

**KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS  
DISASTER PREPAREDNESS AMONG EMERGENCY  
DEPARTMENT MEDICAL PERSONNEL IN MALAYSIA**

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## **LISTS OF SYMBOLS, ABBREVIATIONS OR NOMENCLATURE**

API - Air Pollutant Index

ED – Emergency Department

EMTS – Emergency Medicine and Trauma Services

HDP – Hospital Disaster Plan

MECC - Medical Emergency Coordinating Centre

MNSC - Malaysian National Security Council

NADMA - National Disaster Management Agency

SOP – Standard Operating Procedure

## **ABSTRAK**

### **Pengenalan**

Bencana adalah fenomena yang menyebabkan kerosakan harta benda dan nyawa. Kesiapsiagaan bencana adalah tindakan yang harus diambil dalam perancangan sistematik berkaitan dengan bencana. Objektif kajian ini adalah untuk mengetahui tahap pengetahuan, sikap dan amalan (KAP) di kalangan kakitangan perubatan jabatan kecemasan di Malaysia dalam kesiapsiagaan bencana dan mengkaji faktor-faktor yang berkaitan antara tahap pengetahuan, sikap dan amalan yang berbeza di kalangan kakitangan perubatan ED.

### **Kaedah Kajian**

Kajian keratan rentas dilakukan di 12 hospital di seluruh Malaysia. Borang kaji selidik berkenaan pengetahuan, sikap dan amalan terhadap persediaan bencana diberikan merangkumi 37 soalan. 427 peserta terlibat dan kajiselidik dijalankan sepanjang Mac 2019 ke Mac 2020.

### **Keputusan**

Kajian ini menunjukkan bahawa kakitangan kakitangan perubatan kecemasan di Malaysia mempunyai pengetahuan, sikap dan amalan yang mencukupi terhadap kesiapsiagaan bencana yang masing-masing mendapat skor 91.6%, 78.2% dan 61.1%. Pengalaman dan latihan dalam tindak balas bencana adalah peramal penting yang berkaitan dengan peningkatan pengetahuan dan amalan. Tempoh pengalaman bekerja juga dikaitkan dengan peningkatan tahap latihan. Namun, tidak ada hubungan yang signifikan dengan tahap sikap dan kesiapsiagaan bencana.



## **Kesimpulan**

Tahap pengetahuan, sikap dan praktikal memuaskan pada pegawai perubatan ED. Kurikulum mengenai teori dan amalan kesiapsiagaan bencana harus digabungkan untuk mempersiapkan mental kakitangan kecemasan sekiranya berlaku bencana. Pendidikan dan latihan berterusan kakitangan penting untuk meningkatkan sistem penjagaan kesihatan.

## **Kata Kekunci**

Kesediaan Bencana, Pengetahuan, Sikap, Amalan, Jabatan Kecemasan (ED)

## **ABSTRACT**

### **Introduction**

Disasters are phenomenon that causes damage in properties and lives. Disaster preparedness is an action to be taken into systematic planning with regards to disaster. Objective of this study is to determine the level of knowledge, attitude and practices (KAP) among ED medical personnel in Malaysia in disaster preparedness and to study the associated factors between the different level of knowledge, attitude and practices among ED medical personnel

### **Methodology**

This cross-sectional study was conducted in 12 hospitals in Peninsular Malaysia which were randomly selected. A self-administered questionnaire regarding the knowledge, attitude and practices towards disaster preparedness comprise of 37 questions were used. A total of 427 participants were recruited. This study was carried out for one year from March 2019-March 2020.

### **Results**

This study showed that emergency medicine staff personnel in Malaysia had adequate knowledge, attitude and practice towards disaster preparedness which score 91.6%,78.2% and 61.1% respectively. Experience and training in disaster response were significant predictors associated with increased level of knowledge and practice. Duration of working experience was also associated with increased level of practice. However, there were no significant association found with level of attitude and disaster preparedness.

## **Conclusion**

The level of knowledge, attitude and practice was satisfactory in ED medical personnel. Curriculum on theories and practices of disaster preparedness should be incorporated to mentally prepare emergency department staff in the event of disaster. Continuous education and training of staff is important to improve the healthcare system.

## **Keywords**

Disaster Preparedness, Knowledge, Attitude, Practices, Emergency Department (ED)

## **CHAPTER 1: INTRODUCTION**

### **1.1 OVERVIEW OF DISASTER AND DISASTER PREPAREDNESS**

Disasters are unpredictable events that kill and demolish properties and disrupt the environment. In the last few decades, disasters have claimed millions of lives and cost billions of dollars worldwide. This was apparent on 26 December 2004 when a powerful earthquake under the eastern Indian Ocean caused a massive tsunami that killed more than 280,000 people and caused billions of dollars in damage<sup>1</sup>. The Malaysian National Security Council (MNSC) Directive 20 (2003) defines disaster as “an emergency situation of some complexity that will cause the loss of lives, damage property, and the environment, and hamper local social and economic activities”. Disasters are classified into natural and man-made disasters. Natural disasters occur where man has no control over them. It causes catastrophic events resulting from natural causes such as floods, landslides, mudslides, etc. When a disaster is caused directly or principally by deliberate or negligent human actions, it will be classified under man-made disasters. This includes stampedes, fires, transport accidents, industrial accidents, oil spills, and nuclear explosions/radiation.

Disaster preparedness is an action to be taken into systematic planning with regards to the disaster situation<sup>2</sup>. It includes to foresee and if possible, to prevent disaster and attenuate the impact of the disaster on individuals or societies. And also, to respond to and effectively cope with their sequel. Mitigation, preparedness, response, and recovery are four phases of emergency management<sup>3</sup>. Mitigation takes place before and after disaster events to prevent future emergencies or minimize their impact. Preparedness is when we prepare to handle an emergency before an emergency occurs. It includes plans or preparations made to save lives and to help response and rescue operations. Examples include evacuation plans and stocking food and water. Followed

by the response phase when you put your preparedness plan into action, i.e. responding safely to an emergency. The last phase is the recovery phase after the disaster. This is where actions are taken to return to a normal or even safer situation following an emergency.

## **1.2 PROBLEM STATEMENT AND STUDY RATIONALE**

Currently, there are gaps in knowledge, attitude, and practices of many doctors, nurses, and medical assistants regarding emergency preparedness and disaster. This study would like to explore the level of knowledge, attitude, and practice in Malaysia. We would like to explore the different states of Malaysia in how they practice and prepared themselves for disaster management since they might have different practices and training. The findings of this study hopefully would contribute to the improvement of disaster knowledge and awareness of medical personnel and preparing them in case of disaster occur. From the point of view of hospital management and emergency department, the findings would contribute to the need for evidenced-based disaster training and structural training which further improve our management of the disaster. The hospital may decide to provide them with in-service training or allow them to pursue further education on disaster preparedness and management. This study will also add to an already existing body of knowledge.

## **CHAPTER 2: STUDY PROTOCOL**

### **2.1 INTRODUCTION**

Malaysia is in Southeast Asia and surrounded by few neighbourhood countries including Thailand, Brunei, Singapore, Philippines, Vietnam, and Indonesia. Malaysia consists of thirteen states and three federal territories. The capital is in Kuala Lumpur.

Malaysia is separated into Peninsular Malaysia or West Malaysia and East Malaysia which Sabah, Sarawak, and Labuan are located by the South China Sea. Malaysia has an area of 329,847 sq. km (120,354 sq. miles), with a coastline of 4,675 km (2905 miles)<sup>3</sup>. Malaysia has a tropical rainforest climate, being hot and humid throughout the year as it is located near the equator. The climate differs between Peninsular and East, as the climate on the East more affected by maritime weather, the climate in Peninsular affected more to wind from the mainland <sup>3</sup> Therefore severe climate change has a significant impact on Malaysia particularly increased risk of flooding during monsoon season, landslides, and leading to large droughts. Geographically, it is located outside the Pacific Rim of Fire, thus minimizes it from direct risks of earthquakes and volcanoes. Due to the excessive number of industries and motor vehicles, Malaysia also suffers from a periodic intense haze which is measured by the Air Pollutant Index (API).

Emergency Medicine and Trauma Services (EMTS) plays an important role in any case of disaster. The emergency department staff are usually the first hospital responders in the event of disasters and are the front lines of disaster preparedness. In EMTS guidelines by the Ministry of Health Malaysia has stated that Emergency and Trauma Department to be in a state of readiness for the management of mass casualties or disaster victims <sup>4</sup>. This EMTS plays a fundamental role in the major medical incident and disaster management including response and recovery for the community that they serve. The EMTS also participate in pre-disaster phases including development, risk management, prevention, mitigation, and preparedness, and provide necessary input to the community such as to reduce the medical impact or injury burden. This follows Directive 20 of the National Security Council, or emergency response plans authorize by the state health officials<sup>4</sup>. According to this, the staff should have knowledge, skills, and training in preparation for any disaster, as disaster can happen anytime anywhere.

The EMTS provides pre-hospital service which includes ambulance service, Medical Emergency Coordinating Centre (MECC) and 999 Emergency Call management system, major medical incident and disaster management, mass gathering, and major event medical coverage. The MECC act as a command, control, coordination, and communication centre for pre-hospital services of the Emergency and Trauma Department <sup>4</sup>. This centre operates 24hours, provides a 999-emergency call management system, ambulance dispatch, control, and coordination of ambulance resources as well as intra and inter-agency communication which is important during a disaster. They also provide operational support and management for disasters. There is a total of 21 hospitals in Malaysia that provides MECC services. The overall average density of emergency service was 0.08 hospitals per 10,000 population <sup>4</sup>.

As of date, there are 139 public hospitals in Malaysia that provided emergency and trauma services <sup>4</sup>. They can be classified as States Hospitals, Major Specialist Hospitals, Minor Specialist Hospitals, Medical Institutions, and Non-specialist Hospitals. A State Hospital is the main hospital for each state in Malaysia. It is usually the largest hospital with the highest capacity in the state and offers various subspecialty services which may also serve as the regional referral centre. While hospital with a specialist is further divided into the major specialist hospital and minor specialist hospital. These specialist hospitals consider various aspects involving the medical services provided such as location, physical capacity of the hospital, and accessibility of specialized care to the public. For major specialist hospitals, at least 20 specialty services provided and for minor hospitals 10 specialty services provided including emergency medicine. However, some of the minor specialist hospitals still unable to provide emergency medical services i.e. no emergency physician in the hospital but they still provide emergency and trauma services as other government hospitals.

In Malaysia, disaster occurrence is increasing due to climate change and major deforestation which causes erratic weather which leads to an increasing number of floods particularly, and landslides, etc<sup>5</sup>. Most of the study worldwide has shown that there are gaps in knowledge, skills, and abilities of many doctors, nurses, and medical assistant regarding emergency preparedness and disaster response. However, the study of disaster management amongst healthcare providers, primarily those who work in the Emergency Department is limited. Thus, leading to this particular interest in looking into how we as emergency medical personnel prepare ourselves in facing disaster since we as a frontline plays a major role in this event.

## **2.1 LITERATURE REVIEW**

Disasters are events that could cause morbidity and mortality. Since the catastrophe of the 11 September 2001 terrorist attack on the World Trade Centre Towers in New York City, the SARS pandemic in March 2003, the tsunami in Southeast Asia in December 2004, and Hurricane Katrina in New Orleans in 2005, the disaster preparedness has become an international concern. In year 2018 we have been shocked by the most recent disaster that affects Southeast Asia, a typhoon in Japan, and an Earthquake in Palu. Malaysia is facing major natural disasters mainly floods according to the monsoon season. Some parts of East Malaysia, also facing disasters such as landslides and droughts.

Malaysia is less vulnerable than other parts of the region based on its geographical location. In December 2004, the Great Indian Ocean tsunami impacted Penang resulting in at least 68 casualties<sup>6</sup>. Every year there will be floods threatening each part of Malaysia for example in January 2007 floods in the Johor-Pahang region killed 17 people, while in December 2007 Malaysia's east coast floods affecting more than 4000 lives in Kelantan, Pahang, and Johor state. Around 2000 people were affected



by flooding in Bendang, Kedah in August 2010<sup>7</sup>. It was said to be the worst flood in 30 years history of Malaysia by October 2010, when the northern states of Perlis, Terengganu, and Kelantan were also hit by continuous rain. However, in 2014 Malaysia again was hit by downpours and floods which affects more than half a million people which was the worst ever in the country's history<sup>7</sup>. Due to uncontrolled development and activities, flash floods reportedly occur quite rapidly in Malaysia<sup>8</sup>

Even though Malaysia is out of the Pacific Rim, Malaysia had been hit by a magnitude 5.9 earthquake which struck near Mount Kinabalu killing 18 and stranding more than a hundred people on the peak in June 2015<sup>7</sup>. In addition to this, Malaysia also suffers from the periodic intense haze mainly from sources such as industries, motor vehicles, open burning, and power generation. This has caused pollution levels to reach record highs and has a significant impact on Malaysia. Climate change is a global issue that occurs worldwide. Carbon dioxide from fuel combustion and deforestation activities contributes to global warming and has caused a shift in the climate system.

Malaysia has set up a National Disaster Management Agency (NADMA) which takes over disaster management from the National Security Council in October 2015 following this<sup>3</sup>. This agency falls under the Prime Minister's department and includes the Civil Defence Department. The National Security Council (NSC) coordinates disaster management under Directive No. 20, the "Policy and Mechanism on National Disaster Relief and Management." The Council facilitates activities that are implemented by the Disaster Management and Relief Committee (DMRC), which comprises various agencies at federal, state, and local levels in managing disaster and its aftermath. One of the agencies involved during a disaster is Emergency Medical Services including the hospital, Malaysia Red Crescent, St Johns, MERCY, etc. Thus, hospitals play one of the biggest roles contributing to disaster management to ensure the

smooth and safe delivery of medical health care. The failure of hospital and emergency services to manage a disaster severely affects the community and the outcome of their medical healthcare<sup>3</sup>.

During disasters that result in a patient surge, hospitals are expected to function as a safe environment for personnel and provide essential medical care to the casualties<sup>9</sup>. The outcome of a patient and the speed of recovery of emergencies presenting to a hospital are largely dependent on the initial response by emergency health workers and the quality of care delivered at presentation. This means that the knowledge and attitude of these emergency workers toward the management of the emergency cases presenting to their hospitals, and their preparedness, add up to a major factor that determines the outcome and recovery of such patients. However, various studies show that hospitals overall suffer from an insufficient level of preparedness<sup>9</sup>

Most of the study worldwide focuses mainly on staff nurses working in emergency departments. Most of the results showed that there was an overall lacking knowledge amongst nurses regarding disaster preparedness. In one study which is conducted on nurses' knowledge, attitudes, practices, and familiarity regarding disaster and emergency preparedness, the results showed a lack of knowledge level of the study participants and the study finding revealed that the practices of participants regarding disaster preparedness were below average level<sup>10</sup>. A systematic review of the literature regarding disaster preparedness among nurses showed that nurses are insufficiently prepared and do not feel confident responding effectively to disaster<sup>11</sup>. According to another study, there is an overall deficiency in knowledge of emergency preparedness among health workers. However, their attitude toward emergency preparedness was generally positive<sup>12</sup>. As Landesman in 2001 note that, “No two emergencies or disasters

are alike.” But in each situation, regardless of cause, the competencies nurses need to possess in order to respond effectively are essentially the same<sup>13</sup>.

There are several factors affecting disaster preparedness in hospitals which can be divided into staff factors and hospital factors. Hospital factors including hospital disaster plan (HDP), adequate storage of equipment in the event of a disaster, disaster Standard Operating Procedure (SOP) in each emergency department. While staff factors including staff knowledge and practice towards disaster mainly from the education, training, and drill. A hospital disaster plan (HDP) is a planned procedure of what should be performed, how it should be handled, and by whom it should be lead in an event of an anticipated disaster. In order to familiarize with disaster, HDP should be regularly updated and emergency simulation training or exercise should be performed frequently in the hospitals. As emergency preparedness and management is necessary for all healthcare workers in the hospitals, the staff should be adequately trained, and emergency drills should be conducted frequently to improve their knowledge. Many hospitals lack disaster preparedness and training for their personnel as indicated in the survey conducted in 2002 in the USA which reported that fewer than half of the hospitals had conducted drills or exercises simulating a response to a bioterrorist attack (the United States General Accounting Office Report 2008). A study done in Israel showed that drills were performed adequately for emergency physicians, and a strong to a very strong relationship was found between training and drills and the total preparedness score for emergency scenarios among health workers in the hospital<sup>14</sup>. Training and education are fundamental to disaster preparedness. The current state of training in the tertiary hospitals surveyed in Gauteng is not favourable, especially since “the most important principle of good disaster preparedness planning is that it must include training as a key component”<sup>15</sup>.

Knowledge is gained through training. The importance of disaster training and education in the health sector has given rise to the discipline of disaster medicine, which has come about as a result of the marriage between emergency medicine and disaster management<sup>16</sup>. It was also discovered that there was a significant association between the staff category and the knowledge of emergency preparedness. Findings from the present study revealed that emergency staff in the medical and surgical categories exhibited better knowledge than staff in other categories. In this study, there was no significant association between the working years of respondents and their emergency preparedness and management<sup>12</sup>. Another study also revealed that most nurses are not confident in their abilities to respond to major disaster events. The nurses who were confident were more likely to have had actual prior experience in disasters or shelters<sup>17</sup>. Gender and level of education were significantly associated with increased knowledge and practice scores. Working experience, involvement in disaster response, and attendance of disaster-related education/training were all associated with increased practice scores<sup>18</sup>.

Currently, there are gaps in the knowledge, skills, and abilities of many doctors and nurses regarding emergency preparedness and disaster response<sup>12</sup>. In Malaysia, the study of disaster management amongst healthcare providers, primarily those who work in the Emergency and Trauma Department is limited, despite the growing number of disaster events. Most of the study focusing on the knowledge of staff nurses primarily rather than medical personnel. A study was done recently in East coast hospitals in Malaysia regarding disaster preparedness among medical personnel showed that the level of knowledge and practice was below average with an acceptable level of attitude<sup>19</sup>. In view of this, I would like to explore this study further in other regions of Malaysia particularly the northern and southern regions that had been affected by

previous flood disasters. It is important for all hospitals to be updated, equipped, and well prepared to minimize the impacts of natural and manmade disasters.

## **2.3 RESEARCH QUESTIONS**

What is the level of knowledge, attitude, and practice towards disaster management amongst emergency department (ED) medical personnel in Malaysia?

## **2.4 OBJECTIVE**

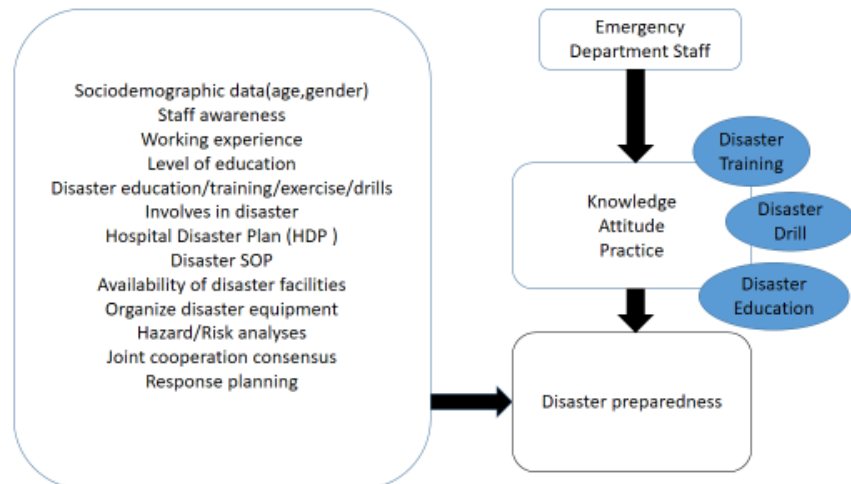
### **2.4.1 General Objectives:**

To determine the level of knowledge, attitude and practices among ED medical personnel in Malaysia in disaster management

### **2.4.2 Specific Objectives:**

1. To determine the level of knowledge towards disaster management amongst ED medical personnel
2. To determine the level of attitude towards disaster management amongst ED medical personnel
3. To determine the level of practices towards disaster management amongst ED medical personnel
4. To study the associated factors between the different level of knowledge, attitude and practices amongst ED medical personnel

## 2.5 CONCEPTUAL FRAMEWORK



## 2.6 METHODOLOGY

### 2.6.1 Study design

Cross sectional study, convenience sampling.

Justification: Since this study involves multicentre, convenience sampling is the most easy, simple and convenient method to select sample for the ease of study. Furthermore, data can be collected in short duration of time and it is cost effective from the investigator point of view.

### 2.6.2 Study period

1<sup>st</sup> March 2019 – 31<sup>st</sup> March 2020

### 2.6.3 Study location

Emergency Department (ED) in Malaysia

### 2.6.4 Study population

Reference population - ED medical personnel in Malaysia

Target population - Medical doctors and paramedics in Malaysia

Source population / sampling pool – Hospitals in Malaysia

Sampling frame – All ED doctors and medical assistant that fulfil the inclusion criteria

### 2.6.5 Subject criteria

Inclusion Criteria- Doctors and medical assistants working in Emergency Department

Exclusion Criteria- Emergency physicians, Staff who are not available during study period

Justification: to avoid bias in view of emergency physician have more knowledge and training in disaster.

### 2.6.6 Sample size estimation

One proportion formula:

The formula:

$$n = \left( \frac{Z_{\alpha}}{\Delta} \right)^2 * P(1 - P)$$

P = the population proportion from literatures

$\Delta$  or d = Precision or detectable deviation. Absolute precision is usually taken between 1% (0.01) – 10% (0.10). Can also be relative precision.

$Z_{\alpha}$  = normal deviates that reflects Type I error; usually taken as 1.96 for  $\alpha = 0.05$ (95%CI) d = 0.05

We will be considering a 20% dropout of samples in all the factors mentioned

Objective 1,2 and 3 using single proportion formula, calculated using PS software

Objectives	P	n	n+20%	Literature review
Adequate Knowledge	0.6	369	462	Ahayalimudin et.al 2016
Positive Attitude	0.9	139	174	Ahayalimudin et.al 2016
Adequate Practice	0.7	323	404	Ahayalimudin et.al 2016

Objective 4 using sample size calculator for 2 independent proportion, using Sample size calculator for two independent proportion from Najib MY (2015) Unit of

### Association between sociodemographic data and knowledge

Associated factors	Po	P1	m	n	N (nx2) +20%	Literature review
Gender	0.5	0.7	1	91	228	Ahayalimudin et.al,2016
Level of education	0.3	0.5	1	91	228	Ahayalimudin et.al,2016
Working experiences	0.7	0.5	1	91	228	Ahayalimudin et.al,2016
Involvement in disaster	0.55	0.7	1	160	400	Ahayalimudin et.al,2016
Attended disaster training	0.22	0.7	1	12	30	Ahayalimudin et.al,2016

### Association between sociodemographic data and attitude

Associated factors	Po	P1	m	n	N (nx2) + 20%	Literature review
Gender	0.9	0.7	1	59	148	Ahayalimudin et.al,2016
Level of Education	0.95	0.8	1	73	184	Ahayalimudin et.al,2016
Working experiences	0.95	0.8	1	73	184	Ahayalimudin et.al,2016
Involvement in disaster	0.9	0.7	1	59	148	Ahayalimudin et.al,2016
Attended disaster training	0.4	0.7	1	40	100	Ahayalimudin et.al,2016

### Association between sociodemographic data and practice

Associated factors	Po	P1	m	n	N (nx2) + 20%	Literature review
Gender	0.55	0.7	1	160	400	Ahayalimudin et.al,2016
Level of Education	0.70	0.5	1	91	228	Ahayalimudin et.al,2016
Working experiences	0.6	0.8	1	79	198	Ahayalimudin et.al,2016
Involvement in disaster	0.5	0.7	1	91	228	Ahayalimudin et.al,2016
Attended disaster training	0.2	0.4	1	79	198	Ahayalimudin et.al,2016



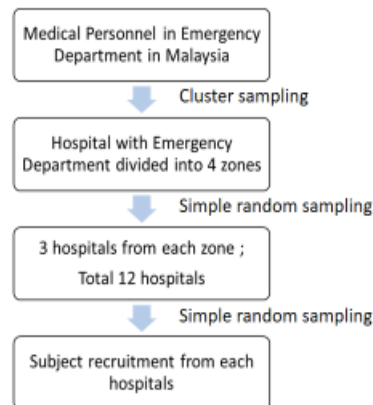
The highest sample size calculated is 462. Therefore, sample size taken for this study will be 470.

### **2.6.7 Sampling method and subject recruitment**

For this study, multi-staging sampling method will be applied

1. Hospital with ED in Peninsular Malaysia will be divided into 4 geographical zones by cluster sampling method:
  - a. North: Perlis, Kedah, Pulau Pinang and northern part of Perak (Taiping, Parit Buntar, Selama, Kuala Kangsar).
  - b. South: Johor and Melaka
  - c. East coast: Kelantan, Terengganu and Pahang.
  - d. Central: Selangor, federal territories of Kuala Lumpur & Putrajaya and southern part of Perak (Ipoh, Teluk Intan, Slim River, Seri Manjung, Batu Gajah, Changkat Melintang, Kampar, Gerik, Sungai Siput, Tapah) and Negeri Sembilan.
2. 3 hospitals will be selected from each zone by simple random sampling method.
3. 470 subjects will be divided among these 12 hospitals based on simple random sampling method. Each hospital will have different number of subjects depending on the number of staff in the hospital. The bigger and a greater number of staff, the more subject will be recruited from that particular hospital.

### Sampling method diagram:



#### 2.6.8 Research tool

Data collection will be done using a Questionnaires from the validated survey; ‘Questionnaire on Knowledge, Attitude and Practices for Disaster Management by Nurul’Ain Ahayalimudin(2012). The questionnaire comprises of 7-items socio-demographic data, 15- items of knowledge, 10- items of attitude and 12- items of practices. The questionnaire of yes-no-uncertain choice covers all aspects ranging from the definition, classification, phases, and its activities to the impacts of disaster. A 5- Likert scale (agree-disagree-uncertain) was utilized to determine their attitude on the involvement, phases and its activities and the impacts of the disaster. The items for the practice section comprised of the yes-no-uncertain answer. The scores of all domains were set to a 60% cut-off point to distinguish the adequate, inadequate for knowledge and practice and positive, negative for attitude. This questionnaire has been validated and has Cronbach’s alpha of knowledge and practice above 0.7, and 0.66 for attitude.

#### 2.6.9 Operational definition

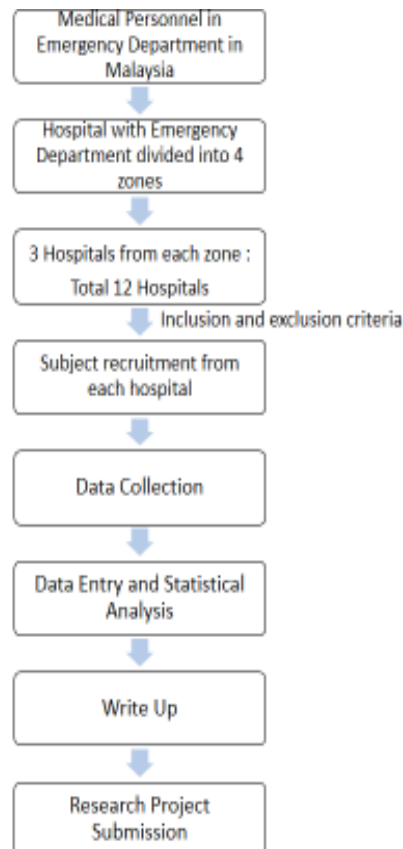
- a. Medical personnel – doctors and paramedics who are working in emergency department
- b. Adequate knowledge – respondents who have scored  $\geq 60\%$  of knowledge questions (Ahayalimudin et.al 2012)

- c. Positive attitude – respondents who have scored  $\geq 60\%$  of attitude questions  
(Ahayalimudin et.al 2012)
- d. Adequate practice– respondents who have scored  $\geq 60\%$  of practice questions  
(Ahayalimudin et.al 2012)

#### **2.6.10 Data collection method**

1. Permission obtained from head of emergency department of selected hospital to conduct the study during department CME time.
2. Short briefing of how to answer the questions given by the investigator or one of the trained research team members. The purpose of the study explained and each participant that agree to participate answered the questionnaires online.
3. The questionnaires were in Google form format.
  - a. 5. The questionnaire were distributed during department CME time, whereby all the staff gather in the CME room.
5. Participants answered the questionnaire at the same time.
6. Participants were given 20 minutes to answer the questionnaire.
7. The written consent form was distributed during that particular time, both in English and Malay version
8. Each response of questionnaire was handle confidentially. Only investigator or trained research team member have accessed the data collection. Data that were collected will be stored in a computer for 3years. After data analysis and completion of study, each data collection will be deleted.

### 2.6.11 Study flowchart



### 2.6.12 Data analysis

Data will be entered and analysed using SPSS version 24. Descriptive statistics will be used to summarise the socio-demographic characteristics of subjects. Numerical data will be presented as mean (SD) or median (IQR) based on their normality distribution. Categorical data will be presented as frequency (percentage).

For objective 1, 2 and 3 descriptive statistics will be used to summarise KAP. For objective 4 simple and multiple logistic regression will be used to analyse the associated factors and KAP.

## 2.7 EXPECTED RESULTS

### Analysis of sociodemographic data

Variables	n	%
Age		
<40		
>40		
Gender		
Male		
Female		
Level of Education		
Certificate & Diploma		
Degree & Master		
Working Experience		
<4years		
>5years		
Involved in disaster response		
Yes		
No		
Attended disaster education/training		
Yes		
No		

### Classification of knowledge, attitude and practice

	Adequate		Inadequate	
	n	%	n	%
Knowledge				
Practice				

	Positive		Negative	
	n	%	n	%
Attitude				

Factors associated with knowledge, using simple logistic regression.

Variables	Crude OR ( 95% CI )	Wald statistic(df)	p value
Gender Male Female			
Level of Education Certificate & Diploma Degree & Master			
Working Experience <4years >5years			
Involved in disaster response Yes No			
Attended disaster education/training Yes No			

Similar table for factor associated with attitude and practice, using simple logistic regression.

Factors associated with knowledge, using multiple logistic regression

Variables	Wald statistic(df)	Adjusted OR (95% CI)	p-value

Similar table for factor associated with attitude and practice, using multiple logistic regression

## 2.8 GANTT CHART AND MILESTONE

### Gantt chart

	2018 J J A S O N D	2019 J F M A M J J A S O N D	2020 J F M A M J J A S O N D
RESEARCH ACTIVITY	→		
RESEARCH PROPOSAL	→		
DATA COLLECTION		→	→
DATA ENTRY		→	→
DATA ANALYSIS			→
WRITING REPORT			→
PROJECT COMPLETION/DRAFT SUBMISSION			→
SUBMISSION OF RESEARCH PAPER			→

## 2.9 ETHICAL CONSIDERATION

### 2.9.1 DECLARATION OF CONFLICT OF INTEREST

Principal investigator certifies that there is no conflict of interest in this study. Principal investigator's responses constitute a full disclosure of any conflicting interest/s and activities that may affect the integrity of the research or the rights, safety and welfare of human subjects. The result of this study is hoped to give benefit to the community in the future.

### 2.10 PRIVACY AND CONFIDENTIALITY

Participants' information will be kept confidential by the researchers and will not be made publicly available unless disclosure is required by law. Data obtained from this study that does not identify the participant individually will be published for knowledge purposes.

The original records may be reviewed by the researcher, the Ethical Review Board for this study, and regulatory authorities for the purpose of verifying the study procedures

and/or data. Participants have right to refuse future storage and use of collected specimen/data.

Data will be kept for 3 years in a compact disc and stored in database room in ED HUSM which is secured and will be archived at the mentioned period. After that it will be deleted and destroyed, which is the standard policy of the archive. The answered questionnaire and consent form will be shredded as well.

Participant information will be held and processed on a computer. Only research team members are authorized to access participant's information. Participants are not given access to the personal information and study data. There are no costs involved in this study, expenses of participant's medical treatment and procedures are at their own expenses.

Participants involved will be informed if new information relevant to consent becomes available. By signing the consent form, participant authorize the record review, information storage and data process described above.

## **2.11 VULNERABILITY**

There is no foreseeable or potential risk (including psychological, physical and emotional) that may arise from respondent's participation in this research. However, the respondent should inform our research team if they encounter any problem or relevant information that might change their consent to participate in this research.

## **2.12 COMMUNITY SENSITIVITIES AND BENEFITS**

There will be no direct benefit to participants of this study and the respondents will not receive any compensation from this study.



The findings of this study would be able to assist stakeholders and government to improve the awareness among medical personnel and also improvement of teaching programme and management in case of any disaster.

### **2.13 ETHICAL CLEARANCE**

1. Medical Review and Ethical committee from National Institute of Health, Ministry of Health ( National Medical Research Review, NMMR, MOH)
2. Human Research and Ethics Committee, Universiti Sains Malaysia

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