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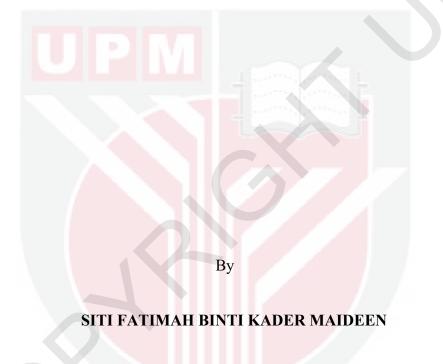
*EFFECTIVENESS OF A WEB-BASED PSYCHO-EDUCATION INTERVENTION PROGRAM ON DEPRESSION AND ANXIETY AMONG ADULTS IN SELANGOR, MALAYSIA*

**SITI FATIMAH BINTI KADER MAIDEEN**

**FPSK(p) 2016 37**

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By

**SITI FATIMAH BINTI KADER MAIDEEN**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirements for the Degree of Doctorate of Philosophy**

**August 2016**

# DEDICATION

*To*

*My parents*

*Siblings*

*Family*

*Who I owe success of my life*

# EFFECTIVENESS OF A WEB-BASED PSYCHO-EDUCATION INTERVENTION PROGRAM ON DEPRESSION AND ANXIETY AMONG ADULTS IN SELANGOR, MALAYSIA

By

**SITI FATIMAH BINTI KADER MAIDEEN**

**August 2016**

**Chairman** : **Professor Sherina Mohd Sidik, PhD**
**Faculty** : **Medicine and Health Sciences**

Mental disorders are a major global public health problem. Among all the mental health disorders, depression and anxiety are the most common. The burden and disability resulting from mental disorders is significant, and yet mental disorders are largely left untreated and patients do not receive professional care. This research has been conducted with the aim of determining the prevalence and predictors of depression and anxiety among adults in Selangor, and how a brief psycho-education program can address this problem. A cross sectional study was conducted in three districts of Selangor, from 11th June to 30th December 2012. The sampling frame was obtained from the Department of Statistics Malaysia (DOS) in May 2012, using the National Population and Housing Census 2010. Adults aged 18 years and above who were Malaysian citizens and living in the selected living quarters were approached to participate in the study and were requested to complete a set of questionnaires. A total of 1,556 out of 2,512 participants participated in this study, giving an overall study response rate of 61.90%. Patient Health Questionnaire 9 (PHQ-9) was used to determine the presence of depression, whereas the Generalized Anxiety Disorder 7 (GAD 7) was used to detect anxiety. The prevalence of depression and anxiety in this study was 10.3% and 8.2%, respectively. Based on the multivariate logistic regression analysis, the predictors of depression were presence of anxiety, serious problems at work, unhappy relationship with children, high perceived stress, domestic violence, unhappy relationship with spouse, low self-esteem, unhappy relationship with family, serious financial constraint and the presence of chronic diseases. Based on the additional multivariate logistic regression analysis whereby all the covariates were considered except high stress, anxiety, and low self-esteem, the additional predictors of depression were serious marital problem, non-organizational religious activity and intrinsic religiosity. The predictors of anxiety were depression, serious problems at work, domestic violence and high perceived stress. Based on the additional multivariate logistic regression analysis after removing stress, depression and self-esteem, the additional predictors of anxiety were cancer, unhappy relationship with family, non-organizational religious activity and intrinsic religiosity. A brief web-

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based psycho-education intervention program was developed based on these predictors. The intervention program consisted of four sessions, with each session accessed on a weekly basis. A two-arm randomized controlled trial of a single blind study was conducted to compare four weeks of the web-based psycho-education intervention program versus a wait list control group. Participants who have participated in the first phase of this study and who were still living in Selangor; having access to computer and internet connection and are internet literate were invited to participate in the study. A list of eligible participants who consented to participate in the study was numbered. By using a random number table, the participants were randomly allocated to either the intervention or the control group. A total of 119 participants were included in Phase 2 of study. All the participants completed the online questionnaires at week 1, week 5 and week 12. Participants in the intervention group were allowed to view the full content on the website and use the program as frequently and for as long as they wanted. The primary outcomes of this study were the change in depressive and anxiety score, whereas the secondary outcome was the change in the mental health literacy score. The baseline scores of outcome measures showed no significant differences between the intervention and control group. The mixed between-within subject ANOVA was used to compare mean difference of the psycho-education intervention program between the intervention and control groups at baseline, post-test (week 5) and 2-months of follow up (week 12). Results revealed a significant difference in the mental health literacy between the intervention and the control group. No significant difference was found in the depression and anxiety scores. The psycho-education intervention was found to be effective in increasing the mental health literacy of the participants.


**Keywords: Depression, anxiety, adult, community, psycho-education, RCT**

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

# KADAR EFEKTIF PROGRAM PENDIDIKAN BERASASKAN PSIKOLOGI DI LAMAN SESAWANG UNTUK KEMURUNGAN DAN KEBIMBANGAN DI KALANGAN ORANG DEWASA DI SELANGOR, MALAYSIA

Oleh

## SITI FATIMAH BINTI KADER MAIDEEN

**Ogos 2016**

**Pengerusi** : **Profesor Sherina Mohd Sidik, PhD**
**Faculki** : **Perubatan dan Sains Kesihatan**

Masalah mental merupakan masalah kesihatan awam di antarabangsa. Antara kesemua masalah mental, kemurungan dan kebimbangan adalah yang paling utama. Beban dan ketidakupayaan yang disebabkan oleh masalah mental adalah amat besar dan masih ramai yang tidak dirawat dan tidak mendapat pengurusan profesional. Kajian ini dijalankan dengan tujuan to mengenal pasti prevalens dan penyebab kemurungan dan kebimbangan di kalangan orang dewasa di Selangor dan program pendidikan psiko untuk mengatasi masalah ini. Satu kajian rentas dijalankan di tiga daerah di Selangor, dari 11 Jun hingga 30 Disember 2012. Jadual persampelan diperoleh dari Jabatan Perangkaan Malaysia pada bulan Mei 2012, menggunakan data dari Bancian Kebangsaan Populasi dan Perumahan 2010. Orang dewasa yang berumur 18 tahun dan ke atas yang merupakan warganegara Malaysia yang menetap di perumahan yang dipilih dialukan untuk menyertai kajian ini dan diminta untuk melengkapkan satu set borang soal selidik. Seramai 1,556 dari 2,512 peserta menyertai kajian ini, menjadikan kadar purata respons sebanyak 61.90%. *Patient Health Questionnaire 9 (PHQ-9)* digunakan untuk menentukan kemurungan. Manakala *Generalized Anxiety Disorder 7 (GAD 7)* digunakan untuk menentukan kebimbangan. Prevalens kemurungan dan kebimbangan di dalam kajian ini adalah sebanyak 10.3% dan 8.2%. Berdasarkan analisa multivarian regresi logistik, penyebab kemurungan adalah kehadiran kebimbangan, masalah serius di tempat kerja, perhubungan yang tidak harmoni dengan anak, tanggapan stres yang tinggi, keganasan rumah tangga, perhubungan yang tidak harmoni dengan pasangan, harga diri yang rendah, perhubungan yang tidak harmoni dengan keluarga, masalah kewangan yang serius dan penyakit kronik. Berdasarkan analisa multivarian regresi logistik tambahan dimana semua kovariat di masukkan kecuali stres, kebimbangan dan harga diri yang rendah, penyebab tambahan kemurungan adalah masalah rumah tangga yang serius, aktiviti keagamaan bukan berasaskan organisasi dan keagamaan intrinsik. Manakala penyebab kebimbangan adalah kemurungan, masalah serius di tempat kerja, keganasan rumah tangga dan tanggapan stres yang tinggi. Berdasarkan analisa multivarian regresi logistik tambahan selepas mengeluarkan stres, kebimbangan dan

harga diri yang rendah dari model, penyebab tambahan kebimbangan adalah kanser, perhubungan yang tidak harmoni dengan keluarga, aktiviti keagamaan bukan berasaskan organisasi dan keagamaan intrinsik. Satu program pendidikan berasaskan psikologi yang ringkas dibina berdasarkan penyebab factor-faktor tersebut. Program intervensi ini terdiri daripada empat sesi, di mana setiap sesi diakses pada setiap minggu. Satu kajian rawak kawalan dengan dua kumpulan dijalankan untuk membandingkan program empat minggu pendidikan berasaskan psikologi dengan kumpulan kawalan. Peserta yang telah menyertai fasa satu kajian ini, yang masih menetap di Selangor; mempunyai akses kepada komputer dan internet dan yang tahu menggunakannya dijemput untuk menyertai kajian ini. Satu senarai penyerta yang layak yang memberikan persetujuan untuk menyertai kajian dinomborkan. Dengan menggunakan jadual nombor rawak, peserta dibahagikan secara rawak kepada kumpulan intervensi atau kawalan. Seramai 119 peserta termasuk dalam fasa kedua kajian ini. Kesemua peserta telah melengkapkan borang soal selidik secara *online* pada minggu ke-1, ke-5 dan minggu ke-12. Peserta di dalam kumpulan intervensi dibenarkan untuk mengakses kesemua kandungan di dalam laman sesawang dan menggunakan program tersebut sekerap dan selama mana yang mereka mahu. Hasil primer kajian ini adalah perubahan dalam skor kemurungan dan kebimbangan. Manakala hasil sekunder adalah perubahan dalam skor kesihatan mental. Keputusan awal karakter sosio-demografi menunjukkan tidak ada perubahan signifikan di antara kumpulan intervensi dan kawalan. *Mixed between-within subject ANOVA* digunakan untuk membandingkan min perubahan program pendidikan berasaskan psikologi antara kumpulan intervensi dan kawalan pada *baseline*, pos-uji (minggu ke-5) dan susulan (minggu ke-12). Hasil menunjukkan terdapat perubahan signifikan dalam kesihatan mental di antara kumpulan intervensi dan kawalan. Tiada perubahan signifikan didapati pada skor kemurungan dan kebimbangan. Program pendidikan psiko didapati efektif dalam meningkatkan kesihatan mental peserta-peserta.


**Kata kunci: Kemurungan, kebimbangan, dewasa, komuniti, pendidikan-psiko, RCT**

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I would also take this opportunity to thank everyone who involved directly and indirectly to complete my studies, including all the academic staffs of UPM for sharing their knowledge and experience. Thanks also for the research funders and all the participants of this study. Thank you very much everyone.

I certify that a Thesis Examination Committee has met on 4 August 2016 to conduct the final examination of Siti Fatimah binti Kader Maideen on her thesis entitled "Effectiveness of a Web-Based Psycho-Education Intervention Program on Depression and Anxiety among Adults in Selangor, Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

Members of the Thesis Examination Committee were as follows:

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Date: 27 December 2016

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

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Date:

**Declaration by graduate student**

I hereby confirm that:
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This is to confirm that:
- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) were adhered to.

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Committee: Professor Dr. Lekhraj Rampal A/L Gyanchand Rampal

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Name of Member
of Supervisory
Committee: Associate Professor Dr. Firdaus Mukhtar

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| AUDADIS-IV | The Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV Version |
| BRFSS | Behavioral Risk Factor Surveillance System |
| CBT | Cognitive behavioral therapy |
| CDC | Centers for Disease Control and Prevention |
| CI | Confidence Interval |
| CIDI | Composite International Diagnostic Interview |
| CPES | Collaborative Psychiatric Epidemiology Studies |
| CPMD | Common perinatal mental disorders of depression and anxiety |
| DOS | Department of Statistics Malaysia |
| DSM 5 | Diagnostic and Statistics Manual of Mental Disorders 5 |
| DUREL | The Duke University Religion Index |
| EBs | Enumeration Blocks |
| FFCWS | Fragile Families and Child Well-being Study |
| GAD | Generalized anxiety disorder |
| GAD-7 | Generalized Anxiety Disorder-7 |
| GHQ | General Health Questionnaire |
| HADS-A | Hospital Anxiety and Depression Scale for anxiety |
| HARK | Humiliation, afraid, rape and kick |
| IPV | Intimate partner violence |
| IR | Intrinsic religiosity |
| KECA | Korean Epidemiologic Catchment Area |
| LEBANON | The Lebanese Evaluation of the Burden of Ailments and Needs of the Nation |

| | |
|---|---|
| LQs | Living quarters |
| MDD | Major depressive disorder |
| MDE | Major depressive episode |
| MHLQ | Mental health literacy questionnaire |
| MINI | Mini International Neuropsychiatric Interview |
| NCS-R | National Comorbidity Survey Replication |
| NEMESIS | Netherlands Mental Health Survey and Incidence Study |
| NESARC | National Epidemiologic Survey on Alcoholism and Related Conditions |
| NESDA | Netherlands Study of Depression and Anxiety |
| NHMS | National Health Morbidity Survey |
| NORA | Non-organization religious activity |
| NSDUH | National Survey on Drug Use and Health |
| OCD | Obsessive Compulsive Disorder |
| OR | Odds ratio |
| ORA | Organizational religious activity |
| PHQ-9 | Patient Health Questionnaire-9 |
| PST | Problem Solving Therapy |
| PTSD | Post-traumatic stress disorder |
| RCT | Randomized controlled trial |
| SD | Standard deviation |
| TAU | Treatment as usual |
| USA | United States of America |
| WHO | World Health Organization |
| WMH-CIDI | World Mental Health- Composite International Diagnostic Interview |

YLD                  Years lived with disability

## CHAPTER 1

## INTRODUCTION

This chapter discusses the background of the study and defines the problem of interest in the study. It also explains the significance of the study, research objectives, hypotheses and the conceptual framework of this study.

### 1.1     Background

The World Health Organization (WHO) defined health as "A state of complete physical, mental and social well-being and not merely the absence of disease" (WHO, 2001). The term health does not only refer to physical health, it also includes the aspects of psychological and mental health which require sufficient recognition. A definition of mental health states "A state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community"(WHO, 2001). When normal life and social functioning are affected, mental illnesses occur. In the general population, depression and anxiety are the most common mental health disorders (Kessler, Aguilar-Gaxiola, et al., 2009).

A systematic analysis from The Global Burden of Disease 2010 showed that the prevalence of major depressive disorder (MDD) and anxiety disorders was 4.33% and 3.96%, respectively (Vos et al., 2012). Mental and behavioral disorders attributed the largest amount in global years lived with disability (YLD) that is of 22.7% of total YLD. The most leading cause of global YLD in the year 2010 after low back pain, was major depressive disorder which accounted a total of 8.1% of YLDs, which caused 63 million of YLD. Anxiety disorders contributed to 3.5% of all YLD. Among the 25 leading causes of YLD, MDD ranked second globally, whereas anxiety disorders ranked seventh, in the leading causes of global YLD. However, in South East Asia, depression was the foremost cause of YLD, while anxiety remained at the seventh rank.

The global burden of disease reveals that depression has been ranked as the fourth disorder. It will probably be the highest disorder within countries that have a high income by the year 2030 (WHO, 2001). Approximately 12% of all YLD is attributed to depression in terms of disease burden (Ustun, Ayuso-Mateos, Chatterji, Mathers, & Murray, 2004). Adult Psychiatric Morbidity Survery which was carried out in England showed that 17.6% of the adult population met at least one criteria of common mental health disorder (McManus, Meltzer, Brugha, Bebbington, & Jenkins, 2007). (McManus et al., 2007). The National Survey on Drug Use and Health (NSDUH) conducted among adults who were 18 years or older within the United States (US) reported that about 45.9 million adults had any mental illnessin the past year, representing 20% of the population; with 5% of them having a serious of any mental illness (Substance Abuse and Mental Health Services Administration, 2012). In the

study, any mental illness was defined as adults who met diagnostic criteria of mental, behavioral or emotional disorder in the past year based on Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV). The findings also showed that 6.8% of the adults had suffered a major depressive disorder (MDD) in the previous year.

A National Survey of Mental Health and Wellbeing that was carried out in Australia in 2007 found that those who were aged between 16 and 85 found a lifetime prevalence of mental disorders of 45 % (Slade et al., 2009). An estimated 3.2 million (20%) of them had suffered mental disorders in the previous year. Being the most common mental health disorders, anxiety disorders affected 2.3 million of the Australian population, accounting for 14.4%. The survey also revealed 6.2% of Australians suffered from an affective disorder, and within the past year, 4.1% of them experienced a depressive episode.

In Singapore, a population-based survey among adult residents aged 18 years or more showed that 12.0% of the population had at least one lifetime affective, anxiety, or alcohol use disorders (Chong, Abdin, Vaingankar, et al., 2012). In Malaysia, The Fourth National Health and Morbidity Survey (NHMS IV), revealed a prevalence of Generalized Anxiety Disorder (GAD) of 1.7% and current depression of 1.8% using the Mini International Neuropsychiatric Interview (MINI) (Institute for Public Health, 2011). Various biological, social and psychological factors contribute to the occurrence of depression and anxiety disorders.

Various psychological approaches are available for the management of mental health problems, especially for depression and anxiety. One of it is psycho-education. It was noted that many patients were found to be lacking of information regarding their own health conditions and unaware on various treatment that are available (Lin, Moyle, Chang, Chou, & Hsu, 2008). Studies shown that patient education is one of the most commonly used in health promotion and was found to be effective in adhering to medications besides being often used as primary prevention (Pampallona S, Bollini P, Tibaldi G, 2002). It is understood that individuals that are empowered with knowledge have better understanding about their disorder and are more aware about the management of their disorder (Lin et al., 2008).

## 1.2    Problem statement

Anxiety disorders and depression affected 69.1 million and 30.3 million of people in 2010, respectively in Europe (Wittchen et al., 2011). In Malaysia, more than 300 000 of adults aged 16 years and above are suffering from depression and anxiety (Institute for Public Health, 2011). The prevalence of depression and anxiety has been found increasing over the years, globally as well as in Malaysia. The pronounced effect, especially on the quality of life, physical well-being and its long term effect in the development of other diseases are of concern. Both depressive and anxiety disorders are associated with significant economic burden with both signified as a growing public health threat (Mirza & Jenkins, 2004).

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Besides that, individuals with depression and anxiety disorders were found to be associated with suicidal ideation and attempt (Mykletun et al., 2007; Nepon, Belik, Bolton, & Sareen, 2010; Sareen et al., 2005). The considerable amount of YLD due to mental and behavioral disorders (Vos et al., 2012) draw attention to the urgent need for the identification and implementation of effective and affordable strategies for this set of problems. The consequences of psychiatric morbidity can be severe if not identified and treated in the early stage (ZamZam, Thambu, Midin, Omar, & Kaur, 2009).

Although mental disorders cause about 60% of unavertable burden, there is a limited percentage of people receiving effective treatment (Andrews, Issakidis, Sanderson, Corry, & Lapsley, 2004). It is estimated that 60% of depressed individuals are not being treated (Kohn, Saxena, Levav, & Saethnicityno, 2004). Lack of psychological treatment and poor compliance with medications (Wade, 2010); cost of treatment and limited mobility due to illnesses (Klein, Meyer, Austin, & Kyrios, 2011) as well as lack of transportation are factors which favor the internet as a possible medium to deliver interventions to cope with these barriers.

The delay in the identification and management could threaten the lives of people. It is essential to detect these illnesses early, so as to lessen the consequences and the suffering caused by psychiatric morbidity (Wittchen et al., 2011). The earlier studies were mostly conducted in clinical setting and that those done in the community seting was not representative to the population of Selangor. As there were no recent study conducted in the current setting in this aspect, it is essential to fully comprehend and explore the factors associated with depression and anxiety in the community setting and identify individuals with depression and anxiety so as to assist them to get proper treatment.

The present study will determine the prevalence and predictors of depression and anxiety in the community. It will serve as a baseline data for the development of a specific and effective module to reduce frequently occuring mental health disorders in the community of Selangor. Busy and hectic lifestyles put everyone at risk of being stressed, and lack of knowledge and skills to cope with the problem of life, will eventually increase one's risk in developing depression and anxiety. There is lack of knowledge on mental health among the general population, which eventually affects the help-seeking behavior (Ham, Wright, Vo Van, Doan, & Broerse, 2011). Study also has shown that poor knowledge on mental health suggest the importance to increase the awareness and instill the positive attitude towards mental health (Ganesh, 2011).

A systematic review which evaluate depression literacy among general population and patients found poor knowledge on depression and negative attitudes among the population affects the help seeking behavior and treatment choice (Gabriel & Violato, 2010). In the same review, it is noted that psycho-education may increase the knowledge and change their attitudes towards depression. Therefore, a psycho-education program was aimed at increasing the knowledge on mental health pertaining

to depression and anxiety and empower them with skills to cope with life events with successfully.

## 1.3    Significance of the study

This study would help to fill the gap of the literature on the prevalence and predictors of depression and anxiety in the current setting. By conducting this study, it would enable us to detect participants with depression and anxiety and provide a better understanding on the predictors of depression and anxiety among adults in Selangor. By determining the predictors of depression and anxiety, it would enable us to help the community to address their problems which hinder them from having good quality of life. Based on the predictors, the web-based psycho-education program that has been developed would benefit the participants by making them aware about their current mental health status by increasing their knowledge about depression and anxiety. Besides that, the program would empower them with the skills to cope with the current life problems which eventually would help them to take in charge of their life and live a quality life.

## 1.4    General description of the study

This study consists of two phases. Phase one of the study was a cross-sectional study to establish the prevalence and predictors of depression and anxiety among adults in the Selangor community. Phase two of the study was a randomized controlled trial of a web-based psycho-education program for the same cohort of the adult community in Selangor.

## 1.5    Objectives of the study

### 1.5.1    Phase One

#### 1.5.1.1    General objective

To determine the prevalence and predictors of depression and anxiety among adults in Selangor, Malaysia.

#### 1.5.1.2    Specific objectives

The specific objectives for phase one of this study were to:

1. Determine the socio-demographic characteristics such as age, gender, ethnicity, marital status, education level, employment status and income of the adults in the Selangor community.
2. Determine the prevalence of depression among adults in the community of Selangor.
3. To determine the predictors of depression among adults in the Selangor community.

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4. Determine the prevalence of anxiety among adults in the community of Selangor.
5. To determine the predictors of anxiety among adults in the Selangor community.

### 1.5.2    Phase Two

#### 1.5.2.1  General objective

To develop, implement and evaluate a web-based psycho education community intervention program for depression, anxiety and mental health literacy for an adult population in Selangor.

#### 1.5.2.2  Specific objectives

The specific objectives for phase two of this study were to:

1. Develop and implement a web-based psycho-education intervention program for depression, anxiety and mental health literacy for an adult population in Selangor.
2. Determine the baseline socio-demopgrahic characteristics such as gender, ethnicity, marital status and education level of participants in the intervention and control group.
3. Determine the outcome measures (scores of depression, anxiety and mental health literacy) of participants in the intervention and control group at baseline.
4. Determine the difference in depression, anxiety and mental health literacy scores at baseline, week 5 and week 12.
5. Determine the difference in depression scores between intervention and control group at baseline, week 5 and week 12.
6. Determine the difference in anxiety scores between intervention and control group at baseline, week 5 and week 12.
7. Determine the difference in mental health literacy scores between intervention and control group at baseline, week 5 and week 12.

### 1.6     Research Hypotheses

1. Socio-demographic characteristics such as age, gender, ethnicity, marital status, education level, employment status and income; chronic diseases and history of mental health disorders; stressful life events; domestic violence; anxiety; high perceived stress; low self-esteem and religiosity are significant predictors of depression.
2. Socio-demographic characteristics such as age, gender, ethnicity, marital status, education level, employment status and income; chronic diseases and history of mental health disorders; stressful life events; domestic violence; depression; high perceived stress; low self-esteem and religiosity are significant predictors of anxiety.

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3. The web-based intervention program on psycho education is effective in reducing depression scores of adults in Selangor.
4. The web-based intervention program on psycho education is effective in reducing anxiety scores of adults in Selangor.
5. The web-based intervention program on psycho education is effective in increasing mental health literacy scores of adults in Selangor.

## 1.7    Conceptual Framework

Figure 1.1 shows the conceptual framework of this study. The development of depression and anxiety has been known to be multi-factorial in origin. The presence of numerous factors such as presence of chronic diseases, personal and family history of mental health disorders, stressful life events such as financial constraint and unhappy relationship with family, domestic violence, high stress and low self-esteem in individuals contribute to higher likelihood of developing depression and/or anxiety. It is believed that intervention targeting those risk factors can help to reduce depression and anxiety symptoms.



**Figure 1.1 : A conceptual framework of risk factors of depression and/or anxiety and the psycho-education program.**

## 1.8    Theoretical framework of the psycho-education intervention program

A theory is a set of interrelated concepts, definitions, and propositions that explains or predicts events or situations by specifying relations among variables. Theories and models help explain behaviour, as well as suggest how to develop more effective ways to influence and change behaviour. Various health theories are available, among which it include Health Believe Model (HMB), transtheoretical model, theory of planned behavior, Social Cognitive Theory (SCT) and the Information-Motivation-Behavioral Skills (IMB) model. All of these theories specify determinants of behavior that are potential to be changed and commonly used to develop health-related behavioral interventions. In particular,  the IMB model was applied in this study as a theoretical framework for developing the psycho-education program because it consist of constructs that are needed for successful self-management and self-adherence to tackle chronic diseases, such as depression and anxiety.  The IMB theory was originally developed by Fisher and Fisher for AIDS risk reduction program (Fisher & Fisher, 1992). The theory consists of three constructs that include information, motivation and behavioral. Information is a prerequisite for enacting a health behavior. Whereas the motivation construct consist of personal motivation that integrates one's beliefs and attitudes towards health behavior; and social motivation that integrates social support for engaging in the behavior. The last construct which is the behavioral skills integrates the one's objective skills and perceived self-efficacy for conducting the health behavior. It is noted that both information and motivation affect behavioral skills which will eventually lead to the behavioral change. The information and motivation construct exert direct effects on both behavioral skills and behavior change, whereas behavioral skills have direct effects on behavioral change.

The IMB model has been used for chronic diseases, with focus on risk prevention and self-care behaviors. A systematic review by Chang et al. who reviewed 12 articles showed that the IMB model has the potential to be used as a theoretical framework to develop behavioral interventions (Chang, Choi, Kim, & Song, 2014). It was suggested that disease-specific and behavior-specific information for the information construct; positive attitudes and feelings for the motivational construct; and self-efficacy and objective skills for the behavioral skills construct to change behavior should be emphasized and focused.  The IMB model is applicable to patients with various chronic diseases. The web-based psycho-education program consist of four sessions, whereby session 1 consist of information construct whereby information of depression and anxiety was detailed. Whereas session 2 consist of motivation construct and session 3 and 4 consist of behavioral skills to enact the behavioral change.

```
┌──────────────┐
│ Information  │─────────────────────┐
│ (Depression  │                     │
│ and anxiety) │──────┐              │
└──────────────┘      │              ▼
   ▲  │          ┌──────────────┐  ┌──────────────┐
   │  │          │ Behavioral   │  │ Behavior     │
   │  │          │ skills       │  │ change       │
   │  │          │ (Tackling the│─▶│ (Reduction of│
   │  │          │ depression   │  │ depression   │
   │  ▼          │ and          │  │ and anxiety) │
┌──────────────┐ └──────────────┘  └──────────────┘
│ Motivation   │──────┘              ▲
│ (To reduce   │─────────────────────┘
│ depression   │
│ and anxiety) │
└──────────────┘
```

**Figure 1.2 : Theoretical framework of the psycho-education program.**

8

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Siti Fatimah Kader Maideen was born and grew up in Klang. She obtained her Degree in Biomedicine in 2008. After graduation, she was working as a junior lecturer for almost four years in one of the private college in Selangor. Later, she further her studies in University Malaya and obtained her Masters of Medical Science in Public Health in 2010. In September 2011, she enrolled in the PhD program under the Department of Community Health, Faculty of Medicine and Health Sciences in University Putra Malaysia. Currently she is working as a lecturer in a private medical college.

# LIST OF PUBLICATIONS

Kader Maideen SF, Mohd. Sidik S, Rampal L, Mukhtar F (2014) Prevalence, Associated Factors and Predictors of Depression among Adults in the Community of Selangor, Malaysia. PLoS One 9(4): e95395. doi:10.1371/journal.pone.0095395.

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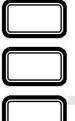
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