al, most of the injuries occurred at surgical ward 24(69%) depend on the chance to get clinical exposure by the students.(Shen et al. 1999).

Knowledge of needle sticks injury and prevention measure

The knowledge of students on needle stick injury and preventive measures was the main contribution for changing perception and behaviour. Some students have fair underlying knowledge on needle stick injury and some important risk factors were aware by most of the students. This is one of the good parts of the study and we can generally draw conclusion and that will give contribution on our further studies and interventions.

Most of the students had knowledge about the diseases transmitted by contaminated sharp objects (mean score 4.41; SD 0.8). Most of the students(99.1% , 90.5% and 96.8%) gave correct response on hepatitis B, hepatitis C and HIV was transmitted by In a study by Norsayani MY et al, most of the student acquired knowledge of blood borne disease mainly from the lectures 98.3%, books 90.8% through informally 81.6%. Almost all of the participants (n = 250, 93%) identified blood as the most infectious body fluid that can transmit infections through occupational exposure. (Kulkarni et al. 2013)In the study by Deisenhammer S et al, general, students' knowledge about the transmission risks of HIV, hepatitis B and C through a needle stick injury with a contaminated needle was poor. A study by Saleem T et al, more than 85% students from each class were aware of the possibility of acquisition of Hepatitis B, Hepatitis C and HIV from needle stick injuries(Saleem et al. 2010). Only 16.4% 3rd year students, 29.5% 4th year students and 36.2% final year students knew the full details of needle stick injury prevention protocols. Curriculum was cited as an important source of information regarding needle stick injuries(Saleem et al. 2010).

In this study the students have knowledge regarding universal precaution measures (Annex 7), but regarding needle recapping; only 50.3% gave correct answer. This result was same with the result found out from focus group discussion and it can conclude that the availability of disposal bin near the procedure encouraged the students to recap the needle back. In a study by Norsayani, the percentage of students who acquired knowledge of universal precaution was 70.3%(Norsayani and Hassim 2003)and in a study by Kulkarni et al ,the knowledge of the study participants was high regarding standard precautions, as 70.5% (n = 189) of the participants were able to identify all of the components(Kulkarni et al. 2013). A similar study on health science students in northern china reported that the students displayed a general lack of knowledge of occupational exposure standards.(Zhang et al. 2008) the transmission risk of HIV was rated correctly by only 9% of a first year as compare to 45% of the fifth year students. Similar results were found for hepatitis B and C. (Deisenhammer et al. 2006).

In this study we have found out the medical students knowledge regarding hepatitis B immunization was poor (Annex 7). That's reflected that the students have less exposure to WHO universal precaution and hepatitis B immunization guideline which was the core components of Melaka Manipal Medical College Needle sticks injury prevention Model.

There were a difference between mean score of knowledge among intervention and control groups before and after intervention and it was statistically significant. That reflects the success of intervention that students have changed in knowledge or increased in knowledge after the intervention.

Perception on risk of needle sticks injuries and universal precaution

In this study, perception of needle sticks injury questionnaires and the conceptual framework of the study were developed based on the Health Believed Model. (Glanz K 2005)

There were total thirteen statements of perception regarding risk and prevention of needle sticks injury which are related with five perceptions such as perceived susceptibility, perceived seriousness, perceived threat, perceived benefit and perceived barrier. There were nine positive perception statements and four negative perception statement to assess the perception of the students.

Mean score of perception among intervention groups after intervention was increased and it was statistically significant.

It was found out in literature that some of the statements in this study were quite similar with statements in other studies and we can discuss the data compare with our study.

In this study it was found out that the perception of needle stick injury was changed and increased number of positive perception after intervention in intervention groups. The results mean that the health education on needle stick injury prevention model give an effective changes of perception to the students.

In this study, 47% of students disagree and strongly disagree of the statement " If health care workers get infected with HIV infection, they should resign from their profession" and in a study by Lal P et al, majority of the interns (68.3%) perceived themselves to be at a very high/high risk of acquiring HIV infection during their medical career.(Lal et al. 2007) The common reasons for perceived risk of acquiring HIV infection were due to needle pricks/cuts during surgical procedures (32.4%), frequent exposure to the blood/ secretions of patients (28.5%) and insufficient availability of gloves (17.6%). Some (23.2%) 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 (3.1%) were even considering to leave the medical profession for the same reason.(Lal et al. 2007)

In this study 81.1% of students agree/strongly agree to the statement, “Reporting after needle stick injury is not much useful” but in a study by Hanafi MI et al, 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.(Hanafi et al. 2011)(Hanafi et al. 2011)(Hanafi et al. 2011)(Hanafi et al. 2011)

Discussion on focus group 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, 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(Saleem et al. 2010, Zhang et al. 2008). Only one third of final year students knew the full details of needle stick injury prevention protocols. A similar study on health science students in northern china reported that the students displayed a general lack of knowledge of occupational exposure standards(Deisenhammer et al. 2006). 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.

Strengths of the study

1. This research was randomized controlled trial and both quantitative and qualitative data collection methods were used to ascertain the results.

2. The intervention was divided into three to prevent contamination among intervention and control groups.

Limitation of the study

1. Although the intervention was divided into three to prevent contamination among intervention and control groups, there might be sharing information between them because they all are studying in a same campus.

2. Pre intervention means score of knowledge of students in control group was low compare with intervention group.

3. The questionnaires type in this study is self-reporting type, so that the chances of recall bias would be occurred during filling up the answer

4. This intervention study was conducted was conducted in Melaka Manipal Medical College, so that generalizability of results would be one of our limitation that was needed to take into account

CONCLUSION AND RECOMMENDATION

This study is randomized control trial with pre and post intervention design that was conducted among medical students of Melaka Manipal medical College, Malaysia, during their clinical training years. Based on the study results, it was concluded that the prevalence of needle stick injury among the students were reduced on post intervention period. The students had knowledge on universal precaution guidelines such as hand washing and wearing the glove and proper disposal of sharps. The knowledge of students was significantly increased after intervention but their perception was not significantly changed.

Knowledge on hepatitis B immunization and post exposure prophylaxis measures should be encouraged among the student. 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.

Implementing the Melaka Manipal Medical College needle stick injury model to medical students gave them increased knowledge regarding needle stick injury prevention measure and motivates them to apply this knowledge in their daily clinical practice, which would lead to decrease incidence of needle stick injury among the students

RECOMMENDATION

RESEARCH RECOMMENDATION

- Regarding the knowledge questions on handling of the syringe, the correct answer related with needle recapping was less so that I would like to recommend strengthening the health education on universal precaution measures and closed supervision is needed to prevent further incidence.

POLICY RECOMMENDATION

- In this study, the percentage of students who exposed to specific health education media such as health education talk about health hazard of needle stick injury is very low. So it would be recommended to implement the MMMC NSI model in other medical colleges.
- Regarding hepatitis B immunization the percentage of students who immunized with hepatitis B should be hundred percent in medical students. And the knowledge on information about hepatitis B immunization is poor. I would like recommend that hepatitis B immunization should be the entry requirement for the students and nurses for Medical College.
- I would like to recommend the college to adopt MMMC needle stick injury Model and conduct the workshop regarding needle stick injury yearly or once in years to improve our student's knowledge, perception and practice regarding needle stick injury.
- I would like to recommend other medical universities in Malaysia to adopt the model in implementing the guidelines to reduce prevalence of needle stick injury in their universities.

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ANNEX I :QUESTIONNAIRE (Baseline)

The Prevalence of Needle Stick Injury among Medical students of Melaka Manipal Medical College, Malaysia

This questionnaire is only for research purpose. It will not affect your school performance. So you can answer the questions freely as you feel like. Please read the questions carefully and answer all the questions. Please fill in the blank and mark (√) on the area given the box. Do not fill in the box marked by office use. ☐☐☐

SOCIODEMOGRAPHIC CHARACTER

I	Question	Answer	Office use
1	Completed Age	_____ year	☐☐
2	Gender	☐ Male ☐ Female	☐
3	Religion	☐ Islam ☐ Hindu ☐ Buddhist ☐ Christian ☐ Others _____	☐
4	Ethnic	☐ Malay ☐ Chinese ☐ Indian ☐ Others _____	☐
5	Academic year in MMMC (Batch)	----------	☐☐
6	Hepatitis B vaccination completed or not?	☐ Yes ☐ No	☐
7	Have you attend the health education talk about needle stick injury before?	☐ Yes ☐ No (If yes, When----------Where----------	☐
8	Is there a topic about needle stick injury and universal precaution measure in your curriculum?	☐ Yes ☐ No If yes the subject is ----------	☐
9	If you learned about universal precaution for needle stick injury from somewhere it is from- (Multiple response)	☐ Book/magazine/newspaper/ Pamphlets ☐From doctors and nurses ☐ Documentary program from TV ☐ Billboard / Poster ☐ Others----------	☐☐☐ ☐

I. QUESTIONS ON INJURY INFORMATION

I	Question	Answer	Code
1	Did you have any needle stick injury before?	□ Yes □ No (If " No" go to Pg 3, Knowledge questions)	□
2	If yes , total number of injuries (In past one year)	----------	□
3	The posting that injury/injuries occurred (Multiple response)	□ Medicine □ Surgery □ Paediatric □ O & G □ Family medicine/ community medicine or OPD □ Orthopaedic or emergency □ Others --------	□ □
4	Type of instruments that caused the injury	□ Solid needle □ Hollow bore needle □ Others	□
5	Mechanism of that injury	□ IM injection □ IV cannulation □ Withdraw blood □ Assist in theatre □ Re capping needle □ Others_____	□
6	Injury was caused by	□Self inflicted□ Someone else	□
7	During that time of injury, were you wearing glove or not?	□ Yes □ No	□
8	Site of injury	_____	□
9	Perceived cause of injury	□ Rushed □ Lack of assistance □ Fatigued □ Lack of experience □ Poor lightning □ Others _____	□ □

	Post exposure action		
10	Have you taken Post exposure action after injury	□ Yes (Go to Q 11) □ No (Go to Q 12)	□
11	If yes , what was the immediate action taken (Multiple response)	□ Wash the wound □ Encourage bleeding □ Draw blood for testing □ Take immunization □ Take drugs □ Others _____	□□□
12	If No, the reason for not taken action is (Multiple response)	□ I did not have time to report □ I did not know the reporting procedure □ I was concerned about confidentiality □ I thought I might be blamed for having the exposure □ I thought the source patient was low risk for HIV and/or hepatitis B or C □ I did not think it was important to report □ Other ----------	□□□

II. QUESTIONS ON KNOWLEDGE OF RISK OF NEEDLE STICK INJURY

Sr.	Statement	Yes	No	Don't	Code
Transmission routes of blood borne pathogens					
1	Which of these diseases do you think can be transmitted by sharp injections?				□
	2. Hepatitis B Virus				□
	3. Hepatitis C Virus				□
	4. Hepatitis E Virus				□
	5. Human Immunodeficiency Virus				□
2	Hepatitis C virus can prevent by vaccination.				□
Procedures on dealing with syringe					
1.	The used syringes disposed into regular trash can cause needle Stick injury.				□

2	It is necessary to recap the used syringes before you discarding them away?				☐
3	Sharp needle should be discarded into black colour container.				☐
4	Soiled Bandage and dressing should be discarded into yellow colour bin or container.				☐
Universal precaution measures					
1	As your knowledge , what are the standard precautions for needle stick injuries, 1. Hand washing after any direct contact with patients				☐ ☐
	2. Needle recapping				☐
	3. Safe collection and disposal of sharps				☐
	4. Wearing glove is not always necessary				☐
	5. Safe system for hospital waste management				
2	Hepatitis B immunization Schedule for booster dose and antibody test is 1. Pre-vaccination serological testing is unnecessary				☐ ☐
	2. The schedule is 0, 1 and 6 months				
	3. Post-vaccination testing is necessary				☐
	4. Do not administer boosters routinely				☐
Post exposure prophylaxis					
1	If one is injured by sharp instruments, which of the following procedures are correct to take? 1. Inject the immunity globulin or hepatitis B vaccine as soon as possible 2. Wash the wound with water 3. Put pressure on the wound and arrest the bleeding 4. Test the blood of patient				☐ ☐ ☐ ☐ ☐

III. RISK PERCEPTION ON NEEDLE STICK INJURY

SA – strongly agree, A- agree, U- uncertain, DA- disagree, SDA- strongly disagree

Sr.	Statement	SDA	DA	U	A	SA	Off.
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 should resign from their profession.						
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						
7	Although there is a risk of infection, confident and skilfulness can prevent injury.						
8	We haven't learned about the standard precaution about needle stick						
9	Unavailability of protection equipment can prone to get needle stick						
10	Handle needle without wearing glove is better than wearing glove.						
11	Reporting after needle stick injury is not much useful.						
12	Every health care worker should be immunized with Hepatitis B						
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						

Thanks for your time.

ANNEX 2

Informed Consent Form

Date ……..

Code number of participant ……

I who have signed here below agree to participate in this research project

Title of research project …… Effects of Melaka Manipal Medical College needle sticks injury prevention model on needle sticks injury prevention among medical students in Melaka, Malaysia……..

Principle researcher's name DrKye Mon Min Swe, Contact Number ……+601115133799

Home address …18, JalanDesaBaru, Melaka **E-mail:** khmoneminswe@gmail.com

I have **(read or been informed)** about rationale and objective(s) of the project, what I will be engaged with in details, risk/ham and benefit of this project. The researcher has explained to me and I **clearly understand with satisfaction.** I willingly **agree** to participate in this project and consent the researcher to response to questionnaires. /Enroll in the training program for 3 times.

I have **the right** to withdraw from this research project at any time as I wish with no need to **give any reason**. This withdrawal **will not have any negative impact upon me (e.g.: still receive the usual services).**

Researcher has guaranteed that procedure(s) acted upon me would be exactly the same as indicated in the information. Any of my personal information will be **kept confidential.** Results of the study will be reported as total picture. Any of personal information which could be able to identify me will not appear in the report.

If I am not treated as indicated in the information sheet, I can report to the Ethics Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University (ECCU). Institute Building 2, 4 Floor, SoiChulalongkorn 62, Phyathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail:eccu@chula.ac.th,

I also have received a copy of information sheet and informed consent form

Sign ……

(……)

Researcher

Sign ……

(……)

Participant

Sign ……

(……)

Witness

ANNEX 3: FOCUS GROUP DISCUSSION GUIDELINE

With whom: Final year medical students

Purpose: To get the perception of medical students regarding needle stick injury prevention before introducing model and the quantitative data collection.

Selection of participant

For students who haven't got injury before

The final year students were randomly selected by according to their academic performance marks during their community medicine exam. The students were divided into three groups above average (> 75 marks), average (between 50-74) and below average (< 50marks). Four students from each group were randomly selected and inform for their participation in FGD.

For students who have got injury before

Self administered questionnaire containing information about needle stick injury before or not were distributed to the students during their tutorial classes. The researcher tells them to put their students ID and explained for the confidentiality of the questionnaires will be with researcher only. Those who are not willing to perform or who are not willing to fill up their ID can also accepted and inform consent was obtained before the study.

From this information there were total seven students who had injury before and the researcher contact with them to participate in FGD and they all willing to perform.

The researcher conducted the FGD by following the procedures as follows:
Greetings the participants, explaining the purposes of the research, and asking for cooperation to participate in the study.

Content of discussion

1. **Transmission routes of blood borne pathogens**

What are the diseases do you think can be transmitted by sharp injections?

1. Hepatitis A Virus
2. Hepatitis B Virus

3. Hepatitis C Virus
4. Hepatitis E Virus
5. Human Immunodeficiency Virus

Hepatitis C virus can prevent by vaccination?

2. Procedures on dealing with syringe

Do you know the color coding for disposal of hospital waste?

It is necessary to recap the used syringes before you discarding them away?

3. Universal precaution measures

Have you heard or learn about the universal precaution procedure?

E.g., Hand washing after any direct contact with patients, Safe collection and disposal of sharps, Wearing glove, safe system for hospital waste management

4. Hepatitis B immunization Schedule for booster dose and antibody test is

1. Pre-vaccination serological testing is unnecessary
2. The schedule is 0, 1 and 6 months
3. Post-vaccination testing is necessary
4. Do not administer boosters routinely

5. Post exposure prophylaxis

1If one is injured by sharp instruments, which procedures are correct to take?

1. Inject the immunity globulin or hepatitis B vaccine as soon as possible
2. Wash the wound with water
3. Put pressure on the wound and arrest the bleeding
4. Test the blood of patient
5. Keep confidential about the injury

REGARDING RISK PERCEPTION ON NEEDLE STICK INJURY

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 should resign from their profession.

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.

7 Although there is a risk of infection, confident and skillfulness can prevent injury

8 We haven't learned about the standard precaution about needle stick injury.

9 Unavailability of protection equipment can prone to get needle stick injuries.

10 Handle needle without wearing glove is better than wearing glove.

11 Reporting after needle stick injury are not much useful.

12 Every health care worker should be immunized with Hepatitis B vaccine.

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.

Closing

1. Any other suggestion or information would you like to share?
2. Thank you for giving your time and information to me.

ANNEX 4:

SUMMARY OF HEALTH EDUCATION PROGRAM

Preparation Phase

1.1 Active contact with dean and infection control unit of Melaka General Hospital, student council of MMMC

1.2 Plan to establish the committee

Activity Plan

Firstly, to establish the committee to conduct the MMMC NSI prevention health education intervention program

Committee members are,

Chaired by Head of department of Community Medicine, deputy chair by the researcher and surgeon, orthopaedic surgeon, representative from college administrative office, representative from hospital needle stick infection control team, student representative from each batch will be the members of the committee.

Objective of committee

1. To draw the agenda for the workshop
2. To prepare the materials used in workshop example prepare slides, prepare scenario for performance, prepare material for training
3. Implementation of MMMC NSI prevention health education intervention workshop
4. Implementation of needle stick injury health education program by conducting the workshop
5. Monitoring and process evaluation of MMMC NSI prevention health education intervention program
6. To evaluate the MMMC NSI prevention health education intervention program by using structured questionnaires (Post test)

ANNEX 5: GANT CHART

No	Activities	Time																									
		2012								2013														2014			
		May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar			
	Reviewing literature and writing proposal																										
	Submit for dissertation proposal exam																										
	Dissertation proposal exam																										
	Revise proposal and Submit for ethical approval																										
	Pre-test the questionnaire																										
Phase I	**Preparation Phase**																										
1.1	Active contact with the dean, infection and control team from hospital and student council																										
Phase II	**Baseline data collection**																										
2.1	Baseline survey by using structured questionnaire																										
Phase III	**Activity Plan**																										

Stage I	To establish the committee to conduct the workshop																							
Stage II	To draw the agenda for the workshop																							
Stage III	To develop module for the precaution of needle stick injury																							
Stage IV	To Implement the health education program																							
Stage V	Monitoring and Evaluation																							
3.5.1	Monitoring and process evaluation of health education program																							
3.5.2	Outcome evaluation- End line survey by using structured questionnaire																							
	Data management																							
	Data analysis																							
	Report writing																							
	Submit for final dissertation exam																							
	Dissertation exam																							
	Revision																							
	Submit final product																							

ANNEX 6

BUDGET

Item	Description	Breakdown	Total (US $)
Total cost for booklet publishing	Poster and pamphlets	2 dollar x 500 pamphlet – 1000 30 dollar x 10poster - 300	1300
Rental for the workshop facilities	Conference room, Chair, PA system	300 US$ x 3 times = 900	900
Training materials	Disposal bin, Glove, Syringe and needle, Reporting form, Personnel protection material	300 US$	300
For trainer	5 Lecturers for health talk Facilitators for workshop	100 x 3times = 300 x 5 = 1500 50 x 3 times = 150 x 6 = 900 Role play students – 10 x 30 = 300 x 3 times= 900	3300

Refreshment		30 par pax – 150 = 450 x 3times = 1350	1350
Administrative supplies and stationary		100	100
Baseline and End-line Survey			
Questionnaires		**For 300 question x 3times = 500**	500
Monitoring and Evaluation			
Documents and Stationary			
Training materials and guidelines - Copying - Binding			500
Questionnaires copying			
-			
Logistics			
Total			**Approximate 10000**

ANNEX 7

Curriculum Vitae

Name : DR KYE MON MIN SWE

Date of birth : 16th October 1978

Education : (1) M.B.B.S (2003), University of Medicine 1, Yangon, Myanmar

(2) M.Med.Sc(Public Health) (2007)

University of Medicine 1, Yangon, Myanmar

Work Experience

Date (Year-Year)	Work Place	City / Country	(Designation)
2005-2006	Anatomy Department University of Medicine (1)	Yangon, Myanmar	Assistant Lecturer
2008 Jan- 2008 Oct	Preventive & Social Medicine Department University of Medicine (1)	Yangon, Myanmar	Assistant Lecturer
2008Nov -2010 May	Department of Population and Family Health, University of Public Health	Yangon, Myanmar	Lecturer
2010 June – 2012 April	Department of Community Medicine, Melaka Manipal Medical College	Melaka Malaysia	Assistant Professor
2012 April to present	Department of Community Medicine, Melaka Manipal Medical College	Melaka Malaysia	Associate Professor

1. ชื่อ : DR KYE MON MIN SWE

2. วันเดือนปีเกิด : 16 ตุลาคม 1978

3. การศึกษา :

(1) MBBS (2003), มหาวิทยาลัยแพทยศาสตร์ 1, ย่างกุ้ง, พม่า

(2) M.Med.Sc (สาธารณสุขศาสตร์) (2007), มหาวิทยาลัยแพทยศาสตร์ 1, ย่างกุ้ง, พม่า

4. ประสบการณ์ทำงาน

(1) ผู้ช่วยอาจารย์ประจำภาควิชากายวิภาคศาสตร์มหาวิทยาลัยแพทยศาสตร์ (1) ย่างกุ้ง, พม่า, 2005-2006

(2) ผู้ช่วยอาจารย์ป้องกันและกรมแพทย์สังคมมหาวิทยาลัยแพทยศาสตร์ (1) ย่างกุ้งพม่าจาก 2008 ม.ค. 2008 ตุลาคม

(3) อาจารย์ประจำภาควิชาประชากรและการอนามัยครอบครัวมหาวิทยาลัยสาธารณสุขย่างกุ้งพม่าจาก 2008Nov -2010 พฤษภาคม

(4) รองศาสตราจารย์ภาควิชาอายุรศาสตร์ชุมชนมะละกา Manipal วิทยาลัยแพทย์มะละกา, มาเลเซีย, จากปี 2010 เดือน มิถุนายน - ปัจจุบัน

REFERENCES

APPENDIX

VITA

Names : DR KYE MON MIN SWE.

Date of birth : October 16, 1978 .

Education :

(1) MBBS (2003), University of Medicine 1, Yangon , Myanmar .

(2) M.Med.Sc (Public Health) (2007), University of Medicine 1, Yangon , Myanmar .

Work Experience:

(1) Senior Lecturer, Department of Anatomy, University of Medicine (1) Rangoon , Burma, 2005-2006.

(2) Assistant Professor , Department of Preventive and Social Medicine , University of Medicine (1) Rangoon , Burma from 2008 Jan 2008 in October .

(3) Lecturer, Department of Population and Family Health , University of Public Health Yangon Myanmar 2008Nov -2010 May.

(4) Associate Professor, Department of Community Medicine , Melaka Manipal Medical College, Melaka, Malaysia, from June 2010 - present .