



**UNIVERSITI PUTRA MALAYSIA**

***KNOWLEDGE, ATTITUDE AND PRACTICE ON DENGUE FEVER  
AMONG INTERNATIONAL POSTGRADUATE STUDENTS IN A PUBLIC  
UNIVERSITY IN MALAYSIA***

**ZAHRA ABBASALI**

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UNIVERSITY IN MALAYSIA**

By

**ZAHRA ABBASALI**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,  
in Fulfilment of the Requirements for the Degree of Master of Science**

**February 2020**

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## **DEDICATION**

I dedicate the thesis to the people who without them I won't have reached where I am today

My soul husband  
My beloved daughter  
My supportive supervisor committee  
My lovely lecturers and friends



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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**February 2020**

**Chairman : Ng Yee Guan, PhD**  
**Faculty : Medicine and Health Science**

Dengue is a vector-borne disease and significant health concern in Malaysia. However, to the international students currently residing in Malaysia, dengue may not be as common or in the list of priority health threat back in their countries which may indirectly increases their risk of dengue.

This study aimed at determining the lifetime prevalence rate of dengue fever among international postgraduate students in Universiti Putra Malaysia (UPM) and assessing their current level of knowledge, attitude, and practice in relation to prevention of dengue fever. A cross sectional study was conducted using universal sampling method via an adapted self-administered questionnaire for data collection. Data was analyzed with significant level set at  $p < 0.05$ . The normality test was checked by using Kolmogorov-Simonov test. Chi-square test, Spearman correlation test, and logistic regression model were applied to test the research hypothesis.

A total of 312 respondents were participated with the response rate of 91.7%. The the lifetime prevalence of dengue fever incidence among students was low where respondents had poor level of knowledge and practices but positive attitude on dengue fever. There is a significant ( $p < 0.001$ ) correlation between knowledge and attitude, attitude and practices as well as knowledge and practices respectively. Written material was the significant source of information on dengue fever for the respondents' level of knowledge. Being female, living in Malaysia more than five years and written material were the significant predictors to good level of knowledge.

The significant predictors to positive attitude were age between 31-40 years old while significant predictors to good practices on dengue fever were female and knowledge level on dengue fever.

In conclusion, knowledge-based health education and the development of a positive attitude should be further reinforced taking into consideration the gender, age and knowledge delivery mechanism with the aim of improving prevention practices on dengue fever.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**PENGETAHUAN, SIKAP DAN AMALAN TERHADAP DEMAM DENGGI  
DALAM KALANGAN PELAJAR SISWAZAH ANTARABANGSA DI  
UNIVERSITI AWAM DI MALAYSIA**

Oleh

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Denggi merupakan penyakit bawaan vektor dan masalah kesihatan yang signifikan di Malaysia. Namun, bagi pelajar antarabangsa yang kini menetap di Malaysia, denggi mungkin tidak begitu umum atau dalam senarai ancaman kesihatan yang utama di negara mereka dan secara tidak langsung meningkatkan risiko mereka kepada demam denggi.

Tujuan kajian ini dijalankan adalah untuk menentukan prevalens seumur hidup demam denggi di kalangan pelajar siswazah antarabangsa di Universiti Putra Malaysia (UPM) dan menilai hubungan pencegahan demam denggi dengan tahap pengetahuan, sikap dan amalan mereka. Kajian keratan rentas dijalankan dengan menggunakan kaedah persampelan universal melalui soal selidik sendiri untuk pengumpulan data. Analisis data menetapkan tahap signifikan pada  $p < 0.05$ . Ujian normaliti disemak dengan menggunakan ujian Kolmogorov-Simonov manakala ujian Chi-square dan ujian korelasi Spearman, serta model regresi logistik digunakan untuk menguji hipotesis kajian.

Seramai 312 responden telah menyertai kajian ini dengan kadar respons sebanyak 91.7%. Hasil kajian menunjukkan prevalens seumur hidup demam denggi di kalangan responden adalah rendah dengan tahap pengetahuan dan amalan yang lemah tetapi mempunyai sikap yang positif terhadap demam denggi. Terdapat hubungan korelasi yang signifikan ( $p < 0.001$ ) di antara pengetahuan dan sikap, di antara sikap dan amalan serta di antara pengetahuan dan amalan berkaitan dengan demam denggi.

Bahan bertulis merupakan sumber maklumat penting bagi tahap pengetahuan demam denggi. Pelajar wanita yang telah menetap di Malaysia lebih dari lima tahun dan bahan bertulis merupakan peramal yang penting kepada pengetahuan yang baik. Peramal yang signifikan terhadap sikap positif adalah di antara usia di antara 31 hingga 40 tahun tetapi bagi mereka yang tinggal di Malaysia antara 3 hingga 5 tahun cenderung kepada sikap negatif terhadap demam denggi.

Kesimpulannya, pendidikan kesihatan berasaskan pengetahuan dan pengembangan sikap positif harus diperkukuhkan dengan mengambilkira faktor jantina, umur dan mekanisme penyampaian pengetahuan dengan tujuan menambah baik amalan pencegahan demam denggi.





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This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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## LIST OF ABBREVIATIONS

AOR	Adjusted odd ratio
CI	Confidence interval
COMBI	Communication for behaviour impact
DF	Dengue fever
DHF	Dengue hemorrhagic fever
DSS	Dengue shock syndrome
IR	Incidence rate
KAP	Knowledge, attitude, practice
OTC	Over the counter
OR	Odd ratio
SE	Standard error
SGS	School of graduate studies
SPSS	Statistical package for social science
UPM	Universiti Putra Malaysia
WHO	World Health Organization
WWII	World war two

# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Dengue is significant health concern in Malaysia and currently considered a reemerging disease and a global health threat. To date, no specific treatment and vaccine mentioned for dengue fever (DF), thus disease prevention is the best possible practice at the moment. Prevention of dengue fever has been one of the remarkable progress in the affected tropical and subtropical countries such as Malaysia. Although many efforts have been made to control the disease, the number is increasing (World Health Organization, 2014).

Malaysia, one of the many affected countries is located in tropical region where dengue fever is endemic. Long dry season in Malaysia with occasional torrential rains were among the reasons which provided a suitable breeding sites for proliferation of mosquitoes thereby spreading the disease (Rahman & Zamri, 2015). The other reason was people mobility which triggered the spreading virus in the country as well. In a study conducted at urban residential areas in Shah Alam, it was shown that increased travel to hotspot areas was the cause of spreading dengue fever (Nur et al., 2017).

The spread of dengue infections is highly dependent on people's habits and activities. Millions of dengue cases reported in the whole world are associated with the lack of human knowledge regarding dengue and its preventive measures (Al-Zurfi et al., 2015). On the other hand, environmental changes, population growth, lack of having urbanization plan, enhancing international trade and travel are the other reasons to spread dengue virus and its vector (WHO, 2014).

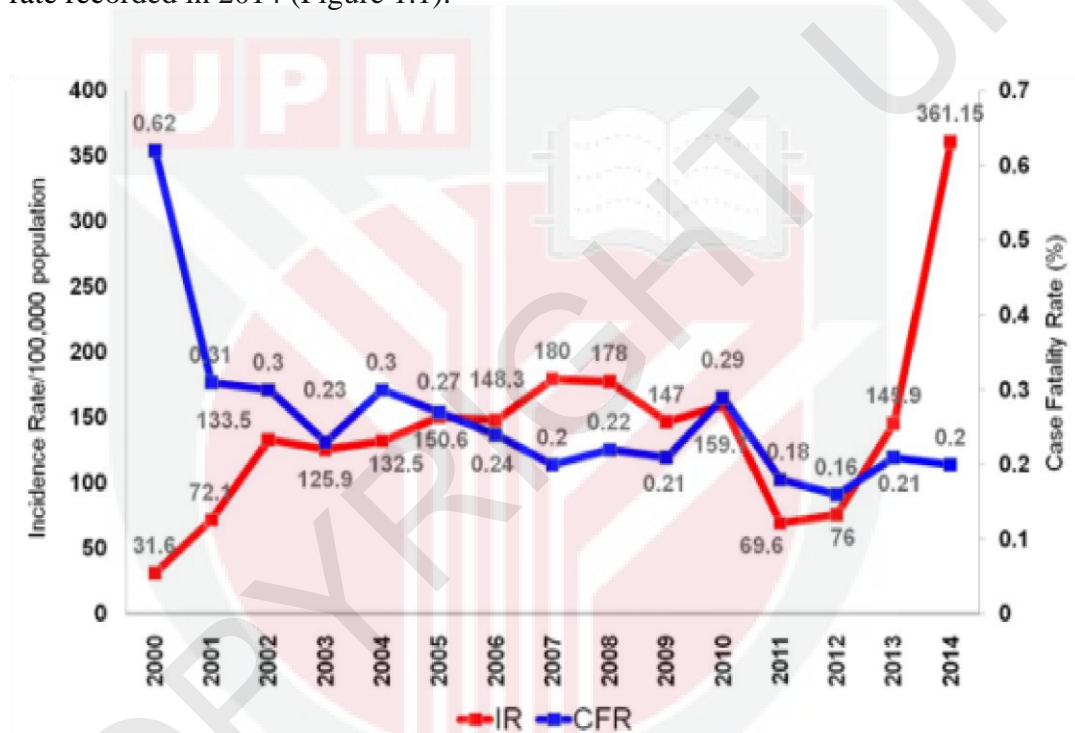
Even though dengue fever is a febrile illness that is spread by mosquito typically endemic to tropical and subtropical areas, recent evidence has shown that it has been expanding to southern Europe and America (Hasan et al., 2016). Dengue fever has occurred in over 100 countries, including the United States, Africa, Eastern Mediterranean, South-East Asia and Western Pacific areas (Hasan et al., 2016). According to WHO reports, 2.5 millions of residents living in area where dengue is endemic where around 400 million individuals were infected every year, with a 5 to 20 percent of the mortality rate in some areas (WHO, 2014).

Dengue's economic burden is about the cost that disease poses on the society directly or indirectly that related to illness, treatment, outcome, and prediction. In 2013, 58.4 millions of symptomatic dengue fever occurred with 13,586 deaths, 18% hospitalized, 48% outpatient and 34% non-medical with a noteworthy estimated total cost of dengue infection worldwide annually estimated to be US \$8.9 billion (Castro, Wilson, & Bloom, 2017).

## 1.2 Problem Statement

The increase of dengue incidence of regions and several countries has seen a growing rise in recent decades (MOH, 2015). The World Health Organisation (WHO) reported a significant rise in prevalence over the past 50 years and an extension of dengue virus infections to new nations, and from urban to rural areas, such as Malaysia.

Despite the Ministry of Health and Municipalities' close supervision and concerted measures to carry out preventive and control programs, the number of dengue cases continues to rise owing to various unmanageable causes. Since 2000, in Malaysia, the number of dengue cases and incidence rate (IR) has continued to rise, with the peak rate recorded in 2014 (Figure 1.1).



**Figure 1.1 : Dengue Incidence Rate and Case Fatality Rate for Malaysia, 2000-2014**

A total of 108,698 cases that is equivalent to 361.1 IR were reported cases in a population of 100,000 that year. Figure 1 shows, the IR has a growing pattern with a high in 2014, whereas the case-fatality rate indicates a declining trend. Fifty-six percent (56 percent) of the cases belonged to Klang Valley, in which 49 percent coming from Selangor and 7 percent coming from the Kuala Lumpur-Putrajaya Federal Territory.

Between 2000 and 2014, the number of dengue cases reported ranged from 7,103 to 108,698 cases per year and the annual incidence rate ranged from 31.6 to 361.1 cases per 100,000 populations. Both ages and ethnic groups are at risk of dengue infection.

Accurate estimation of the economic burden of dengue fever is difficult due to incomplete data. As Malaysia has a passive surveillance system, the overall number of cases involving dengue is underreported (Shepard et al., 2013). It is estimated an economic burden of dengue illness of US\$ 102.25 (95%CI: 77.94 – 310.66) million per year (Shepard et al., 2013). The point is that the cost of dengue prevention and control, dengue surveillance, is not included. Other costs, such as the impact of dengue disease on tourism are still not considered. While the best estimation of the dengue burden and its patterns today must rely on a mixture of suspected cases and verified results, the primary objective for programs would be effective monitoring (WHO, 2012).

Numerous studies have been conducted on dengue fever with different results. Some studies showed the significant role of knowledge as well as attitude for having a good practice against dengue fever (Aung et al., 2016). However, another study found only knowledge significantly affected practices towards dengue fever (Alhazmi et al., 2016). Throughout the years, the correlations between knowledge, attitude, and practices have been the focus of much discussion. Some reports found a correlation between good knowledge and good practice (Dhimal et al., 2014a). Moreover, some reports showed a correlation between knowledge and a positive attitude (Rosalina & Rosli, 2018).

Surprisingly, some study showed no correlation between KAP (Rosalina & Rosli, 2018). Another study showed moderate knowledge, positive attitude and poor practice (Rahim, Olivia, & Rafee, 2016). Some study has unexpectedly linked poor knowledge to the good practice (Rao et al., 2016). In general, according to the reports seem that having suitable knowledge and a positive attitude regarding DF are predictors for good practice against dengue fever (Rao et al., 2016). Authorities should bridge the gap between knowledge, attitude, and practices in their ongoing efforts to combat dengue (Aung et al., 2016)

Dengue fever is also one of the main public health issues for people who travel to endemic areas (Juni et al., 2015). Traveling in and out of epidemic areas for both the population and vectors is the most significant reason for the increasing dengue cases (Juni et al., 2015). Dengue fever among non-endemic travelers is uncertain, and the effect of the disease on that population is likely to be underestimated (Schwartz et al., 1996). There have been numerous international students accounted for 130,110 In Malaysia, who mainly come from Asia, Europe, the Middle East, and Africa, 2019. In a study carried out in Malaysia showed that newcomers with poor knowledge and negative attitude regarding dengue fever were one of the associated factors for DF spread (Wong YM & Zainal Abidin, 2013).

Due to the different nationality in the current study population, it is expected that the knowledge of this disease among international postgraduate students to be low unless there is previous experience in another country or previous education or training in this regard. UPM as one of the higher education institute located in Selangor, Malaysia, is a relatively high-risk area, with a total number of 25,628 students, thus,

assessing the level of knowledge of students and increasing their protection against dengue and related factors among the study population is not only important but necessary.

Besides, international students who come from different regions which dengue may not be prevalent in those areas such as Iran. Therefore, with no previous background of the disease, they are a vulnerable group in this case and undoubtedly, they are at danger of dengue and transmitted to others. Nevertheless, there is a lack of dengue studies among foreign students in Malaysia, this study aimed at identifying the lifetime prevalence of dengue fever, assessing the level of knowledge, attitude and practices towards dengue fever and identifying the associated factors with knowledge, attitude, and practices on dengue fever.

### **1.3 Significant of Study**

Dengue is a significant health concern with an increasing trend in Malaysia. Dengue is a kind of disease that affects human activities directly. Therefore, with the perception of the level of knowledge, attitude, and practice in the community and relationship among the KAP can shape effective preventive practices regarding DF. As attempts have been made to teach individuals by health officials to avoid dengue fever, therefore, it is essential to evaluate the level of community dengue awareness. Most importantly, identifying barriers to taking action against DF and finding methods to transfer people's understanding of dengue into beneficial preventive practices that would ultimately decrease community-based dengue fever transmission. Since there is no specific treatment and vaccine, preventive measures to reduce the population of mosquitoes and transmit the disease to people are the best way to control the disease. Preventive and control measures regarding dengue fever need to support, cooperation and participation of people in the community.

The KAP (knowledge, attitude, and practice) studies on dengue fever are never irrelevant. In fact, the KAP study is the main tool for analyzing the situation of people's literacy towards dengue and its manifestation. With the information on the community's dengue knowledge, attitude and practices (KAP), the authorities could design a vector control program based on evidence. KAP study offers an appropriate format to assess current programs and identify strategies for effective behavioral change particularly among international postgraduate students.

### **1.4 Research Question**

This study explores the information to answer the following research questions:

1. What is the lifetime prevalence of dengue fever among the international postgraduate students?

2. What is the level of knowledge, attitude and practice regarding DF among international postgraduate students?
3. Is there any relationship between the level of knowledge and attitude, knowledge and practices as well as attitude and practices on DF?
4. What are the factors associated with knowledge, attitude, and preventive practices of students regarding dengue fever?
5. What factors predicts the knowledge, attitude, and preventive practices of students regarding dengue fever?

## **1.5 Objective**

### **1.5.1 General**

To determine the lifetime prevalence of dengue fever, level of knowledge, attitude and practices of preventive measures on dengue fever and the associated factors among international postgraduate students in Universiti Putra Malaysia.

### **1.5.2 Specific**

- i) To determine the lifetime prevalence of DF among international postgraduate students.
- ii) To determine the level of knowledge on dengue fever, attitude and practices on prevention of DF among international postgraduate students in Universiti Putra Malaysia.
- iii) To determine relationship between knowledge, attitude and practice on dengue fever among international postgraduate students in Universiti Putra Malaysia.
- iv) To determine the factors associated with knowledge on DF, attitude and practice on prevention of DF among international postgraduate students in Universiti Putra Malaysia.
- v) To determine the predictors of knowledge on DF, attitude and practice on prevention of DF among international postgraduate students in Universiti Putra Malaysia.

## **1.6 Research Hypotheses**

- i) There is a significant relationship between the level of knowledge and attitude regarding DF among international postgraduate students in Universiti Putra Malaysia.
- ii) There is a significant relationship between the level of knowledge and practice regarding DF among international postgraduate students in Universiti Putra Malaysia.



- iii) There is a significant relationship between the level of attitude and practice regarding DF among international postgraduate students in Universiti Putra Malaysia.
- iv) Sociodemographic factors (gender, level of education, duration of stay in Malaysia, marital status, source of information, field of study, nationality and age) and lifetime prevalence of dengue are significantly associated with knowledge, attitude and practices regarding dengue fever among international postgraduate students in Universiti Putra Malaysia.
- v) Sociodemographic factors (gender, level of education, duration of stay in Malaysia, marital status, source of information, field of study, nationality and age) and prevalence of DF in the past are predictors of knowledge, attitude and practices regarding dengue fever among international postgraduate students in Universiti Putra Malaysia.



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