VALIDATION STUDY OF THE MALAY VERSION OF POSITIVE EMOTION RATING SCALE
&
POSITIVE EMOTION AND ASSOCIATED FACTORS IN PATIENTS WITH DEPRESSION AT THE OUTPATIENT CLINIC OF HOSPITAL BAHAGIA ULU KINTA

DR. FATIHAH ADDAWIAH BINTI MOHAMED

DEPARTMENT OF PSYCHOLOGICAL MEDICINE

FACULTY OF MEDICINE

UNIVERSITY OF MALAYA

KUALA LUMPUR

2017

VALIDATION STUDY OF THE MALAY VERSION OF POSITIVE EMOTION RATING SCALE

&

POSITIVE EMOTION AND ASSOCIATED FACTORS IN PATIENTS WITH DEPRESSION AT THE OUTPATIENT CLINIC OF HOSPITAL BAHAGIA ULU KINTA

DR. FATIHAH ADDAWIAH BINTI MOHAMED

UNIVERSITY OF MALAYA

KUALA LUMPUR

2017

ABSTRACT

The level and associated factors of Positive Emotion in patients with depression at the outpatient clinic of Hospital Bahagia Ulu Kinta (HBUK), Perak.

***Objective*:** Positive emotion is frequently being neglected in the management of depression. Positive emotion has an important role in relation to the depression. This is a cross-sectional study with objective to measure the level of positive emotion and to study associated factors of positive emotion among depressed patients.

***Method*:** A total of 104 depressed patients were recruited via convenient sampling from the outpatient clinic of HBUK from July 2016 to September 2016. Subjects were assessed with Malay version of Positive Emotion Rating Scale, Malay version of Center for Epidemiological Studies Depression, Malay version of Snaith-Hamilton Pleasure Scale, Malay version of Duke Religious Index, Malay version of Brief Religious Coping and questionnaire on relevant sociodemographic and clinical profile.

Results: There were more depressed female (70.2%) than male (29.8%), with Chinese predominant (54.8%) than other races. Most of the depressed patients were married (63.5%), attained minimum level of secondary education (62.5%) and employed (55.8%). All of the depressed patients were on medication, with the majority were on Selective Serotonin Reuptake Inhibitors (SSRIs) antidepressant (77.9%). Despite being on medication, near half of the depressed patients still had ongoing depressive symptoms, lower hedonic capacity and lower positive emotion. There were no significant associated factors between positive emotion with sociodemographic and different types of medication, except one significant association with age. Depressed patients with age above 45 years old were found to have higher level of positive emotion than younger patients. There were significant associations between positive emotion with religiosity

and positive religious coping. Depressed patients with higher level of positive emotion were found to have higher level of religiosity and positive religious coping. However, this study did not find significant association between positive emotion and negative religious coping.

Conclusion: Positive emotion is significantly associated with depression. This study found that age, religiosity and positive religious coping significantly associated with positive emotion. Religion and religious coping could be helpful to enhance positive emotion and to reduce psychological distress in the depressed patients.

Key words: positive emotion, depression, treatment, religiosity, religious coping

ABSTRAK

Tahap dan faktor-faktor yang berkaitan dengan Positif Emosi dikalangan pesakit-pesakit kemurungan di klinik pesakit luar Hospital Bahagia Ulu Kinta (HBUK), Perak.

Objektif: Positif emosi seringkali diabaikan dalam aspek perawatan penyakit kemurungan. Maklumat menunjukkan positif emosi mempunyai peranan yang penting dalam penyakit kemurungan. Ini adalah satu kajian rentas dengan objektif untuk mengukur tahap positif emosi dan untuk mengenalpasti faktor-faktor yang berhubungkait dengan positif emosi dikalangan pesakit-pesakit kemurungan.

Kaedah: Sejumlah 104 orang pesakit kemurungan telah dipilih melalui kaedah persampelan konvenien dari klinik pesakit luar di HBUK dari Julai 2016 hingga September 2016. Semua pesakit dinilai dengan menggunakan versi Bahasa Melayu Positive Emotion Rating Scale, versi Bahasa Melayu Center for Epidemiological Studies Depression, versi Bahasa Melayu Snaith-Hamilton Pleasure Scale, versi Bahasa Melayu Duke Religious Index, versi Bahasa Melayu Brief Religious Coping dan borang soal selidik berkenaan latar belakang sosial dan klinikal.

Keputusan: Terdapat lebih ramai pesakit wanita (70.2%) berbanding pesakit lelaki (29.8%), dengan bangsa Cina (54.8%) mendahului bangsa-bangsa lain. Kebanyakan pesakit kemurungan adalah berkahwin (63.5%), minimum pencapaian tahap pendidikan sekolah menengah (62.5%) dan bekerja (55.8%). Kesemua pesakit kemurungan menerima rawatan ubat-ubatan, yang mana majoriti mengambil ubat kemurungan jenis Selective Serotonin Reuptake Inhibitors (SSRIs) (77.9%). Walaupun menerima rawatan, hampir separuh daripada pesakit-pesakit kemurungan masih mengalami simptom-simptom kemurungan dan mempunyai tahap keseronokan dan positif emosi yang rendah.

Positif emosi didapati tidak berkaitan dengan faktor latar belakang sosial dan profil klinikal para pesakit, kecuali faktor umur yang didapati berkait rapat dengan positif emosi. Pesakit-pesakit kemurungan yang berumur 45 tahun ke atas didapati mempunyai tahap positif emosi yang lebih tinggi berbanding pesakit yang lebih muda. Positif emosi didapati berkait rapat dengan tahap keagamaan dan kemahiran menangani tekanan dengan kaedah keagamaan yang positif. Pesakit-pesakit kemurungan yang mempunyai tahap positif emosi yang tinggi didapati mempunyai tahap keagamaan yang tinggi dan banyak menggunakan kemahiran menangani tekanan dengan kaedah keagamaan yang positif. Walaubagaimanapun, positif emosi didapati tidak berkaitan dengan menangani tekanan dengan cara keagamaan yang negatif.

Rumusan: Positif emosi adalah berkait rapat dengan kemurungan. Kajian ini mendapati bahawa faktor umur, tahap keagamaan dan menangani tekanan dengan cara keagamaan yang positif adalah berkait rapat dengan positif emosi. Agama dan menangani tekanan dengan kaedah keagamaan dapat meningkatkan positif emosi dan membantu mengurangkan ketegangan psikologi dikalangan pesakit-pesakit kemurungan.

Kata kunci: positif emosi, kemurungan, rawatan, keagamaan, menangani tekanan dengan kaedah keagamaan

ACKNOWLEDGEMENT

First and foremost, I express my gratitude and praises to Almighty God for His blessings and love and for giving me strength to complete this work.

The completion of this research project and dissertation could not be possible without assistance and unbearable support from many parties especially my dearest family, friends, specialists and lecturers. All of you have touched me with your unrelenting contributions and unconditional supports which I was desperately need. For that, I am sincerely appreciate all of your kindness.

My personal utmost gratitude to Professor Dr. Ng Chong Guan for his kindness and patience. I am extremely grateful and indebted to him, for his ongoing supervision, valuable guidance, private times and for all of his assistance from the beginning of this research. You are such an inspirational person with a perseverance spirits with your works. For all of your time, effort, guidance and support, may God bless you with all His kindness.

A special thanks to Dr. Ong Lieh Yan for his support, encouragement and for providing his expert guide and recommendations in this research. I would like to thank you for your valuable time and effort of reading and correcting my dissertation.

Through this dissertation and especially through my journey in completing the master programme, I have come across with many surprises and hardship, which taught me to be a person who I am today. I am very blessed to get to know with many great persons through my journey and for that I would like to thank all of my colleagues, specialists and lecturers who inspired me in many ways.

Final words to my dear husband and daughter, thank you for always supporting me through thick and thin and providing me unconditional love.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

AD	Antidepressant
ANS	Autonomic Nervous System
AP	Antipsychotic
APA	American Psychiatric Association
AUC	Area Under the Curve
BRCOPE	Brief Religious Coping Scale
BRCOPE-M	Malay version of Brief Religious Coping Scale
BDZ	Benzodiazepine
CESD	Center for Epidemiological Studies Depression
CESD-M	Malay version of Center for Epidemiological Studies Depression
CI	Confidence Interval
DPES	Dispositional Positive Emotion Scale
DSM-5	Diagnostic and Statistical Manual, 5th Edition
DUREL	Duke University Religion Index
DUREL-M	Malay version of Duke University Religion Index
ECT	Electroconvulsive Therapy
EFA	Exploratory Factor Analysis
GBD	Global Burden of Disease
HBUK	Hospital Bahagia Ulu Kinta
HPA	Hypothalamic Pituitary Axis
ICC	Intraclass Coefficient
ICD-10	International Classification of Disease (Tenth Revision)
IR	Intrinsic Religiosity
MDD	Major Depressive Disorder
MOH	Ministry of Health
MREC	Medical and Research Ethics Committee
MS	Mood Stabiliser
NaSSa	Noradrenergic and Specific Serotonergic Antidepressant
NICE	National Institute for Health and Care Excellence
NMRR	National Medical Research Register
NORA	Non-organization Religious Activity

NPV	Negative Predictive Value
NRC	Negative Religious Coping
ORA	Organizational Religious Activity
PRC	Positive Religious Coping
PERS	Positive Emotion Rating Scale
PERS-M	The Malay version of Positive Emotion Rating Scale
PPV	Positive Predictive Value
ROC	Receiver Operating Characteristic
SD	Standard Deviation
SHAPS	Snaith-Hamilton Pleasure Scale
SHAPS-M	Malay version of Snaith-Hamilton Pleasure Scale
SNRI	Serotonin Noradrenaline Reuptake Inhibitor
SPSS	Statistical Package for Social Sciences
SSRI	Selective Serotonin Reuptake Inhibitor
WHO	World Health Organization
YLD	Years Lived with Disability

CHAPTER 1: INTRODUCTION

Major depressive disorder (MDD) is a common mood disorder with significant impact on the global burden of disease (GBD) (Kessler et al., 2003; World Health Organization, 2012). Historically, depression has been recognized since ancient Greek and first described as melancholia (Shorter, 2005). In the past, few terms have been used to describe depression, such as melancholia, hysterical fit, hypochondriac and neurasthenia (Jansson, 2011). With the growth of knowledge and research on mood disorders, the term depression appeared in the medical writing as early as in the seventeenth century (Shorter, 2005). It was in the nineteenth century, where the term depression was commonly used after it had been introduced into the official diagnostic criteria (Paykel, 2008a).

Over centuries, enormous numbers of research developed which enlighten the concept of mood disorders. A great number of literature have highlighted the theories of the depression, such as biology, genetic and psychosocial factors (Billings & Moos, 1982; Maletic et al., 2007; Paykel, 2008a). Better understanding about depression is made available through many literatures that addressed the aetiology, classification, symptoms characteristic, diagnostic criteria, course of illness, disease progress, outcome and management of the depression (Fawcett, 1993; Judd & Akiskal, 2000; Lester & Howe, 2008; Paykel, 2008b).

Despite of loads of studies have looked into many aspects and areas of depression, there are still unanswered questions about this illness. New ideas and theories may be tested and subjected to interesting discussion in future. More research in depression would be timely.

CHAPTER 2: LITERATURE REVIEW

2.1 Major Depressive Disorder (MDD): A Global Concern and Burden

Mental disorders are common disorder in the general population in many countries in all over the world (Kessler et al., 2009). Depression is found to be the most common type of mental disorders (Paykel, 2008a) and the highest prevalence of mood disorders (Myers et al., 1984). In the year of 2011, over 120 million of people in the worldwide affected with depression (Lépine & Briley, 2011). The burden of depression is on the rise globally and it is predicted to be the leading cause of the disability by the year 2030 (Lépine & Briley, 2011).

Evidence showed that mental and substance use disorders are the leading cause of disability in the world (Whiteford et al., 2013). In particular, MDD is the leading contributor of disability in the worldwide, in term of years lived with disability (YLD), based from the series of study by Global Burden of Disease (GBD) between 1990 and 2010 (Lopez & Murray, 1998), GBD 2010 (Ferrari et al., 2013) and GBD 2013 (Vos et al., 2015). The findings from the studies of GBD highlight the significant impact and burden of depression (Whiteford et al., 2013), which not only affected the depressed people, but also their families and society (Lépine & Briley, 2011). The burden of depression is also found to be affecting both developed and developing countries (Vos et al., 2015; Whiteford et al., 2013).

Depression imposes significant burden worldwide due to high prevalence and disability related to this disorder (Murray & Lopez, 1996). Kessler et al. (2005) in the National Co-morbidity Survey Replication had reported the lifetime prevalence of

depression was estimated to be about 20%, which is supported by a former study by Goldman, Neilsen & Champion (1999). Meanwhile, the 12-month prevalence of depressive disorder is estimated within 3% to 6% (Judd & Akiskal, 2000; Kessler et al., 2003).

In general, depression affects all groups of people, regardless of gender, age, race, ethnicity and social economic background (Demyttenaere et al., 2004; Ferrari et al., 2013; Kessler et al., 2009). Most of the studies had identified that there are higher prevalence of depression among female and young adults (Blazer, Kessler, & McGonagle, 1994; Lépine & Briley, 2011). The median age of onset ranges between late 20s' and early 40s' (Kessler et al., 2007), with average age onset is around 30s' (Kessler et al., 2005). Women have higher risk of early age at first onset than men, as early as at the beginning of puberty and persisted through adulthood (Piccinelli & Wilkinson, 2000).

Depression is highly prevalence in women with approximately two times more likely than men (Goldman et al., 1999; Lépine & Briley, 2011). This finding is consistent across various cultural settings (Kuehner, 2003). Besides, it has been found that the burden of depression is higher in women, as women have higher composition of YLD compared than men (Ferrari et al., 2013). This is related to higher relapse rate, higher non-remission rate and increased rate of recurrence among women with depression than men (Kuehner, 2003).

A review by Piccinelli & Wilkinson (2000) had explained on determinant of female gender as a risk factor of depression. Female has an increased risk of depression due to vulnerability of childhood adverse experiences such as sexual abuse, psychosocial-

cultural gender role and less-effective psychological coping response to adverse life events (Piccinelli & Wilkinson, 2000). These findings are consistent with series of GBD study, whereby a comparative assessment for risk factors for depression revealed that depression has been related to conflict, intimate partner abuse and childhood sexual abuse (Forouzanfar et al., 2015).

Clinical presentation of depression is different by gender. Women are frequently presented with somatic symptoms such as sleep and appetite disturbances, lethargy and hypochondriasis. (Kuehner, 2003; Piccinelli & Wilkinson, 2000). Men are found to be presented with externalizing symptoms such as psychomotor agitation or retardation, alcoholism and substance abuse (Alexandrino-Silva et al., 2013; Piccinelli & Wilkinson, 2000). Women are frequently diagnosed with comorbid anxiety, atypical depression and melancholic depression (Kuehner, 2003), while men are frequently diagnosed with agitated depression and mixed depression (Alexandrino-Silva et al., 2013). Gender difference also affects help-seeking and illness behaviour, as women are found to be more likely to seek medical health with physical and somatic complaints (Piccinelli & Wilkinson, 2000). This is often challenging, as the diagnosis of depression may be overlooked (Goldman et al., 1999).

Although depressive disorder is highly prevalence in general population, recognition of depression is among one of the major challenge in managing depression in the primary care practise, as dysphoria and subjective complaint of low mood are uncommon presentation (Lester & Howe, 2008). The most common presentation to the primary care level is somatic symptoms such as fatigability and pain (Goldman et al., 1999), which possibly masking the clinical presentation of depression. Awareness among

primary clinicians about depression is important, especially when dealing with female subjects who are often presented with somatic symptoms (Kuehner, 2003).

Mental health related issues are found to be the second most common reason of consultation in the primary care setting (Gask, Lester, Knedrick, & Peveler, 2009). However, identifying and treating depression in primary care is challenging, as many of the patients often have comorbidity with chronic physical illnesses and often presented with various clinical presentations (Lester & Howe, 2008). The National Institute for Health and Clinical Excellent (NICE) guideline recommends that screening for depression should be done among people at high risk of depression such as patients with significant physical illnesses and significant adverse life events (NICE, 2004). Effective screening for depression in primary care level is important, as the prevalence of depression in the general population is increasing and approximately 80% of depressed patients are seen and treated in the primary care setting only (Lester & Howe, 2008).

Other challenges in diagnosing and treating depression are include stigma, restricted access to mental health services, patients denial, time-limitation, inadequate train or competencies among health practitioners and restricted resources of medication and specialist care (Goldman et al., 1999). Improvement of mental health service is needed to overcome this challenges, included destigmatization program, public educational programs, improving access to health care service and professional educational training (Goldman et al., 1999). Integration of mental health service in primary care level is beneficial and is a practical way to ensure wide coverage of mental health service available to the people in need (Gask et al., 2009).

Impairment associated with mental disorders is significantly higher than impairment related to chronic medical disorders. Depression is associated with substantial increase in morbidity and mortality (Blazer et al., 1994; Lépine & Briley, 2011). Overall, the burden of mental disorders can be divided into short term and long term effects, which affecting lot of parties, including patients, families, society and also economic aspect (Kessler et al., 2009; Lépine & Briley, 2011).

The psychosocial impairment of the depression can be related to the illness itself such as presence of residual symptoms, cognitive impairment, relapses and recurrence of depression (Lépine & Briley, 2011). The impact of the depression on the social and occupational dysfunction had caused significant distress and affected one's quality of life (Lépine & Briley, 2011). It was found that the largest proportion of YLDs from depressive disorder had affected people within the age of 15 to 64 years old, which highlights the high prevalence and high disease burden of depression among people within productive age group (Ferrari et al., 2013). Depression increases the risk of functional disability such as absenteeism, decreased productivity at workplace, work days lost, unemployment and decrease in financial income (Lépine & Briley, 2011). Additionally, depression is associated with an increased risk of psychiatric comorbidity, particularly anxiety disorder and substance use, which further exerts more burden and psychosocial impairment to the depressed individual (Blazer et al., 1994; Goldman et al., 1999; Paykel, 2008a).

Psychosocial dysfunction tends to lead to family distress and conflict with spouses, which may end up with separation and divorce (Goldman et al., 1999; Lépine & Briley, 2011). The adverse effects of depression also has considerable effect on economic burden due to impairment of social functioning and excessive healthcare expenditure

(Kessler et al., 2009; Lépine & Briley, 2011).The economic burden also affects the individuals, families and society at large. The long term impact is visualized as overall societal lost in a way that depression leads to loss of productivity, reduce educational achievement, low occupation and financial income and marital instability (Kessler et al., 2009; Whiteford et al., 2013).

In term of mortality, depression is associated with increased in mortality, as literature had shown that increased risk of death of all-causes in people with depression, twice more likely than general population (Lépine & Briley, 2011). Additionally, depression is associated with increased in mortality rate due to suicide and cardiovascular death (Ferrari et al., 2013; Goldman et al., 1999). Mortality risk for suicide is 20-fold greater than general population. Depression also contributes as an important risk factor for mortality due to coronary heart disease, with odd ratio of 2 than non-depressed people (Lépine & Briley, 2011).

A study from the World Mental Health Survey had shown an interesting finding that despite of high prevalence and significant impact and burden of mental disorders, yet many cases were untreated (Demyttenaere et al., 2004). There were high rate of untreated depression in both developed and less-developed countries, although more predominantly in the latter (Lépine & Briley, 2011). Three factors that formed the barrier to treatment have been identified, included patient, clinician and health care system factors. All of these three factors had contributed as barriers to effective mental health care in term of recognition barrier, diagnostic barrier and treatment barrier (Goldman et al., 1999).

Social stigma, lack of access to mental health service and lack of resources were found to be the common barriers for effective management of mental illnesses, especially in low and middle income countries (Demyttenaere et al., 2004; Gask et al., 2009). Action should be taken to overcome these matters, such as conducting public health promotions or campaigns to increase awareness among public, especially among patients and their family (Goldman et al., 1999). Awareness and knowledge dissemination among health professionals are important, as it was found that clinician's factors such as fear of making psychiatric diagnosis, inaccurate assessment, inadequate knowledge and lack of clinical skill contributed to barrier in recognizing psychiatric disorders (Goldman et al., 1999). Screening tool and guideline for managing MDD in primary care are made available to assist clinician in the assessment and treatment of major depressive disorder (Gask et al., 2009; Goldman et al., 1999).

Early intervention and mental health promotion are useful and cost-effective in managing all mental disorders, by mean of preventing the disease progress (Demyttenaere et al., 2004) and further reduce the overall burden of mental disorders (Ferrari et al., 2013). Early recognition and treatment of mental disorders are also important as part of the primary prevention strategy for substance abuse (Regier et al., 1990). Expansion of mental health service is important to make mental health service more accessible (Gask et al., 2009). Integration of mental health service in primary care is practical and feasible, and had been appointed as one of the WHO mental health policy (Gask et al., 2009).

2.2 Aetiology of Depression

The aetiology of depression is multifactorial, involving biological, psychological and social factors (Paykel, 2008a). The neuroanatomical and neurobiological factors had been widely studied included neurotransmitters disturbances, structural and functional alterations in several brain areas related to the depression (Maletic et al., 2007). Established and extensive literatures on antidepressants and electroconvulsive therapy (ECT) significantly support the correlation between depression and neurotransmitters disturbances (Nutt, 2008), which provide the evidence based treatment for the management of depressive disorder.

Psychosocial factors play a huge role in the course of depressive disorder, especially in the initial part of the illness (Kuehner, 2003). Integrative review on psychosocial theories of depression found that depression is a result of interaction between stressful life events and diversities of psychosocial domain (Billings & Moos, 1982). Psychosocial domains such as personal conflicts, individual's coping strategies, environmental stressors and environmental resources are important as it will act as either protective factors or predispose factors to depression (Billings & Moos, 1982). This explains why stressful life events lead to depression in some persons, but not to others (Billings & Moos, 1982). A structured form of psychotherapy is effective in managing mood disorders such as cognitive behavioural therapy, interpersonal psychotherapy and psychodynamic psychotherapy (Goldman et al., 1999). Apart from antidepressant medications, psychotherapy is also an evidence based treatment that available in managing depressive disorder (NICE, 2004).

2.3 Diagnostic Criteria of Major Depressive Disorder

The diagnostic concept of mental illness began around early 1980s' after development of a structured research diagnostic interview (Kessler et al., 2007). Prior to that, no formal method or diagnostic guideline were available, but physician had long systematic observation that certain illnesses tend to fall into syndromes which share stable patterns of signs and symptoms (Surís, Holliday, & North, 2016). Depressive disorder observable as a cluster of signs and symptoms, which tend to occur together and assumed to have common pathophysiology (Paykel, 2008a). Few diagnostic guidelines are available to assist clinical assessment of mental disorders, with detail description on the sign and symptoms of all types of psychiatric disorders. Two commonly used guidelines are the Diagnostic and Statistical Manual (DSM) by American Psychiatric Association (APA) and International Classification of Disease (ICD) of Mental Health and Behavioral Disorders by World Health Organization (WHO) (Paykel, 2008a).

The core symptoms of MDD are depressed mood or loss of pleasure or interest, which at least one of these required in the DSM-5 (American Psychiatric Association, 2013). The two core symptoms reflected that depression is a disorder of mood or affect (Paykel, 2008a). The core symptoms must be accompanied with numbers of additional symptoms, which altogether pointed towards a diagnosis of MDD (American Psychiatric Association, 2013). Altogether, the diagnostic assessment of depression is a combined assessment of symptoms description, course, duration and severity of the symptoms (NICE, 2004).

The DSM-5 described MDD as a pervasive condition of depressed mood or anhedonia for at least two weeks duration (American Psychiatric Association, 2013). The episode must be accompanied with a minimum of four other symptoms, consisted of sleep disturbances, appetite or weight changes, fatigability, reduce in concentration or attention, worthlessness and death thoughts. Altogether, the depressive episode must cause significant distress to the affected person (American Psychiatric Association, 2013).

Overall, depressive disorder reflects a cluster of negative emotion (Gallo & Matthews, 1999). With the cardinal features of low mood and sadness, the presentation of the depression may also include other negative emotions such as guilty, hopelessness, anxiety and irritability (Gallo & Matthews, 1999). Hence, depressive disorder is described as a cluster of negative emotion (Gallo & Matthews, 1999) and discussion about depression deliberately tends to focus more towards negative emotion. The tendency to focus more on the negative emotion leads to little attention is paid onto positive emotion, especially in the context of psychological view (Fredrickson, 2004).

2.4 Positive Emotion and Depression

The definitions of emotion are varied. However, the basic concept of emotion divides emotion into two categories as positive affect and negative affect (Burgdorf & Panksepp, 2006). The term emotion and affect are often used interchangeably (Fredrickson, 2001). Emotion and affect are denoting to the affective process (Gallo & Matthews, 1999). Emotion includes a component of affect, as well as other components such as cognitive, behaviour and physiological aspects, which in respond to any emotion-provoking stimuli (Gallo & Matthews, 1999). Emotion and affect are short-lived, transitory reactions and adaptive responses towards emotion-provoking stimuli (Fredrickson, 2004, 2005; Rottenberg, 2005).

The descriptions of positive emotion and negative emotion are non-specific and rather general semantic-conceptual that described the concept of emotional feeling (Burgdorf & Panksepp, 2006). Positive emotion and negative emotions are described as a good and a bad feelings (Burgdorf & Panksepp, 2006). Positive emotion encompassed specific positive feelings such as love, joy, compassion, pride, contentment, awe and amusement; whilst negative emotion constituted specific negative feelings such as anger, fear and sadness (Burgdorf & Panksepp, 2006). Both positive and negative emotions have useful effect to human being, with overall balance and stability between the emotions are important in every individual, in order to sustain personal wellbeing (Fredrickson, 2001, 2004).

Numerous existing literatures in mood disorders and anxiety disorders are focusing more on negative emotion than positive emotion (Carl et al., 2013; Fredrickson, 1998, 2004; Gross, 1999). This has led to the tendency to focus more on negative emotion than positive emotion in the clinical practice (Fredrickson, 1998). Negative emotion has become the common focus of psychological problems as it has caused many disturbances in the context of extreme, prolong or inappropriate state of negative emotion (Fredrickson, 2004). This included depression and suicide, phobia, anxiety disorders, eating disorders, violence and aggression (Fredrickson, 2004).

Review on psychological literature is typically favour more on the negative emotion, especially in explaining the theories of the psychological problems (Fredrickson, 1998, 2004). For this reason, psychological literatures commonly described negative emotion as part of the problem-focused approach in psychological intervention to manage some psychological problems such as depression (Fredrickson, 1998, 2004).

Furthermore, positive emotion is not usually a life-threatening situation, hence given lower priority in the clinical practice and also in the psychological perspective (Fredrickson 2001, 2004). As the result, the knowledge and value of positive emotion have been received little focus and under-reviewed as compared to the study of negative emotion (Burgdorf & Panksepp, 2006).

Positive emotion is an essential component for human wellbeing (Fredrickson, 1998). It has an important role as a marker of optimal wellbeing and facilitates adaptive behaviour to the surrounding environment (Fredrickson, 2001). The theory of positive emotion was described by Fredrickson (2001, 2004) in the broaden-and-build theory of positive emotion. The theory explains that positive emotion helps to broaden the thoughts and behaviour tendencies when people are coping with negative emotional circumstances (Fredrickson, 1998). Positive emotion helps to broaden the options and generates flexible and adaptive solution to solve the problems when one is coping with stress (Fredrickson, 2001). For better understanding on the broaden theory of positive emotion, comparison with the effect of negative emotion is worthwhile. Negative emotion will lead to specific action tendencies in respond to the autonomic response of fight-and-flight, when people are facing with stressful events (Fredrickson, 2005). Negative emotion helps to focus and narrow down the thought and action options so that people can take action upon the threat them quickly (Fredrickson, 2002). Meanwhile, positive emotion broadens the options that help people to solve the problems and cope with stressors (Fredrickson, 1998, 2002, 2004).

Positive emotion helps to build and shape a cognitive flexibility, by means forming a flexible and adaptive pattern of thought and behaviour when people are coping with stress (Fredrickson, 2001). The cognitive flexibility formed in this process will help to build one's personal and social resources when coping with stress, as well as help to build psychological resilience when coping with any constraints in the future (Fredrickson 1998, 2001). Overall, the broaden-and-build theory explains that the positive emotion helps to broaden people's thoughts and action-repertoires and helps to build personal resources and psychological resilience when people are coping with daily life crisis and challenges (Fredrickson, 2001). The overall effect of the broaden-and-build theory will initiate upward spiral towards increasing emotional wellbeing (Fredrickson, 2002).

Evidence also showed that positive emotion will undo the effects of negative emotion (Fredrickson, 1998). Positive emotion is found to be able to downregulate the effects of negative emotion, in a way it helps to undo or speeds up the recovery of the psychological and physiological effects of negative emotion following a stressful circumstance (Fredrickson, 2001). Hence, it is believed that positive emotion helps to regulate experience of the negative emotion by undoing the effects of negative emotion (Fredrickson, 2004).

Mechanism that links positive emotion to effective coping and resilient is through the process of emotional regulation (Fredrickson, 2004). Emotional regulation refers to a complex process of upregulating and downregulating of both negative and positive emotions when people are facing with stressful events (Parrot, 1993 as cited in Tugade & Fredrickson, 2007). Interestingly, human daily life is governed by a complex emotional

regulation process (Tugade & Fredrickson, 2007). The process can be either conscious or subconscious regulation of one's own feelings towards surrounding stimuli, especially towards negative experiences process (Gross, 1999). Emotional regulation involves an attempt to change or influence own emotions to various situations in daily life (Gross, 1999). Exerting positive emotions regulation when coping with negative experiences will help people to maintain wellbeing and promote resilient (Tugade & Fredrickson, 2007).

Emotional competence is an adaptive regulation of emotions, refers to a state where someone knows how to use own emotions at full advantages and knows how to regulate own emotion to achieve their goals and respond to challenges appropriately (Gross, 1998). Emotional competence will promote social competence, as people who are emotionally competent will be able to regulate their emotion to respond in situation appropriate ways (Gross, 1998). Regulation of positive emotion will promote flexible thoughts and behaviour when coping stress, hence promotes resilient and wellbeing (Tugade & Fredrickson, 2007). Regulation of positive emotion facilitates specific approach behaviours, by means it prompts individual to participate and to engage with their social activities appropriately (Fredrickson, 2001).

Overall, positive emotion is associated with good outcomes (Mauss et al., 2011). Many literatures related that positive emotion improves psychological functions and personal wellbeing (Fredrickson & Losada, 2005; Gross, 1998; Santos et al., 2013). Positive emotion showed to broaden people thought and action repertoire, undo negative emotions and build psychological resilience when coping with daily life crisis and challenges (Fredrickson, 2001). The benefit of positive emotion is also shown to have better health outcome, in a way it is associated with better health practices (Richman et

al., 2005). Hence, positive emotion promotes overall personal well-being and improves one's quality of life (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Mauss et al., 2011).

Positive emotion fosters physical health (Fredrickson, 2001) and reduces the level of mental health problems (Mauss et al., 2011). Positive emotion has shown to protect physical health through physiological mechanism as positive emotion has found to be associated with lower basal level of cortisol, norepinephrine and epinephrine (Richman et al., 2005). Negative emotion states are known to active hypothalamic-pituitary axis (HPA) and autonomic nervous system (ANS) which will release and mediate the action of cortisol, norepinephrine and epinerphine (Cohen, Janicki-Deverts, & Miller, 2007). Prolonged activation of HPA and ANS in relation to chronic stress such as depression and anxiety result in physical illnesses such as increased risk of cardiovascular diseases (Cohen et al., 2007, Richman et al., 2005). Apart from lowering the basal level of cortisol, norepinephrine and epinephrine, positive emotion is associated with better health practices, of which positive emotion may contributes to a protective role in the development of medical illness such as diabetes and hypertension (Richman et al., 2005).

Decrease or deficit in positive emotion is associated with poor psychological health and lower life satisfaction (Brown & Barlow, 2009; Gruber, Kogan, Quoidbach, & Mauss, 2013). Negative emotion has been associated with an increased risk of morbidity and mortality from cardiovascular diseases, diabetes, hypertension and adverse health behaviours such as lower physical activities, smoking and excessive alcohol consumption (Richman et al., 2005). Generally, the overall balance and stability of both positive and negative emotions are crucial and contribute to subjective wellbeing (Fredrickson, 2001,

2004). The balance between positive and negative emotions will help people to achieve optimal functioning and maintain psychological wellbeing (Fredrickson, 2004).

Disturbances of positive emotion regulation are found to be evident across majority of emotional disorders and anxiety disorders (Brown & Barlow, 2009; Carl, Soskin, Kerns, & Barlow, 2013; Gruber et al., 2013). It is found that decreased in positive emotion is at increased risk of depression and anxiety (Brown & Barlow, 2009; Gruber et al., 2013). Lack of positive emotion contributed as a vulnerability to emotional disorders, in particular depressive disorder (Carl et al., 2013; Gruber et al., 2013). People with deficit in positive emotion have difficulties to regulate their emotion towards negative events and made them vulnerable to depression (Ehring, Tuschen-Caffier, Schnülle, Fischer, & Gross, 2010). They are found to be using more of dysfunctional emotion regulation strategies, such as more frequent use of emotion suppression to down-regulate their negative emotion when respond to the negative life events (Ehring et al., 2010). It has also been found that deficit of positive emotion regulation is likely to contribute as a maintaining factor of depressive disorder (Carl et al., 2013; Ehring et al., 2010).

Depression is a disorder of impaired emotional regulation (Gallo, 1999). Depressive disorder is characterised by deficit in positive emotion (Gruber, Oveis, Keltner, & Johnson, 2011). Decreased in positive emotion is found to be strongly associated with the depressive symptoms, in particular dampening or inability to experience positive emotion and pleasurable activities (Gruber, et al., 2011). Hence, disturbances of positive emotion plays a central role of depressive disorder (Gruber et al.,

2011; Santos et al., 2013) and subjected for therapeutic target in the treatment of emotional disorders (Carl et al., 2013; Santos et al., 2013).

On the other perspective, positive emotion is found to be beneficial as part of the management of the depression, as evidence showed that increased in positive emotion helps to reduce the sign and symptoms of depression as well as prevent relapse (Carl et al., 2013; Santos et al., 2013). Positive emotion has an important role in psychological therapy especially in the treatment of emotional disorders (Ehrenreich, Fairholme, Buzeella, Ellard, & Barlow, 2007). Hence, it is important to focus on positive emotion as part of the clinical assessment, in order to incorporate psychological therapy among patients with emotional disorders (Ehrenreich et al., 2013). Positive emotion is incorporated into emotion-focused therapy is found to be effective in managing mood disorders (Ehrenreich et al., 2013; Gross, 2008). Treatment is focused on building up positive emotion in order to alleviate negative emotion (Ehrenreich et al., 2013). Focusing on positive emotion in the treatment of mood disorders is helpful in reduction of acute symptoms, as well as promoting long-term recovery of emotional disorders (Carl et al., 2013).

Despite of increasing literature on the benefit of positive emotion especially in relation to mood disorders, positive emotion is often being neglected in common clinical practice. As human's emotion is complex and multidimensional (Carl et al., 2013), assessment of emotion are challenging. Many emotion questionnaires are designed to measure different type of emotional experiences, due to various definition and models of emotion (Lucas, Diener, & Larsen, 2009). Although various studies on positive emotion have been done, there is lack of valid tool to measure positive emotion especially among

the depressed patients (Ng et al., 2016). Thus it is important to establish an effective and a validate questionnaire that helps clinician to measure and positive emotion among depressed patients, especially in our local setting. To date, there is no valid questionnaire in Malay language available for the measurement of positive emotion in our local setting. As Malaysia is a multi-racial country with Malay language as the national language, it is important to form a validated tool in Malay version to assess positive emotion.

CHAPTER 3: RATIONALE AND OBJECTIVES

3.1 Rationale of the Study

Positive emotion is important as part of the management of mood disorders, especially in depressive disorder. Evidences suggest that positive emotion is beneficial for the management of MDD. However, it is often being neglected and not routinely assessed in the common practice. There is lack of availability of a proper tool to assess and monitor the level of positive emotion. Thus, it is important to establish an effective and a validated questionnaire to assess positive emotion.

To date, there is no local valid questionnaire in Malay language available for the measurement of positive emotion. Furthermore, there is no previous study done in Malaysia that specifically looks at positive emotion in depressive disorder.

As Malaysia is a multiracial country with difference languages, there is a demand to produce a validated tool to suit the use in local clinical setting. This study hopes to translate a specific set of positive emotion questionnaire into Malay language and further

to assess the psychometric properties of the questionnaire. This study also wants to look into the level of positive emotion among depressed patients and to study the association of positive emotion among depressed people. It is hopeful that the result from this study can expand the current knowledge and awareness about the importance of positive emotion. This could be beneficial as a stepping stone for future development on appropriate intervention program, in order to deliver a holistic approach of psychiatric service to depressed patients mainly.

3.2 Objectives of the Study

- To study the psychometric properties of PERS-M.
- To study the level of positive emotion in patients with depression.
- To examine the associated factors of positive emotion in depressed patients.

3.3 Research Hypothesis

There is lack of positive emotion among patients with Major Depressive Disorder (MDD).

CHAPTER 4: METHODOLOGY

This was a two-phase study.

4.1 PHASE I - Validation of Malay Version of Positive Emotion Rating Scale (PERS-M)

4.1.1 Study Design

This was a cross-sectional study using convenient sampling method to recruit depressed subjects and healthy subjects.

4.1.2 Study Setting

Hospital Bahagia Ulu Kinta (HBUK) is the biggest of the four mental health institutions in Malaysia. It is built on 544 acres land which is located at Tanjung Rambutan, a small town in Kinta district of Perak, which is only 15 kilometres distance from Ipoh city. Built in 1911, HBUK is the oldest mental institution in Malaysia.

HBUK is a tertiary government hospital under Ministry of Health (MOH) Malaysia. It has 76 wards, with over 2,600 beds. HBUK provides various psychiatric services included inpatients, outpatient clinic, community psychiatric, forensic psychiatric, pharmaceutical and many other clinical supports. HBUK also served as referral centre apart from providing training and conducting researches. The outpatient clinic in HBUK is open from Mondays to Fridays. It delivers service for new cases and follow-up cases of various mental and psychological disorders.

4.1.3 Study Duration

The whole study was done from June 2016 to January 2017. The sample collection for Phase I was carried out from June 2016 to August 2016.

4.1.4 Study Population

This study involved two groups of subjects, consisted of depressed patients and control group. The sample for both groups were recruited from the outpatient psychiatric clinic of HBUK. For depressed group, all depressed patients who attended the outpatient clinic in HBUK during study period would be recruited. Control subjects were recruited from patients' family members, caretakers and visitors without underlying depression or other psychiatric illnesses.

4.1.5 Sample Size and Sampling Method

Sample size for factorial analysis was used to estimate the sample size for this study (MacCallum, Widaman, Zhang, & Hong, 1999). Estimated sample size was 40 depressed subjects and 80 non-depressed subjects (ratio one to two), based on calculation of five cases per item of the PERS-M (Gorsuch, 1983, as cited in MacCallum et al., 1999). Convenient sampling method was used, as all depressed subjects and non-depressed subjects were selected from the outpatient setting.

4.1.6 Study Procedure

Prior to data collection, ethical approval had been obtained from the Medical Research and Ethic Committee (MREC), Ministry of Health Malaysia (MOH). Approval from site of study was also obtained from Director of HBUK.

Eligible participants who were identified from the outpatient clinic were approached by researcher. Explanation about the study and reassurance on confidentiality of the information were informed to the participants. Consent form sheet was given if the participants agreed to join the study. Subsequently, the participants were given a set of six questionnaires:

- Sociodemographic and clinical profile questionnaire
- The Malay version of PERS (PERS-M)
- The English version of PERS
- Dispositional Positive Emotion Scale (DPES)
- The Malay version of Center for Epidemiological Studies Depression (CESD-M)
- The Malay version of Snaith-Hamilton Pleasure Scale (SHAPS-M)

4.1.7 Assessment Tool

i. Sociodemographic and Clinical Profile Questionnaire

The basic sociodemographic background of the subjects was collected by using the questionnaire developed by the research team. The questionnaire was divided into two parts; sociodemographic data and clinical profile. Altogether, the data was collected by either interviewing the participants, retrieving patients' medical record or self-answered by the participants.

The first part of the questionnaire was regarding sociodemographic data included subjects' age, gender, race, religion, marital status, educational level and occupation. Whereas the second part of the questionnaire was about clinical profile of the depressed

subjects included duration of diagnosis of depressive disorder, current medication, previous hospitalization or electroconvulsive therapy (ECT) and family history of MDD.

ii. Malay Version of Positive Emotion Rating Scale (PERS-M)

The original English version of PERS was translated to Malay version PERS via process of forward translation and back translation technique. The psychometric properties of the final version of PERS-M was assessed to ensure the validity and reliability of the instrument to measure positive emotion in the depressed patients.

iii. Positive Emotion Rating Scale (PERS)

The PERS is an instrument used to measure positive emotion in the depressed patients (Ng et al., 2016). It is a self-report questionnaire consisted of eight items. Participants need to score themselves with score range from one (never) to five (always). Total score is range from 8 to 40, with the cut-off score of 30 had demonstrated significant discriminant validity between depressed and non-depressed subjects. It has a good validity and reliability to measure positive emotion in depressed patients, with high internal consistency in identifying people with depression (Ng et al., 2016).

iv. Dispositional Positive Emotion Scale (DPES) - Compulsion Subscale

The compassion subscale of DPES is a self-report questionnaire of 7-likert scale. The tool was developed by Shiota, Keltner, & John, 2006. It measures dispositional tendency to feel compassion or concern towards other people wellbeing which is part of positive emotion. Participants will score themselves to the 5-item questionnaire according to their level of agreement, ranging from one (strongly disagree) to seven (strongly agree).

Score will be summed into average of all five items, with higher score indicates higher level of positive emotion (Shiota, Keltner, & John, 2006).

v. Malay Version of Center for Epidemiologic Studies Depression Scale (CESD-M)

In this study, the Malay version of CESD was used, which had been validated (Sabki, Zainal, & Guan, 2014). CESD-M was found to be useful for screening purpose for non-depressed individual in the outpatient setting (Sabki et al., 2014).

The CESD is a screening test for depression which was developed by Radloff (1977). It is one of the most commonly used instrument in the study of psychiatry epidemiology to identify people at risk for clinical depression. The CESD consisted of 20-item self-report questionnaire, score ranging from 0 to 3. Total score ranges from 0 to 60, with higher score signifies greater depressive symptoms, with the cut-off score of 16 and more. It has good sensitivity and good specificity with high internal consistency in identifying people at risk of clinical depression (Lewinsohn, Seeley, Roberts, & Allen, 1997).

vi. Malay Version of Snaith-Hamilton Pleasure Scale (SHAPS-M)

The SHAPS is a self-rated instrument to assess hedonic capacity (Snaith et al., 1995). It consists of 14 items with a set of four response categories: definitely agree, agree, disagree and definitely disagree. It will be scored as the sum of all 14 items. A higher total SHAPS score indicates higher level of anhedonia (Snaith et al., 1995).

In this study, the Malay version of SHAPS (SHAPS-M) was used, which had been validated and showed to be reliable to assess anhedonia among depressed patients (Ng et

al., 2014). Unlike the original English version, the SHAPS-M applied a reverse scoring. The SHAPS-M is scored as sum of all 14 items, with total score range from 14 to 56. The lower the total score of SHAPS-M indicates higher level of anhedonia, with cut-off value of 42 to distinguish between depressed and non-depressed subjects. It has good sensitivity of 0.79 and specificity of 0.74 to assess anhedonia (Ng et al., 2014).

4.1.8 Translation Process

The English version of PERS was translated to Malay language by two bilingual (English and Malay language) authors. Subsequently, two different authors who were bilingual had translated back the Malay language to English language, using back translation technique (Brislin, 1970). The translated Malay language was pilot tested among 30 medical staffs for face validity. The finalised version of the Malay version of PERS was reviewed by two psychiatrists for content validity and to ensure satisfactory face, criterion and conceptual equivalent.

4.1.9 Statistical Analysis

All data collected were analysed with Statistical Package for Social Science (SPSS) version 23.0 software. Descriptive statistics were used to examine sociodemographic backgrounds of all subjects. The mean score of each MPERS item and total score of MPERS were calculated and Mann-Whitney test was used to study the comparison of score between depressed and healthy subjects. Parallel reliability between PERS-M and PERS was analysed with Spearman's intraclass coefficient (ICC). Spearman's correlation was used to examine concurrent validity between PERS-M and DPES, CESD-M and SHAPS-M. The internal consistency of PERS-M was analysed with Cronbach's α coefficient. The optimal cut-off score of PERS-M for depressed cases was determined from the co-ordinate point with optimal sensitivity and specificity values in the Receiver

Operating Characteristic (ROC). The Area Under the Curve (AUC) of the ROC was determined. All of the analysis were 2-tailed with alpha value of 0.05.

4.1.10 Ethical Consideration

This study was registered under National Medical Research Register (NMRR) of Ministry of Health (MOH) in June 2016. Ethical approval was obtained from Medical and Research Ethics Committee (MREC) (Reference number: NMRR-16-1102-31198). Approval from the site of study from Director of HBUK was also obtained prior to data collection.

4.2 PHASE II – The Level of Positive Emotion and Associated Factors in Depressed Subjects

4.2.1 Study Design

A cross-sectional study, using convenient sampling method to recruit depressed subjects who were attending the outpatient clinic of HBUK.

4.2.2 Study Setting

The study was conducted in the same setting as in Phase I. The sample of depressed patients were recruited from the outpatient clinic of HBUK.

4.2.3 Study Duration

The entire study was conducted from June 2016 till January 2017. The data collection for Phase II was done from July 2016 to September 2016.

4.2.4 Study Population

The study population was patients with the diagnosis of Major Depressive Disorder (MDD) who were attending outpatient clinic in HBUK.

4.2.4.1 Inclusion criteria

- Age: 18 to 80 years old.
- Patient was diagnosed with MDD.
- Patient was able to read and understand English and Bahasa Melayu.
- Patient who agreed and gave informed consent to join this study.

4.2.4.2 Exclusion criteria

- Patient who was suffering mental illness other than MDD.
- Patient with co-morbid substance use and personality disorders.
- Patient who was not able to read and understand English and Bahasa Melayu.
- Patient who was refused and not giving consent for the study recruitment.

4.2.5 Sample Size Determination

There is no fixed sample to variable ration of exploratory factor analysis (EFA) (MacCallum et al., 1999). The usual range used for the ration is between 5 to 10 numbers of samples per variable (Gorsuch, 1983; Everitt, 1975, as cited in MacCallum et al., 1999). Altogether, there are eight factors of the PERS. Therefore, the estimated sample size for this study would be:

$$N = (5 \text{ to } 10 \text{ cases per variable}) \times 8$$

$$= 40 \text{ to } 80 \text{ sample size}$$

4.2.6 Study Procedure

Ethical approval had been obtained by the Medical Research and Ethic Committee (MREC), MOH. Approval from Director of HBUK was obtained prior to data collection. Informed and written consent is compulsory in every participant. Patients' information and data obtained from the study is confidential and would only be used in this study. Patients who were diagnosed with MDD and attending outpatient clinic of HBUK were approached. A detailed information about the study was explained to every participant before the recruitment. Consent form sheet would be given to patient who agreed to participate in the study. Only patients who fulfilled both inclusion and exclusion criteria were recruited in this study.

4.2.7 Assessment Tool

i. Sociodemographic Data and Clinical Profile Questionnaire

This questionnaire was developed by the research team to inquiry regarding basic sociodemographic and clinical profile backgrounds. The first part of the questionnaire was regarding sociodemographic data included subjects' age, gender, race, religion, marital status, educational level and occupation. The second part of the questionnaire on clinical profile of the depressed subjects included duration of diagnosis, current medication, previous hospitalization or ECT and family history of MDD.

ii. Malay Version of PERS (PERS-M)

PERS is a self-report questionnaire to measure positive emotion in the depressed patients. It is a brief and easy to administer questionnaire, consists of eight items with 5-likert score from one (never) to five (always). The total score is by summing up of all items, ranging from 8 to 40. The cut-off total score of 30 had demonstrated significant

discriminant validity between depressed and non-depressed subjects. It has a good validity and reliability to measure positive emotion in depressed patients, with high internal consistency in identifying people with depression. Even though PERS is a newly invented questionnaire, it was shown to have impressive psychometric properties (Ng et al., 2016).

The English PERS was translated to Malay language for the use in this study. The PERS-M displayed good internal consistency with Cronbach's alpha of 0.89, concurrent validity and parallel reliability. The optimal cut-off point of 32, which was generated via area under the curve was able to differentiate between depressed subjects from healthy subjects. This cut-off point differed from the original version of PERS. Overall, PERS-M demonstrated satisfactory psychometric properties to measure positive emotion in depressed patients. It is brief, easy to administer, valid and reliable questionnaire to assess positive emotion among depressed patients in Malaysia.

iii. Malay Version of Center for Epidemiological Studies Depression (CESD-M)

The original CESD was developed by Radloff (1977) to be used as a screening test for depression in the general population. It is one of commonly used instrument in the epidemiology studies to identify people who are at risk of depression. It showed demonstrable validity to differentiate between people with and without depressive symptoms. However, it is not designed to make a clinical diagnosis of depression (Radloff, 1977).

It focused primarily on affective and cognitive components of depressive symptoms. It is a short, structured self-report instrument and usable by lay respondents.

It has 20 items, to be scored by respondent from zero to three. Possible total score is range from zero to 60, with higher score indicates more severe depressive symptoms. The cut-off point of 16 or higher signifies greater depressive symptoms. It was proven to have good psychometric characteristics, hence it is a valid and reliable test to identify people who are at risk of depression (Lewinsohn et al., 1997).

The Malay version of CESD had been validated and showed satisfactory psychometric properties (Sabki et al., 2014). The CESD-M found to be useful for screening purpose in the outpatient setting and it was recommended that it should be followed by a diagnostic tool in subjects with score above the cut-off score (Sabki et al., 2014). The CESD-M used the traditional cut-off point of 16 to identify potential clinical depression.

iv. Malay Version of Snaith-Hamilton Pleasure Scale (SHAPS-M)

SHAPS is an instrument to assess hedonic capacity, i.e. the degree of person's ability to experience pleasure or anticipation in pleasurable activities (Snaith et al., 1995). It has an excellent psychometric properties with good internal consistency and construct validity to assess hedonic capacity among adult with depression (Nakonezny, Carmody, Morris, Kurian, & Trivedi, 2010). This scale is also able to differentiate samples of depressive patients, psychotic patients and substance dependence patients (Franken, Rassin, & Muris, 2007).

SHAPS is simple and easy to administer self-rated scale, yet it is a comprehensive tool. It covers four types of pleasure domains, namely interest/pastimes, social interaction, sensory experience and food/drink. Overall, there are 14 items of SHAPS,

with four types of response: definitely agree, agree, disagree and definitely disagree. It will be scored as the sum of all 14 items, with higher total score indicates higher current level of anhedonia (Snaith et al., 1995).

SHAPS was designed to minimize gender, age and cultural biases (Snaith et al., 1995). Furthermore, this scale was not influenced by race, educational level and clinical background such as duration of illness, number of depressive episodes and duration of current depressive episode (Nakonezny et al., 2010).

SHAPS had been translated into few languages worldwide. In this study, the Malay version of SHAPS (SHAPS-M) was used, which had been validated with good psychometric properties (Ng et al., 2014). SHAPS-M is a valid and reliable scale to assess anhedonia among depressed patients in Malaysia (Ng et al., 2014).

v. Malay Version of Duke University Religious Index (DUREL-M)

DUREL is a self-rated tool designed to measure religiosity with good validity and reliability properties (Koenig & Büssing, 2010). It is brief, easy to administer and a comprehensive instrument, hence had been extensively used in large number of studies worldwide. It is available in more than 10 languages included Spanish, Portuguese, Chinese, Romanian, Japanese, Thai, Persian/Arabic, German, Norwegian, Dutch and Danish (Koenig & Büssing, 2010).

The DUREL was translated into Malay language and the validation study had displayed good psychometric characteristic properties (Syarinaz & Ng, 2010). The

validated Malay version of DUREL had been used in numerous local studies such as among nursing students (Ng, Yee, Subramaniam, Loh, & Moreira, 2015), among medical students (Anis, Pan, Huda, & Faisal, 2016) and among cancer patients (Ng, Mohamed, Sulaiman, & Zainal, 2016).

DUREL is a five-item scale that measures three major dimensions of religious activities and religious involvement. The first item is to measure organizational religious activity (ORA), the second item measures non-organizational religious activity (NORA) and the last three items measure intrinsic religiosity (IR). The overall score for DUREL range from 5 to 27. However, for the purpose of analysis and result interpretation, three subscales should be analysed separately. It is not recommended to sum all the three subscales, as grouping the total score of all three subscales may cancelling out the effects of each dimension (Koenig & Büssing, 2010). Each DUREL component will be analysed separately by means of using the separate mean scores of ORA, NORA and IR respectively (Ng et al., 2015; Nurasikin et al., 2013). By using the separate mean score as cut-off value, each DUREL component will be categorized into low and high (Ng et al., 2015; Nurasikin et al., 2013).

vi. The Malay Version of Brief Religious Coping Method (BRCOPE-M)

The BRCOPE is a tool to measure individual religious coping with major life stressors (Pargament, Feuille, & Burdzy, 2011). It consists of 14-items which divided into two subscales, namely positive religious coping (PRC) and negative religious coping (NRC) methods. Each subscale has seven items, with four-point Likert scale (1-not at all, 2-somewhat, 3- quite a bit, 4- a great deal). The total score is a summed up of all seven

items on each subscale, ranging from 7 to 28 for each PRC and NRC (Pargament et al., 2011).

Many studies had described the total BRCOPE score as mean of total score of each PRC and NRC subtypes (Mihaljević, Aukst-Margetić, Vuksan-Ćusa, Koić, & Milošević, 2012; Nurasikin et al., 2013; Pargament et al., 2011). By using the separate mean score of PRC and NRC as cut-off value, each religious coping subtype will be divided into low and high religious coping (Nurasikin et al., 2013; Sipon et al., 2015). Higher score of PRC subscale indicates greater presence of positive religious coping, while higher score of NRC indicates greater use of negative religious coping (Pargament et al., 2011).

PRC reflects a secure connection with God and a sense of connectedness with others. PRC methods included seeking spiritual support and collaborative problem solving with God when coping with stressors. NRC on the other hand, reflects an underlying spiritual tension and conflict within oneself, with others and with God. NRC methods included feeling of abandonment or punishment by God and blaming God for own difficulties (Pargament et al., 2011).

The psychometric properties of the Malay version of BRCOPE had been studied and showed good reliability and validity (Yusoff, Low, & Yip, 2010). Since then, the Malay version of BRCOPE has been widely used in the local Malaysia studies such as in the studies among cancer patients (Ng et al., 2016) among psychiatric patients (Nurasikin et al., 2013) and among flood victims in Terengganu and Selangor (Abdullah, Sipon, Radzi, & Ghani, 2015).

4.2.8 Statistical Analysis

The results were analysed with Statistical Package for Social Sciences (SPSS) version 23.0. The descriptive statistics were used to examine the baseline characteristic of all participants. Univariate analysis were conducted to study the association between PERS-M score with the sociodemographic profile and type of medication. Association between PERS-M score and CESD-M, SHAPS-M, DUREL-M and BRCOPE-M were analysed by univariate analysis. Regression analysis was used to examine the association between PERS-M and significant variables from the univariate analysis.

4.2.9 Ethical consideration

This study was registered with the National Medical Research register (NMRR) of MOH Malaysia in June 2016. Ethical approval was obtained from Medical Research and Ethic Committee (MREC) of MOH (Reference number: NMRR16-1102-31198). Approval from the site of the study was obtained from the Director of HBUK.

CHAPTER 5: RESULTS

5.1 OVERVIEW OF PARTICIPANTS

A total of 104 depressed patients and 85 non-depressed subjects were recruited from the outpatient clinic of Hospital Bahagia Ulu Kinta (HBUK).

In Phase I of psychometric properties study on PERS-M questionnaire, altogether there were 43 depressed patients and 85 non-depressed subjects. In Phase II study on positive emotion among depressed patients, total of 104 depressive cases were recruited, whereby 43 cases were depressed patients from the Phase I study.

The descriptive statistics of the participants' sociodemographic background will be discussed together in same section. However, the results of statistical analysis will be discussed and presented separately for each Phase I and Phase II.

5.1.1 Sociodemographic Characteristic of all Participants (Table 1)

Based from the inclusion and exclusion criteria of this study, a total of 104 depressed patients and 85 control subjects were recruited. The mean age of the depressed subjects was 46.56 years (SD=13.78) and mean age for non-depressed subjects was 42.52 years (SD=13.20). For depressed group, majority of the respondents were female (n=73) which accounted for 70.2% of the participants, whilst male gender accounted for 29.8% (n=31). This resembles the worldwide prevalence of depression in term of gender, which more common in female (Lépine & Briley, 2011). For non-depressed group, there were slightly more female (n=48, 56.6%) than male (n=37, 43.5%).

In the depressed group, there were 31.7% Malay (n=33), 54.8% Chinese (n=57), 11.5% Indian (n= 12) and 1.9% of others ethnicity (n=2). In the healthy group, they were 76.5% Malay (n=65), 12.9% Chinese (n=11), 9.4% Indian (n=8) and 1.2% others ethnicity (n=1).

In the depressed group, there were 31.7% Muslim (n=33), 38.5% Buddhist (n=40), 14.4% Christian (n=10), 9.6% Hindu (n=10) and 5.8% others religion (n=6). In healthy group, there were76.5% Muslim (n=65), 8.2% Buddhist (n=7), 5.9% Christian (n=5), 7.1% Hindu (n=6) and 2.4% others religion (n=2).

For marital status, the status was the same in both depressed and healthy groups, whereby married was more than single, and single was more than divorced or widow. In the depressed group, 63.5% married (n=66), 22.1% single (n=23) and 14.4% were divorced or widow (n=15). In the healthy group, 69.4% married (n=59), 23.5% single (n=20) and 7.1% divorced or widow (n=6).

For both groups, all of the participants had background of formal education, at least to the level of secondary education. This could be related to the inclusion criteria of this study, whereby all participants must be able to read and understand English and Malay language, apart from all the questionnaires were self-rated assessment. In depressed group, 12.5% attained primary educational level (n=13), 62.5% attained secondary educational level (n=65) and 25.0% attained tertiary level of education (n=26). For healthy group, 3.5% attained primary educational level (n=3), 54.1% attained secondary educational level (n=46) and 42.4% attained tertiary level of education (n=36).

For the employment status, in both groups most were employed. Employed was divided into full-time or part-time. Subjects who were classified as unemployed included those who were not working at time of study recruitment, pensioner, housewife and students. In the depressed group, 55.8% (n=58) were employed (part-time: n=8, 13.8%; full-time: n=50, 86.2%) and 44.2% were unemployed (n=46). For healthy group 68.2% (n=58) were employed (part-time: n=5, 8.6%; full-time: n=53, 91.3%) and 31.8% were unemployed (n=27).

Table 1: Sociodemographic characteristics of the study subjects.

	Depressed Subjects (N:104)	**Healthy Subjects (N: 85)**	**Total (N: 189)**
Age, mean (sd)	46.56 (13.78)	42.52 (13.20)	44.54 (13.49)
Gender, n (%)			
Male	31 (29.8%)	37 (43.5%)	68 (36.0%)
Female	73 (70.2%)	48 (56.6%)	121 (64.0%)
Race, n (%)			
Malay	33 (31.7%)	65 (76.5%)	98 (51.8%)
Chinese	57 (54.8%)	11 (12.9%)	68 (36.0%)
Indian	12(11.5%)	8 (9.4%)	20 (10.6%)
Others	2 (1.9%)	1 (1.2%)	3 (1.6%)
Religion, n (%)			
Muslim	33 (31.7%)	65 (76.5%)	98 (51.8%)
Buddhist	40 (38.5%)	7 (8.2%)	47 (24.9%)
Christian	15 (14.4%)	5 (5.9%)	20 (10.6%)
Hindu	10 (9.6%)	6 (7.1%)	16 (8.5%)
Others	6 (5.8%)	2 (2.4%)	8 (4.2%)
Marital status, n (%)			
Single	23 (22.1%)	20 (23.5%)	43 (22.8%)
Married	66 (63.5%)	59 (69.4%)	125 (66.1%)
Divorced/Widow	15 (14.4%)	6 (7.1%)	21 (11.1%)
Education level, n (%)	13 (12.5%)	3 (3.5%)	16 (8.5%)
Primary	65 (62.5%)	46 (54.1%)	111 (58.7%)
Secondary	26 (25.0%)	36 (42.4%)	62 (32.8%)
Tertiary			
Employment, n (%)			
Unemployed	46 (44.2%)	27 (31.8%)	73 (38.6%)
Employed	58 (55.8%)	58 (68.2%)	116 (61.4%)

5.1.2 Clinical background of the Depressed Subjects (N: 104)

The mean duration of depression in the depressed subjects was 2.6 years (mean: 32.75 months, SD=35.50). Majority of them were treated as outpatient only (n=88, 84.6%), while 15.4% had history of hospitalization for depression (n=16) (Table 2). Majority of the depressed subjects never had received electroconvulsive therapy (n=101, 97.1%), and only 3 patients had past history of electroconvulsive therapy. 34.6% of the depressed patients had family history of depression (n=36), while 65.4% had no history of depression in their family (n=68).

Table 2: Clinical background of the depressed subjects.

	N: 104	%
Hospitalization		
Yes	16	15.4%
No	88	84.6%
ECT		
Yes	3	2.9%
No	101	97.1%
Family history of depression		
Yes	36	34.6%
No	68	65.4%

Abbreviation: ECT=Electroconvulsive therapy.

In term of treatment, most of the depressed subjects were treated with antidepressant only (n=57, 54.8%), while the other 42.3% were treated with combination medications (n=44). A small number of 2.9% (n=3) of the depressed subjects were treated with antipsychotic only, whereby all of them were treated with quetiapine antipsychotic (Table3). Among type of antidepressant, majority of the depressed subjects were taking selective serotonin reuptake inhibitor (SSRI) (n=81, 77.9%) (Table 4).

Table 3: Medications usage among the depressed subjects.

Medications	Frequency	Percent (%)
AD only	57	54.8%
AP only	3	2.9%
AD + BDZ	23	22.1%
AD + AP	13	12.5%
AD + BDZ + AP	5	4.8%
AD + MS	2	1.9%
AD + BDZ + AP + MS	1	1.0%
TOTAL	104	100%

Abbreviation: AD=Antidepressant, AP=Antipsychotic, BDZ=Benzodiazepine, MS=Mood Stabiliser.

Table 4: Specific medication usage among all of the depressed subjects.

Type of Antidepressant		Frequency	Percent (%)
SSRI:	Fluoxetine	8	7.7%
	Fluvoxamine	32	30.8%
	Sertraline	17	16.3%
	Escitalopram	24	23.1%
NASSA:	Mirtazapine	13	12.5%
SNRI:	Venlafaxine	2	1.9%
	Duloxetine	2	1.9%
Melatonergic:	Valdoxan	3	2.9%
Atypical Antipsychotic:	Quetiapine	3	2.9%
	TOTAL	104	100%

Abbreviation: SSRI=Selective Serotonin Reuptake Inhibitor, NASSA=Noradrenergic and Specific Serotonergic Antidepressant, SNRI=Serotonin Norepinephrine Reuptake Inhibitor.

5.2 RESULTS OF PHASE I

5.2.1 The PERS-M Score between Depressed Subjects and Healthy Subjects

Phase I was comparing the results of 43 depressed patients and 85 non-depressed subjects. Total mean score of PERS-M for depressed subjects (mean=27.39, SD= 8.68) was significantly lower than healthy subjects (mean=33.60, SD 5.26). For individual item, the scores among the depressed group were significantly lower than the healthy subjects, even after adjusted for score of CESD-M (Table 5).

Table 5: Comparison of PERS-M's scores between depressed and healthy subjects.

	PERS-M, mean (sd)		**Mean difference**	**Adjusted mean difference* (95% CI)**	***p* value**
	Depressed	Non Depressed			
Item 1	3.37 (1.29)	4.02 (1.02)	0.65	0.13 (2.88, 4.93)	<0.001
Item 2	3.02 (1.42)	3.85 (1.20)	0.83	0.16 (2.52, 4.84)	<0.001
Item 3	3.44 (1.40)	3.97 (1.12)	0.53	0.07 (2.82, 5.08)	0.003
Item 4	3.25 (1.57)	3.75 (1.23)	0.50	0.05 (2.49, 5.01)	0.001
Item 5	4.02 (1.20)	4.47 (0.81)	0.45	0.13 (3.89, 5.62)	<0.001
Item 6	3.93 (1.22)	4.77 (0.56)	0.84	0.28 (3.53, 5.02)	<0.001
Item 7	3.04 (1.51)	4.28 (0.86)	1.24	0.36 (2.84, 4.74)	<0.001
Item 8	3.34 (1.46)	4.45 (0.90)	1.11	0.32 (3.16, 5.08)	<0.001
Total	27.39 (8.68)	33.60 (5.26)	6.21	0.31 (26.58, 37.90)	<0.001

*Adjusted for CESD score using linear regression

5.2.2 Psychometric Properties of PERS-M

The PERS-M exhibited good internal consistency, with Cronbach's alpha coefficient of 0.89. All of the items had corrected-item total correlation of more than 0.60 (Table 6). Parallel reliability of PERS-M and original PERS was good, as showed by Spearman's Correlation of 0.95 ($p < 0.01$). The PERS-M was positively correlated with DPES (r=0.32, p<0.05), SHAPS-M ($r = 0.77$, $p < 0.01$) and negatively correlated with CESD-M (r=-0.61, p<0.01) (Table 7).

Table 6: Corrected-item Total correlation and Cronbach's α if item deleted for PERS-M.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PERS-M1	27.7266	40.767	0.660	0.876
PERS-M2	27.9531	39.116	0.655	0.877
PERS-M3	27.7344	40.638	0.609	0.881
PERS-M4	27.9453	39.076	0.635	0.879
PERS-M5	27.2109	43.081	0.608	0.881
PERS-M6	27.0391	42.888	0.665	0.877
PERS-M7	27.6641	38.367	0.760	0.865
PERS-M8	27.4453	38.721	0.755	0.866

Abbreviation: PERS-M = Malay version of Positive Emotion Rating Scale.

Table 7: Spearman's Correlation (r) between PERS-M and original PERS, DPES, CESD-M and SHAPS-M in the depressed subjects.

	PERS-M (r)	PERS (r)	DPES (r)	CESD-M (r)	SHAPS-M (r)
PERS-M	1.00	0.95**	0.32*	-0.61**	0.77**
PERS	0.95**	1.00	0.40**	-0.59**	0.78**
DPES	0.32*	0.40**	1.00	-0.001	0.44**
CESD-M	-0.61**	-0.60**	-0.001	1.00	-0.45**
SHAPS-M	0.77**	0.78**	0.44**	-0.45**	1.00

** Correlation is significant at the level 0.01 (2-tailed).

* Correlation is significant at the level 0.05 (2-tailed).

Abbreviation: PERS-M = Malay version of Positive Emotion Rating Scale, PERS = Positive Emotion Rating Scale, DPES = Dispositional Positive Emotion Scale, CESD-M = Malay version of Centre for Epidemiological Studies, SHAPS-M = Malay version of Snaith-Hamilton Pleasure Scale.

5.2.3 Receiver Operating Characteristic (ROC) Curve of PERS-M

The area under the receiver operating characteristic curve (AUC) for ROC was 0.71 (95% CI = 0.60 - 0.81). The optimal cut-off score to differentiate depressed subjects from healthy subjects was 32, with sensitivity 0.68, specificity 0.63, positive predictive value (PPV) of 0.49 and negative predictive value (NPV) of 0.79 (Table 8).

Table 8: Sensitivity and specificity of each coordinates for the ROC curve of PERS-M to determine depressed cases in the study subjects.

PERS-M Score	Sensitivity	Specificity
29	0.812	0.512
30	0.812	0.558
31	0.765	0.581
32	0.682	0.628
33	0.647	0.674
34	0.576	0.698
35	0.506	0.744

Abbreviation: PERS-M = Malay version of Positive Emotion Rating Scale, ROC = Receiver Operating Characteristic.

For PERS-M < 32, Positive Predictive Value (PPV) = 0.49 and Negative Predictive Value (NPV) = 0.79.

5.3 RESULTS OF PHASE II

5.3.1 The Total Scores of PERS-M, CESD-M, SHAPS-M, DUREL-M and BRCOPE-M in the Depressed Patients

Phase II had involved with 104 depressed patients. Table 9 displays overall scores on the PERS-M, CESD-M, SHAPS-M, DUREL-M and BRCOPE-M in the depressed patients. The minimum and maximum values of all scales were plotted, together with mean, standard deviation (SD), frequency and percentage.

Overall, total mean score of PERS-M was 27.92 (SD=8.95), CESD-M was 22.17 (SD=12.39) and SHAPS-M was 43.58 (SD=8.85) in the depressed group. For DUREL-M and BRCOPE-M, scores were calculated according to the subdomains. Mean scores were 3.26 (SD=1.63) for organizational religious activities, 4.21 (SD=1.86) for non-organizational religious activities and 12.17 (SD=3.29) for intrinsic religiosity. Mean scores for positive religious coping was 19.38 (SD=6.96) and negative religious coping was 12.13 (SD=5.15) (Table 9).

Table 9: PERS-M, CESD-M and SHAPS-M scores in depressed subjects (N: 104).

	Range	Mean	SD	N (%)
PERS-M	8 - 40	27.92	8.95	
≤ 32				66 (63.5%)
> 32				38 (36.5%)
CESD-M	3 - 50	22.17	12.39	
≤ 16				47 (45.2%)
> 16				57 (54.8%)
SHAPS-M	22 - 56	43.58	8.85	
≤ 42				45 (43.3%)
> 42				59 (56.7%)

DUREL-M	1 – 6	3.26	1.63	
ORA				
Less than 4				60 (57.7%)
4 and above	1 – 6	4.21	1.86	44 (42.3%)
NORA				
Less than 4				32 (30.8%)
4 and above	3 - 15	12.17	3.29	72 (69.2%)
IR				
Less than 12				32 (30.8%)
12 and above				72 (69.2%)
BRCOPE-M				
PRC	7 – 28	19.38	6.96	
Less than 20				50 (48.1%)
20 and above				54 (51.9%)
NRC	7 - 27	12.13	5.15	
Less than 12				56 (53.8%)
12 and above				48 (46.2%)

Abbreviation: PERS-M = Malay version of Positive Emotion Rating Scale, CESD-M= Malay version of Centre for Epidemiological Studies, SHAPS-M = Malay version of Snaith-Hamilton Pleasure Scale, DUREL-M= Malay version of Duke Religious Index, ORA= Organization Religious Activities, NORA= Non-organization Religious Activities, BRCOPE-M=Malay version of the Brief Religious Coping, PRC= Positive Religious Coping, NRC= Negative Religious Coping.

5.3.2 Univariate Analysis of PERS-M with Subjects' Sociodemographic Characteristic and Different Types of SSRI Antidepressants

The univariate analysis of the sociodemographic characteristic of the depressed subjects with the PERS-M showed that there were no significant association, except the age (OR=5.65, $p<0.01$) (Table 10). The analysis of the PERS-M with SSRI antidepressants found no significant association between the PERS-M score with different types of SSRI antidepressants received in the depressed subjects (Table 11).

Table 10: Univariate analysis of PERS-M score with sociodemographic characteristics of the depressed subjects.

	PERS-M total score ≤ 32 N (%)	PERS-M total score > 32 N (%)	Chi Square	Odd Ratio (OR)	95% CI	*p* value
Gender						
Male	21(67.7%)	10(32.3%)	0.35	1.31	0.54, 3.18	0.56
Female	45(61.6%)	28(38.4%)				
Age						
≤ 45 years old	37(84.1%)	7 (15.9%)	13.99	5.65	2.18, 14.66	<0.001
> 45 years old	29(48.3%)	31(51.7%)				
Race						
Malay	21(63.6%)	12(36.4%)	0.001	1.01	0.43, 2.39	0.98
Non Malay	45(63.4%)	26(36.6%)				
Religion						
Muslim	21(63.6%)	12(36.4%)	0.001	1.01	0.43, 2.39	0.98
Non-Muslim	45(63.4%)	26(36.6%)				
Marital Status	28(73.7%)	10(26.3%)	2.69	0.49	0.20, 1.16	0.10
Single	38(57.6%)	28(42.4%)				
Married						
Education Level						
≤ Secondary	46(59.0%)	32(41.0%)	2.71	0.43	0.16, 1.19	0.10
> Secondary	20(76.9%)	6 (23.1%)				
Employment Status						
Employed	44(63.8%)	25(36.2%)	0.008	1.04	0.45, 2.42	0.93
Unemployed	22(62.9%)	13(37.1%)				

Abbreviation: PERS-M= Malay version of Positive Emotion Rating Scale.

Table 11: Univariate Analysis of PERS-M score with different type of SSRI Antidepressant used in depressed subjects (N: 104).

	PERS-M total score ≤ 32 N (%)	PERS-M total score > 32 N (%)	Chi Square	Odd Ratio (OR)	95% CI	*p* value
Fluoxetine						
Yes	6 (75.0%)	2 (25.0%)	0.498	1.800	0.345,	0.481
No	60 (62.5%)	36 (37.5)			9.399	
Fluvoxamine						
Yes	22 (68.8%)	10 (31.3%)	0.558	1.400	0.578,	0.455
No	44 (61.1%)	28 (38.9%)			3.392	
Sertraline						
Yes	10 (58.8%)	7 (41.2%)	0.189	0.791	0.274,	0.664
No	56 (64.4%)	31 (35.6%)			2.285	
Escitalopram						
Yes	12 (50.0%)	12 (50.0%)	2.438	0.481	0.191,	0.118
No	54 (67.5%)	26 (32.5%)			1.217	

Abbreviation: PERS-M= Malay version of Positive Emotion Rating Scale, SSRI= Selective Serotonin Reuptake Inhibitor.

5.3.3 Univariate Analysis of PERS-M with CESD-M, SHAPS-M, DUREL-M and BRCOPE-M

PERS-M had showed significant association to the CESD-M (OR=0.05, $p<0.001$), SHAPS-M (OR=2.62, $p<0.001$), DUREL-M ORA (OR=2.75, $p=0.01$), DUREL-M NORA (OR=2.70, $p=0.04$), DUREL-M IR (OR=6.26, $p=0.001$) and BRCOPE-M PRC (OR=2.45, $p=0.03$) (Table 12). From the same table, it showed that the PERS-M was not significantly associated with BRCOPE-M NRC (OR=0.55, $p=0.15$).

Table 12: Univariate analysis of PERS-M score with CESD-M, SHAPS-M, DUREL-M, and BRCOPE-M in the depressed subjects.

	PERS-M total score ≤ 32 N (%)	**PERS-M total score > 32 N (%)**	**Chi Square**	**Odd Ratio (OR)**	**95% CI**	***p* value**
CESD-M						
≤ 16	15 (31.9%)	32 (68.1%)	36.81	0.05	0.02,	<0.001
> 16	51 (89.5%)	6 (10.5%)			0.16	
SHAPS-M						
≤ 42	44 (97.8%)	1 (2.2%)	40.28	2.62	1.88,	<0.001
> 42	22 (37.3%)	37 (62.7%)			3.66	
DUREL-M ORA						
Less than 4	44 (73.3%)	16 (26.7%)	5.96	2.75	1.201,	<0.05
4 and above	22 (50.0%)	22 (50.0%)			6.26	
DUREL-M NORA						
Less than 4	25 (78.1%)	7 (21.9%)	4.29	2.70	1.04,	<0.05
4 and above	41 (56.9%)	31 (43.1%)			7.05	
DUREL-M IR						
Less than 12	28 (87.5%)	4 (12.5%)	11.52	6.26	1.99,	0.001
12 and above	38 (52.8%)	34 (47.2%)			19.68	
BRCOPE-M PRC						
Less than 20	37 (74.0%)	13 (26.0%)	4.61	2.45	1.07,	<0.05
20 and above	29 (53.7%)	25 (46.3%)			5.62	
BRCOPE-M NRC						
Less than 12	32 (57.1%)	24 (42.9%)	2.09	0.55	0.24,	0.15
12 and above	34 (70.8%)	14 (29.2%)			1.24	

Abbreviation: PERS-M= Malay version of Positive Emotion Rating Scale, CESD-M= Malay version of Centre for Epidemiological Studies, SHAPS-M = Malay version of Snaith-Hamilton Pleasure Scale, DUREL-M= Malay version of Duke Religious Index, ORA= Organization Religious Activities, NORA= Non-organization Religious Activities, BRCOPE-M=Malay version of the Brief Religious Coping, PRC= Positive Religious Coping, NRC= Negative Religious Coping.

5.3.4 Multivariate Regression Analysis of the Significant Associated Factors with the PERS-M

Multivariate logistic regression analysis was performed using the PERS-M total score against the significant associated factors, adjusted for CESD-M and SHAPS-M. The result showed that the total PERS-M score was found to be significantly associated with age (adjusted $R^2 = 0.66$, $p<0.001$), ORA (adjusted $R^2 = 0.67$, $p<0.001$), NORA (adjusted $R^2 = 0.65$, $p<0.001$), IR (adjusted $R^2 = 0.65$, $p<0.001$) and PRC (adjusted $R^2 = 0.65$, $p<0.001$) (Table 13).

Table 13: Multiple Logistic Regression (Multivariate) Analysis of associated factors for positive emotion.

Variable	N	PERS-M total (mean, sd)	Adjusted R^2*	95% CI	*p* value
Age					
45 and below	44	23.66 (8.65)	0.66	-4.23,	<0.001
Above 45	60	31.05 (7.86)		11.90	
DUREL-M ORA					
Less than 4	60	26.13 (8.87)	0.67	-3.23,	<0.001
4 and above	44	30.36 (8.56)		11.62	
DUREL-M NORA					
Less than 4	32	25.22 (8.91)	0.65	-1.88,	<0.001
4 and above	72	29.13 (8.76)		14.06	
DUREL-M IR					
Less than 12	32	23.66 (7.64)	0.65	-3.23,	<0.001
12 and above	72	29.82 (8.88)		12.38	
BRCOPE- PRC					
Less than 20	50	26.28 (8.73)	0.65	-2.48,	<0.001
20 and above	54	29.44 (8.96)		12.79	

*Adjusted to total score of CESD-M and total score of SHAPS-M.

Abbreviation: PERS-M= Malay version of Positive Emotion Rating Scale, CESD-M= Malay version of Centre for Epidemiological Studies, SHAPS-M = Malay version of Snaith-Hamilton Pleasure Scale, DUREL-M= Malay version of Duke Religious Index, ORA= Organization Religious Activities, NORA= Non-organization Religious Activities, IR= Intrinsic Religiosity, BRCOPE-M=Malay version of Brief Religious Coping, PRC= Positive Religious Coping.

CHAPTER 6: DISCUSSSION

6.1 Overview of the Study

This was a cross-sectional study conducted in the outpatient setting of Hospital Bahagia Ulu Kinta (HBUK) from July to September 2016. The study was divided into two phases. Phase I was aimed to examine the psychometric properties of the Malay version of Positive Emotion Rating Scale (PERS-M) in term of its validity and reliability to measure positive emotion among depressed and non-depressed subjects. The objectives of the Phase II study were to study the level of positive emotion among depressed patients and to examine the associated factors of positive emotion in depressed patients with religiosity and religious coping.

Overall, the PERS-M had shown satisfactory psychometric properties as a tool to measure positive emotion in depressed subjects. PERS-M had displayed good internal consistency (Cronbach's α of 0.89), good parallel reliability with the original English version of PERS and good concurrent validity with DPES and SHAPS-M. The cut-off value of 32 and above was able to discriminate non-depressed and depressed subjects.

This study had found that most of the depressed patients had lower positive emotion (63.5%) and lower hedonic capacity (43.3%) despite being on medication at the time of assessment (Table 10). Positive emotion was found to be significantly associated with religiosity and positive religious coping in the depressed patients (p<0.05). Depressed people with age 45 years and above, significantly had higher level of positive emotion (adjusted R^2=0.66, p<0.001). Otherwise, there were no significant association between positive emotion and other sociodemographic factors and clinical profile of the depressed subjects.

6.2 Overview of participants

Altogether, there were 104 depressed patients had been recruited in this study with more depressed females (70.2%) than males (29.8%) (Table 1). This is consistence with worldwide study of higher prevalence of depression is seen in female, at ratio female to male of 2:1 (Lépine & Briley, 2011). Majority of the depressed patients were married (63.5%) and achieved the level of secondary education (62.5%). More than half of depressed patients were employed (55.8%) at the point of assessment. Similar characteristics were found in non-depressed group, as there were more female, obtained the level of secondary education, married and working in this group. There was an unequal racial distribution as there were more Chinese in depressed group (54.8%, n=57) and more Malay in non-depressed group (76.5%, n=85).

6.3 Psychometric Properties of Malay Version of Positive Emotion Rating Scale

Psychometric properties refer to reliability and validity of the instrument, which are the indicators of a quality of an instrument. Reliability measures the stability and consistency of the questionnaire, while validity measures the accuracy and ability of the instrument to measure what it supposed to measure (Kimberlin & Winterstein, 2008). In this study, PERS-M had displayed satisfactory psychometric properties to measure positive emotion in depressed subjects. Cronbach's alpha of PERS-M was 0.89, indicating that PERS-M has good internal consistency. This was not much differ from the original PERS's internal consistency of 0.90. Internal consistency provides a measurement of reliability whether correlation of each item in the instrument measures the same construct (Kimberlin & Winterstein, 2008). PERS-M also demonstrated excellent intraclass correlation (ICC) equal to 0.95 (p<0.01), which indicates a strong degree of correlation between original PERS and PERS-M (Cicchetti, 1994).

Concurrent validity is a type of criterion validity. It determines the correlation with former instruments with similar or highly related construct (Kimberlin & Winterstein, 2008). PERS-M exhibited significant correlation with DPES (r=0.32, p=0.03) and SHAPS-M (r=0.77, p<0.01) and was negatively correlated with CESD-M (r= -0.61, p<0.01). However, this should be interpreted with caution, as though the correlation between PERS-M and DPES was significant, the association was rather weak. Although PERS-M and DPES were in the same direction, the correlation was weak as they were not measuring the same construct. Both PERS-M and DPES are assessing positive emotion, but of different domains. DPES compassion subscale was used in this study, which as the name implies, it measures compassion domain of positive emotion. PERS encompassed six domains comprised of contentment, interest, love, gratification, active and pride. As PERS and DPES did not assess the same construct, it possibly explains of weak correlation between these two instruments.

Correlation coefficient represents the degree of linear relationship between two variables. Interpretation of the correlation value of more than 0.70 is usually considered as the acceptable level of association. Correlation between 0.36 to 0.69 indicates moderate correlation and value less than 0.35 regards as a weak correlation (Taylor, 1990). The result showed that PERS-M had significant positive correlation with SHAPS-M. This suggests that subject with higher positive emotion would have higher level of hedonic capacity. This could be explained by the theory of broaden-and-built of positive emotion. Positive emotion allows a person to experience positive feelings and excitements by encouraging a person to adaptively involve with pleasurable activities in the surroundings (Fredrickson, 1998; Ryan & Deci, 2001). Deficit in positive emotion experiences is found to be strongly associated with anhedonia (Werner-Seidler, Banks, Dunn, & Moulds, 2013) and increased the risk of depression, anxiety and poor psychological health (Gruber

et al., 2013). This supports the finding in this study whereby there was negative correlation between PERS-M and CESD-M. There was an inverse relationship between PERS-M and CESD, by means that subject with higher level of positive emotion would have lower depressive symptoms, on contrary subject with higher depressive symptoms would have lower level of positive emotion.

The optimal cut-off score of PERS-M was plotted from the Receiver Operating Characteristic (ROC) curve, by determining the optimal value of sensitivity and specificity. PERS-M's cut-off score to distinguish depressed subject from healthy subject was 32, with sensitivity of 0.68, specificity of 0.63, positive predictive value (PPV) of 0.49 and negative predictive value (NPV) of 0.79. These findings differed from the original PERS, with cut-off point of 30 with sensitivity of 0.75, specificity of 0.73, PPV of 0.60 and NPV of 0.78. Overall, the sensitivity and specificity of PERS-M were reduced as the cut-off score was increased. The difference of the cut-off point is better explained by the difference in language of the instrument to accommodate the linguistic difference (Grassi & Riba, 2012). The area under the curve (AUC) for PERS-M (0.71, 95% CI = 0.60 – 0.81) was lower than the original PERS's AUC (0.81, 95% CI 0.74 – 0.90). However, it did not carry much different in meaning as the AUC between 0.7 to 0.8 is interpreted as fair and considered as acceptable to discriminate between disease and healthy groups (Gaines, 2009). From the above analyses, it can be concluded that PERS-M displayed satisfactory psychometric properties to assess positive emotion in depressed patients.

In the Phase I of the study, comparison of PERS-M scores between depressed group and healthy group were done by using independent T-test. Ideally, healthy subject should be recruited from the community. However, due to limitation in time and manpower, this study had included patients' carers and family members as healthy subject, which they might vulnerable to depression in view of exposure to stress from taking care of mentally ill family members or biologically predisposed to mental disorders. Hence independent T-test analysis, adjusted to the score CESD-M was done to compare the score of PERS-M between depressed group and healthy group by adjusting to underlying depressive symptoms. Overall result showed that each item and total scores of PERS-M were significantly lower in depressed group than healthy group with *p* value all less than 0.01. Therefore, the finding had successfully rejected the null hypothesis of this study. There was a significant difference in the level of positive emotion between depressed group and non-depressed group, with the lower level of positive emotion was observed in the former group.

6.4 Positive Emotion and Depression

The validated PERS-M from the Phase I study was used and applied in Phase II to study the level and associated factors of positive emotion among 104 depressed patients. As represented in the results, depressed subjects reported to have lower positive emotion with total mean score PERS-M of 27.92 (SD= 8.95). Majority of the depressed subjects had lower positive emotion (63.5%, n=66 with total PERS-M score of 32 and below) and only one third of the depressed subjects had higher level positive emotion (36.5%, n=38 with total PERS-M score above 32). This result signifies that decrease in positive emotion is common in depressed patients and may further imposed greater burden to patients. Abundance of literatures had linked deficit in positive emotion to poorer psychological health and lower life satisfaction, especially among psychiatric

population (Brown & Barlow, 2009; Carl et al., 2013; Ehrenreich, 2007; Gruber et al., 2013).

Depression refers to absence of positive thoughts and inability to experience positive emotion. Positive emotional disturbances play an important function as part of the theory of depression. Dysfunctional emotion system among people with depression would trigger negative self-appraisal, leading to dampen the ability to experience positive emotion and inability to enjoy pleasurable stimuli (Gruber et al., 2011). This explains on the psychopathology of the core symptoms of depression as stated in the DSM-5, namely anhedonia (lost of interest or pleasure) and depressed mood (absence of positive thoughts). On the another note, lower positive emotion is related to an increase risk of depression, as well as anxiety (Brown & Barlow, 2009; Carl et al., 2013; Ehrenreich, 2007; Gruber et al., 2013). Hence, it can be concluded that positive emotion and depression are interconnected and affecting each other in reciprocal manners.

Uniquely, depression may co-exist with positive emotion. Presence of positive emotion in depressed people would attenuate the severity of depressive symptoms (Lambert, Fincham, & Stillman, 2012). Apart from reducing the symptoms of depression, presence of positive emotion is beneficial to prevent relapse (Santos et al., 2013), which could incorporated as part of relapse prevention strategies.

6.5 Positive Emotion and Age

This study has found no significant association between positive emotion and sociodemographic factors of the depressed patients, except on the subjects' age. This study has found that depressed subjects who were more than 45 years old reported to have higher level of positive emotion. On the contrary, depressed subjects aged 45 years old and younger, reported to have lower level in positive emotion. The difference was statistically significant as demonstrated by the analysis of regression. Even after adjusted for underlying depressive symptoms and hedonic capacity, the association between age and positive emotion remained significant. There was positive correlation between positive emotion and depressed subjects above 45 years old. The findings suggested that depressed subjects from middle adulthood and above have higher level of positive emotion than the younger aged depressed patients.

This significant finding in this study is supported by recent evident that suggests emotional wellbeing improves with the increment of age, particularly from early adulthood to old age (Carstensen et al., 2011). It suggests that there is a steady improvement in emotional development with age (Carstensen et al., 2011; Urry & Gross, 2010). The development of emotional regulation expands across adulthood as people become increasingly motivated to pursue meaningful emotional goals and invest in psychosocial resources to improve emotional wellbeing (Carstensen et al., 2011). It also revealed that as people age, there is increment in positive emotion with infrequent report of negative emotion (Carstensen et al., 2011).

People within age group 40 to 64 years old are classified as middle-aged adult. There is a shift from early adulthood to middle adulthood, which associated with changes in psychosocial roles (Slater, 2003). In midlife age, life has become controllable, with

stronger social support and improved self-regulation (Urry & Gross, 2010). At the same time, there would be some changes in physical functioning as few illness start to set in, which would compromised some physical activities and limit social activities that previously endured with ease (Charles & Carstensen, 2010). The changes in psychosocial and physical functions within this stage would impose risk of psychological distress. However, despite of all possible limitation and difficulties, older adults reported to have higher level of wellbeing than younger adults (Charles & Carstensen, 2010). The differences are mediated by effective and adaptive emotional regulation use in older adults than the youngers (Urry & Gross, 2010).

Psychosocial adaptation in midlife age are shaped based on cultural and tradition (McAdams, Reynolds, Lewis, Patten, & Bowman, 2001). In the middle aged, life adjustments are concern with goals, values, social interaction, strategies and skills to adapt to the changes in psychosocial roles (Charles & Carstensen, 2010). Psychosocial adaption in midlife are focusing on generativity and improving psychosocial wellbeing (McAdams et al., 2001; Slater, 2003). Previous life experiences set growth in a person's life, such as changes in own self, changes in relationship with others and changes of life values (McAdams et al., 2001). Realistic interpretation and evaluation of previous experiences would provide a meaningful lesson learned from previous life events and contributed to healthy psychosocial adaptation (Carstensen et al., 2011; McAdams et al., 2001).

It is an interesting fact that social and emotional functioning do change with age (Charles & Carstensen, 2010). Emotional development is a progressive and a gradual process of mastery own emotional regulation with end product of greater emotional

stability, stable personality trait and better psychosocial wellbeing (Carstensen et al., 2011). Despite of changes in psychosocial roles, occurrence of negative events and possible various illnesses that may compromise physiological changes in midlife age, older adults reported to have lower level of negative emotion (Charles & Carstensen, 2010). Interaction of stable emotional regulation, self-regulation and social support in older adults would enable individual to maintain overall psychosocial wellbeing (Carstensen et al., 2011).

As people age, it is believed that they solve interpersonal problems more effectively by using a combination of effective emotional regulation and problem-solving strategies (Charles & Carstensen, 2010). It is explained by development and improvement of emotional regulation across adulthood, hence older adults will have broader range of coping strategies and solve problems effectively (Blanchard-Fields, 2007). Furthermore, it was observed that older adults were able to maintain flexible emotional responses and in less reactive manner towards both positive and negative events (Carstensen et al., 2011). In comparison, young adults were observed to have labile emotional responses to daily life events (Carstensen et al., 2011).

With the improvement of emotional regulation as people aging, it helps older adults to adaptively cope with stress and solve problems effectively (Charles & Carstensen, 2010). Overall, it promotes personal wellbeing, helps to build up resilience and contributes to positive emotion (Fredrickson, 2001). This possibly explains the finding in this study whereby higher level of positive emotion was observed in depressed subjects aged 45 and above.

6.6 Positive Emotion and Clinical Background of Depressed Patients

All of the 104 depressed patients in this study received and treated with medication at the point of assessment. Near all received antidepressant medications (97.1%, n=101) either as monotherapy or in combination therapy. Among antidepressants group, SSRI antidepressant was found to be predominantly prescribed to the depressed patients. However, there was no significant association found between positive emotion and type of antidepressants used among the depressed patients.

This study has found that despite all of the depressed patients were on treatment, near half of them still had ongoing higher depressive symptoms, lower hedonic capacity and lower positive emotion. These were based on the percentage of the depressed patients with total CESD-M score more than 16 (54.8%), total SHAPS-M less than 42 (56.7%) and total PERS-M less than 32 (63.5%). The finding is consistence with previous study which concluded that anhedonia and deficit of positive emotion is not only limited to the acute phase of depression, but persisted even when there are symptoms-free while in remission (Richman et al., 2005; Werner-Seidler et al., 2013). Review by Leventhal, Chasson, Tapia, Miller, & Pettit (2006) found that although the level of anhedonia is fluctuates during the course of the depression, it usually remains stable throughout the illness. In healthy population, positive and negative emotions are expected to coexist, but with a low and negative correlation (Werner-Seidler et al., 2013). Meanwhile, in depression, it is characterized by sustained negative emotion with persistent reduction of positive emotion (Rottenberg, 2005).

The concept of depression has strongly relates the depressive disorder to the deficit and dysregulation of positive emotion (Brown & Barlow, 2009; Carl, Soskin, Kerns, & Barlow, 2013; Gruber et al., 2013). Disturbances of positive emotion are linked

to anhedonia, which is the core symptom of depression (Santos et al., 2013). Deficit of positive emotion leads to dysfunctional expression of emotions and further discouraging individual to participate or engage with their surrounding activities (Fredrickson, 2001). This mechanism had explained how positive emotion affects anhedonia, and depression as a whole (Fredrickson, 2001). Furthermore, the deficit of positive emotion and anhedonia are believed to be in persistent pattern, although they tend to fluctuate throughout the course of depression (Richman et al., 2005). This would make the depressed people vulnerable to relapse and recurrence and hence imposed poorer prognosis (Werner-Seidler et al., 2013). Additionally, positive emotion is perceived to be a protective factor against the development of depression (Richman et al., 2005). Therefore targeting positive emotion in the management of depression would be beneficial to reduce anhedonia, prevent relapses and improve overall outcome of depression (Werner-Seidler et al., 2013). This highlights the importance of positive emotion as an important role in depression.

The results above should not be taken lightly as it showed that most of the depressed still had ongoing depressive symptoms despite of treatment. However, few concerns should be considered before conclusion is made on this point, such as duration and dosage of the treatment and medication compliance. Studies showed that many of the depressed patients only improved partially following initial treatment, and continued to experience residual symptoms which are persisted and fluctuating in nature (Paykel, 2008b; Richman et al., 2005; Werner-Seidler et al., 2013). Residual symptoms and partial remission exert considerable disability and burden to the depressed people mainly, as well as to their family and society at large (Lépine & Briley, 2011; Werner-Seidler et al., 2013).

6.7 Positive Emotion and Religiosity

This study used DUREL as a tool to measure religiosity. DUREL encompassed three subscales or dimensions of religiosity namely organization religious activities (ORA), non-organization religious activities (NORA) and intrinsic religiosity (IR) (Koenig & Büssing, 2010). ORA refers to public religious activities such as attending to respective holy places, joining group prayers and preaching, while NORA refers to private religious activities that performed in solitary (Koenig & Büssing, 2010). IR assesses the degree of personal commitment and faith on the religion (Koenig & Büssing, 2010). It is recommended to analyse the three subscales separately to ease the interpretation of the instrument (Koenig & Büssing, 2010). The DUREL was initially designed to measure religiosity among Western population (Koenig & Büssing, 2010). However it is valid to be used in the Malaysian population as the Malay version of DUREL had been validated with some changes have been made to adapt with diverse religious practices in Malaysia (Syarinaz & Ng, 2010).

The result showed that there were positive correlations between PERS-M and all three domains of DUREL-M. There were significant associations observed between PERS-M with ORA, NORA and IR in this study. These associations were demonstrated by using multiple logistic regression by computing PERS-M score against ORA, NORA and IR. This method would provide stronger degree of association than univariate analysis. The finding concluded that positive emotion was significantly associated with religiosity, in positive linear manner of association. This indicates that depressed subjects with higher level of positive emotion would report more involvement with public and personal religious activities and would have higher degree of intrinsic religious belief and commitment. On the contrary, depressed subjects with lower level of positive emotion would be expected to have lower level of religiosity.

The findings were consistence with a previous local study which found that higher religious activities and commitment was significantly associated with lower distress among psychiatric population (Nurasikin et al., 2013). Another local study among non-psychiatric population patients had concluded similar finding, whereby higher level of religiosity was significantly found to lower the distress among cancer patients (Ng et al., 2016). However, the level of religiosity are varied across people. Studies among stroke patients and depressed patients reported that NORA was positively related, meanwhile ORA was negatively related to the both disease (Koenig & Büssing, 2010). This would relate that practising private religious activities is a common way to cope with stress (Koenig & Büssing, 2010). The similar finding was replicated in a local study among psychiatric population which found a significant higher level of NORA and IR associated with lower distress level among the study subjects (Nurasikin et al., 2013)

Interest on religiosity has grown widely in recent years and received lot of attention in many epidemiological studies. Reviews on the relationship between religiosity and mental health showed that there are positive correlation between religiosity and psychological function (Hackney & Sanders, 2003). Religiosity has also shown to improve physical health, therefore thought to improve overall positive health outcomes (Ellison & Levin, 1998). There are several mechanisms to explain how religiosity exerts health-related effects, with particular attention in psychosocial and behavioural mechanism (Hackney & Sanders, 2003). Religiosity promotes healthy belief, healthy behaviours and helps individual to regulate healthy lifestyle. It helps to generate positive emotion such as love, forgiveness, acceptance and gratitude and also promotes positive self-perception such as self-esteem and personal development and personal feeling of mastery. Religiosity also helps people to cope with stress adaptively. It provides social resources when coping with stress, by means providing social affiliation and formation

of spiritual support in term of cognitive and behavioural response to stress (Ellison & Levin, 1998).

Religion plays an important role in daily life especially on interpretation and responses to life events (Hackney & Sanders, 2003). It acts as psychological adjustment and psychological respond to challenges in daily life and further improves life satisfaction and personal wellbeing (Hackney & Sanders, 2003). Better health status and outcomes are seen among people with higher religious involvement (Ellison & Levin, 1998). Among the benefits of religiosity on mental health included improvement of social networks, healthier coping strategies, healthier lifestyle, building on positive emotion and stress appraisal (Seybold & Hill, 2001 as cited in Hackney & Sanders, 2003).

The benefit of religiosity extends beyond mental health as studies showed that advantageous effects of religious involvement on wide range of physical illness. Few studies conducted among people with heart disease, hypertension, stroke and cancer showed that religiosity improves the overall outcomes by reducing morbidity and mortality among the study groups (Ellison & Levin, 1998; Koenig & Büssing, 2010; Koenig, Larson, & Larson, 2001). Religion buffers the stress from coping with illness, prevent pessimistic thoughts and reduces psychological distress by helping a person to find a meaning of life (Koenig et al., 2001). Religiosity and coping can also be applied to the general population, as study among students found that students with poor ORA and NORA showed to have higher level of stress (Anis et al., 2016).

Giving particular attention to the depressive disorder, religiosity is associated with faster remission of the illness, promotes recovery and slower down the progression of the disease, such as prevent chronicity of depression (Braam, Beekman, Deeg, Smit, & Tilburg, 1997; Koenig & Büssing, 2010). Spirituality and religiosity should be viewed as part of a holistic approach in the formulation of mental disorder and should be included as therapeutic intervention, especially in managing mood disorders (Bergin, 1983). Encouraging people to practise religious activities could help to reduce psychological distress and improve general health outcomes, not only for people with mental illness but for the general population as well.

6.8 Positive Emotion and Religious Coping

People used different coping strategies to cope with the distress. Coping strategies incorporated both psychological and behaviour efforts to tolerate and minimize stress such as problem solving and emotion-focused when dealing with stress (Pargament et al., 2011). Coping strategies depends on intrapersonal and interpersonal resources, which influences how a person copes with stressors, and religion is among one of the resources (Pargament et al., 2011). Religious coping is defined as effort to comprehend and deal with life events and stressors from the spiritual perspective (Pargament et al., 2011). Religion served as a source of emotional support and people often turn to religion when under stress (Koenig et al., 2001). Religion or spiritual approaches serve as important coping mechanism in daily life (Koenig et al., 2001; Pargament et al., 2011).

There are different types of religious coping which can be divided into two major subtypes of positive religious coping (PRC) and negative religious coping (NRC) (Pargament et al., 2011). PRC employs religious appraisal when coping with stress such as performing religious prayers and rituals, and it reflects underlying secured relationship

with God and sense of religious connectedness with others (Pargament et al., 2011). In contrast, NRC reflects a sense of spiritual struggle and conflict with self, others and God and sense of disconnectedness with social affiliations (Pargament et al., 2011). Religious coping can be assessed by using 14-items Brief Religious Coping (BRCOPE) instrument which measures seven items of PRC and NRC respectively (Pargament et al., 2011).

This study revealed significant association between positive emotion with religious coping, in particular PRC. The statistical analysis of multivariate was used to measure the degree of relationship between positive emotion and religious coping. The results showed that there was significant positive correlation between positive emotion and PRC. This indicates a positive linear relationship whereby higher level of positive emotion is associated with more usage of PRC methods, and vice versa. On the other hand, NRC was demonstrated to be insignificantly associated with PERS-M in this study.

Religious coping has multiple functions which overall improve health, psychological wellbeing and reduce psychological distress (Pargament et al., 2011). Other than providing meaning of higher divine power and spiritual connection, it also helps people to find the meanings of life, searching for identity, form self-control and also connectedness with others (Pargament et al., 2011). Religious coping is a dynamic process which would change over time depending on situations (Harrison, Koenig, Hays, Eme-Akwari, & Pargament, 2001). Overall process involved cognitions, behaviours and emotions components in response to negative situations (Harrison et al., 2001). PRC improves psychological wellbeing, helps to reduce psychological distress and form positive adjustments towards stress (Pargament et al., 2011). In contrast, NRC is associated with poor mental health, high distress level and negative adjustments

(Pargament et al., 2011). It had found that religiosity did not exert as protective effect against depression, but PRC strategies associated with lower depressive symptoms while NRC methods associated with more depressive symptoms (Harrison et al., 2001).

Religiosity is a mediator in coping with psychological stress of various reasons (Rand et al., 2012). Psychiatric disorders are known to experience high level of psychological distress. A study among psychiatric population demonstrated that religious coping helps to reduce the severity of the underlying symptoms (Tepper, Rogers, Coleman, & Malony, 2001). The same study, had reported that majority of people with serious mental illness used some forms of religious activities and faith to cope with daily psychiatric symptoms, frustration and difficulties in their life (Tepper et al., 2001). Meanwhile, local finding suggested that higher use of NRC associated with higher level of distress among psychiatric patients (Nurasikin et al., 2013). Not only confined to psychiatric population, few studies among people with chronic illness had demonstrated that NRC associated with higher mortality among medically ill patients in two years follow-up (Pargament, Koenig, Tarakeshwar, & Hahn, 2004;) and higher usage of NRC strategies among cancer patients with comorbidity anxiety and depression (Ng et al., 2016). Overall, various studies shown that chronic physical illness and medically ill patients turned to religion during distress and depression (Harrison et al., 2001; Rand et al., 2012).

The findings in this study were persistent with other existing studies which highlighted the importance of religiosity and religious coping on psychological health (Harrison et al., 2001; Ng et al., 2016; Rand et al., 2012). The findings are relevant to current clinical situations as religious coping is effective and helpful in handling

emotional distress and should be integrated as therapeutic intervention into psychiatric practice. Not only targeting on people with mental illness, people in public should be encouraged to practice religious activities and religious coping to help managing difficulties and distress.

CHAPTER 7: CONCLUSION

The current study addressed the level of positive emotion and the association with religiosity and religious coping. Positive emotion and depression are found to be closely related. However, positive emotion is not routinely assessed in clinical practice especially in the local setting, owing to lack of effective instrument to assess positive emotion. PERS is a newly invented questionnaire by a group of local researchers, had displayed impressive psychometric properties to measure positive emotion in depression (Ng et al., 2016). With the availability of valid, brief, but yet comprehensive tool to measure positive emotion, PERS will facilitate clinicians to assess positive emotion as part of routine assessment in managing patients with depression.

The overall results of this study can be concluded that age, religiosity and religious coping are significantly associated and correlated with positive emotion in the depressed patients, all in positive linear relationship. Surprisingly, older adults shown to have higher level of positive emotion due to maturity of emotional regulation as people age. Older adults perceived to have greater control over their emotions, despite probability of occurrence of various life events and decline in some of physiological functions due to aging (Urry & Gross, 2010). Mediated by stable and adaptive emotional regulation, older adults respond to various life events in flexible manners, hence adopt effective problem-solving strategies and cope with stressors adaptively (Charles & Carstensen, 2010).

There is a strong association between religion and religious coping with positive emotion in depressed patients (Braam et al., 1997; Harrison et al., 2001; Koenig & Büssing, 2010). Religiosity and spirituality yield better coping skills, which lead to overall better health outcome by improving psychological wellbeing and reducing

psychological distress. Psychiatric disorders such as depression and anxiety are known to be associated with diminish in religious and spirituality (Corrigan, McCorkle, Schell, & Kidder, 2003). Many literatures had emphasized that religiosity and religious copings are effective and helpful in handling psychological distress among people with mental illness (Corrigan et al., 2003; Hackney & Sanders, 2003; Harrison et al., 2001). These matters should be addressed by mental health providers to afford religiosity and religious coping into psychological intervention. Not only limited to psychiatric population, encouraging religious activities is also beneficial to people with chronic physical illness and also to the general population (Corrigan et al., 2003).

CHAPTER 8: LIMITATION, STRENGTHS AND RECOMMENDATION

8.1 Limitation of this study

Few limitations had been identified in this study:

i. Instead of using random sampling, convenient sampling was used in this study due to time restriction. Only outpatient-depressed patients who were consented were recruited in this study. Hence the study was not only able to capture patients who were refused to come to clinic, refused for treatment and patients who were hospitalized. Possibly, only mild to moderate cases of depression were recruited in this study. This may affect generalizability and transportability of the results of this study to the general population.

ii. Being a cross-sectional study, the association between positive emotion and depression could be determined. However, the causal relationship between positive emotion and depression could not be established in this type of study.

iii. This study did not include subjects who were not able to read or understand English and Malay language. Thus the results did not represented the subgroup of subjects with lower educational level, lower socioeconomic background and those with language-barrier.

iv. All of the assessment used in this study were self-report questionnaires, which prone to the risk of bias. Respondents may unwillingly to report certain symptoms and may provide answers that appear to be socially acceptable.

8.2 Strength of this study

The strengths of this study included:

i. This is the first study in our local setting that look into positive emotion in depressive patients. Therefore, the results from this study could provide a baseline data and may be useful for future studies. The information from this study provides particular knowledge about positive emotion in the local setting.

ii. All of the assessment instruments used in this study were translated into Malay language, which all had been validated for the use in the local setting. Development and validation study on Chinese and Tamil version of PERS could be considered in future research.

iii. There was no missing data as all of the participants had completed all of the questionnaire and all data were completely analysed by the research team. Apart from that, multivariate statistical analysis was used in this study which would provide stronger degree of association than univariate analysis.

8.3 Recommendation

i. For a better study design, sampling method could be revised and improved in future studies. Random sampling is preferred, as it would be able to reduce sampling bias and the results will be more able to represent the general population.

ii. Future study on translating the PERS to other languages could be considered. As Malaysia consisted of multiracial, other version of the questionnaire such as Mandarin and Tamil should be made available. This will be helpful to both clinician and patients during assessment.

iii. Study of positive emotion can be expanded beyond the contact of mood disorders. There are growing evidences that deficient of positive emotion not exclusively in association with mood disorders, but seen in other mental illness such as anxiety disorders (Carl et al., 2013) and schizophrenia (Favrod et al., 2015). Additionally, psychiatric comorbidity are common, hence overlapping of psychopathology are not uncommon.

CHAPTER 9: REFERENCES

Abdullah, S., Sipon, S., Radzi, H. M., & Ghani, Z. A. (2015). Stress And Religious Coping Among Flood Victims In Malaysia, *The West East Institute*.

Alexandrino-Silva, C., Wang, Y. P., Carmen Viana, M., Bulhoes, R. S., Martins, S. S., & Andrade, L. H. (2013). Gender differences in symptomatic profiles of depression: results from the Sao Paulo Megacity Mental Health Survey. *Journal of Affect Disorders, 147*(1-3), 355-364. doi: 10.1016/j.jad.2012.11.041

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorder (5th Edition)*. Washington, DC.

Anis, N., Pan, K., Huda, B., & Faisal, I. (2016). Stress And Its Associated Factors Among Medical Students In A Public Medical Faculty, Malaysia. *International Journal of Public Health and Clinical Sciences, 3*(3), 71-80.

Bergin, A. E. (1983). Religiosity and mental health: A critical reevaluation and meta-analysis. *Professional psychology: Research and practice, 14*(2), 170.

Billings, A. C., & Moos, R. H. (1982). Psychosocial theory and research on depression: An integrative framework and review. *Clinal Psychology Review, 2*(2), 213-237.

Blanchard-Fields, F. (2007). Everyday problem solving and emotion: An adult developmental perspective. *Current Directions in Psychological Science, 16*(1), 26-31.

Blazer, D. G., Kessler, R. C., & McGonagle, K. A. (1994). The prevalence and distribution of major depression in a national community sample: the National Comorbidity Survey. *American Journal of Psychiatry, 15*(24), 24-27.

Braam, A. W., Beekman, A. T., Deeg, D. J., Smit, J. H., & Tilburg, W. v. (1997). Religiosity as a protective or prognostic factor of depression in later life; results from a community survey in The Netherlands. *Acta Psychiatrica Scandinavica, 96*(3), 199-205.

Brislin, R. W. (1970). Back-Translation for Cross-Cultural Research. *Journal of Cross-Cultural Psychology, 1*(3), 185-216. doi:10.1177/135910457000100301

Brown, T. A., & Barlow, D. H. (2009). A Proposal for a Dimensional Classification System Based on the Shared Features of the DSM-IV Anxiety and Mood Disorders: Implications for Assessment and Treatment. *Psychological assessment, 21*(3), 256-271. doi: 10.1037/a0016608

Burgdorf, J., & Panksepp, J. (2006). The neurobiology of positive emotions. *Neuroscience Biobehavioural Reviews, 30*(2), 173-187. doi: 10.1016/j.neubiorev.2005.06.001

Carl, J. R., Soskin, D. P., Kerns, C., & Barlow, D. H. (2013). Positive emotion regulation in emotional disorders: a theoretical review. *Clinical Psychology Review, 33*(3), 343-360. doi: 10.1016/j.cpr.2013.01.003

Carstensen, L. L., Turan, B., Scheibe, S., Ram, N., Ersner-Hershfield, H., Samanez-Larkin, G. R., . . . Nesselroade, J. R. (2011). Emotional experience improves with age: evidence based on over 10 years of experience sampling. *Psychology and aging, 26*(1), 21.

Charles, S. T., & Carstensen, L. L. (2010). Social and emotional aging. *Annual review of psychology, 61*, 383-409.

Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological assessment, 6*(4), 284.

Cohen, S., Janicki-Deverts, D., & Miller, G. E. (2007). Psychological stress and disease. *Journal of American Medical Association* (*JAMA), 298*(14), 1685-1687. doi: 10.1001/jama.298.14.1685

Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. (2009). Happiness unpacked: positive emotions increase life satisfaction by building resilience. *Emotion, 9*(3), 361-368. doi: 10.1037/a0015952

Corrigan, P., McCorkle, B., Schell, B., & Kidder, K. (2003). Religion and spirituality in the lives of people with serious mental illness. *Community mental health journal, 39*(6), 487-499.

Demyttenaere, K., Bruffaerts, R., Posada-Villa, J., Gasquet, I., Kovess, V., Lepine, J., . . . Morosini, P. (2004). Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. *JAMA, 291*(21), 2581-2590.

Ehrenreich, J. T., Fairholme, C. P., Buzzella, B. A., Ellard, K. K., & Barlow, D. H. (2007). The Role of Emotion in Psychological Therapy. *Clinical psychology : a publication of the Division of Clinical Psychology of the American Psychological Association, 14*(4), 422-428.

Ehring, T., Tuschen-Caffier, B., Schnülle, J., Fischer, S., & Gross, J. J. (2010). Emotion regulation and vulnerability to depression: spontaneous versus instructed use of emotion suppression and reappraisal. *Emotion, 10*(4), 563.

Ellison, C. G., & Levin, J. S. (1998). The religion-health connection: Evidence, theory, and future directions. *Health Education & Behavior, 25*(6), 700-720.

Favrod, J., Nguyen, A., Fankhauser, C., Ismailaj, A., Hasler, J.-D., Ringuet, A., . . . Bonsack, C. (2015). Positive Emotions Program for Schizophrenia (PEPS): a pilot intervention to reduce anhedonia and apathy. *BMC Psychiatry, 15*(1), 231.

Fawcett, J. (1993). The morbidity and mortality of clinical depression. *International clinical psychopharmacology*.

Ferrari, A. J., Charlson, F. J., Norman, R. E., Patten, S. B., Freedman, G., Murray, C. J. L., . . . Whiteford, H. A. (2013). Burden of Depressive Disorders by Country, Sex, Age, and Year: Findings from the Global Burden of Disease Study 2010. *PLOS Medicine, 10*(11), e1001547. doi: 10.1371/journal.pmed.1001547

Forouzanfar, M. H., Alexander, L., Anderson, H. R., Bachman, V. F., Biryukov, S., Brauer, M., . . . Murray, C. J. (2015). Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. *The Lancet, 386*(10010), 2287-2323. doi: 10.1016/S0140-6736(15)00128-2

Franken, I. H., Rassin, E., & Muris, P. (2007). The assessment of anhedonia in clinical and non-clinical populations: further validation of the Snaith-Hamilton Pleasure Scale (SHAPS). *Journal of Affective Disorders, 99*(1-3), 83-89. doi: 10.1016/j.jad.2006.08.020

Fredrickson, B. L. (1998). What Good Are Positive Emotions? *Review of General Psychology, 2*(3), 300-319. doi: 10.1037/1089-2680.2.3.300

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology. The broaden-and-build theory of positive emotions. *American Psychologist, 56*(3), 218-226.

Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical Transactions of the Royal Society of London, Series B Biological Science, 359*(1449), 1367-1378. doi: 10.1098/rstb.2004.1512

Fredrickson, B. L., & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science, 13*(2), 172-175.

Fredrickson, B. L., & Losada, M. F. (2005). Positive affect and the complex dynamics of human flourishing. *American Psychologist, 60*(7), 678-686. doi: 10.1037/0003-066X.60.7.678

Gaines, A. (2009). Receiver Operating Characteristic (ROC) Curves Assessing the predictive properties of a test statistic. Kaiser Permanente Center For Health.

Gallo, L. C., & Matthews, K. A. (1999). Do negative emotions mediate the association between socioeconomic status and health? *Annals of the New York Academy of Sciences, 896*(1), 226-245.

Gask, L., Lester, H., Knedrick, T., & Peveler, R. (2009). What is primary care mental health? *Primary Care Mental Health*. UK: Royal College of Psychiatrists.

Goldman, L. S., Nielsen, N. H., & Champion, H. C. (1999). Awareness, diagnosis, and treatment of depression. *Journal of General Internal Medicine, 14*(9), 569-580. doi: 10.1046/j.1525-1497.1999.03478.x

Grassi, L., & Riba, M. (2012). *Psycho-oncology: An International Prospective* (Wiley-Blackwell Ed. Vol. First Edition). UK.

Gross, J. J. (1998). Sharpening the focus: Emotion regulation, arousal, and social competence. *Psychological Inquiry, 9*(4), 287-290.

Gross, J. J. (1999). Emotion regulation: Past, present, future. *Cognition & emotion, 13*(5), 551-573.

Gross, J. J. (2008). Emotion regulation. *Handbook of emotions, 3*, 497-513.

Gruber, Kogan, A., Quoidbach, J., & Mauss, I. B. (2013). Happiness is best kept stable: positive emotion variability is associated with poorer psychological health. *Emotion, 13*(1), 1-6. doi: 10.1037/a0030262

Gruber, Oveis, C., Keltner, D., & Johnson, S. L. (2011). A discrete emotions approach to positive emotion disturbance in depression. *Cognition and Emotion, 25*(1), 40-52.

Hackney, C. H., & Sanders, G. S. (2003). Religiosity and mental health: A meta–analysis of recent studies. *Journal for the scientific study of religion, 42*(1), 43-55.

Harrison, M., Koenig, H. G., Hays, J. C., Eme-Akwari, A. G., & Pargament, K. I. (2001). The epidemiology of religious coping: A review of recent literature. *International review of psychiatry, 13*(2), 86-93.

Jansson, Å. (2011). Mood Disorders and the Brain: Depression, Melancholia, and the Historiography of Psychiatry. *Medical History, 55*(3), 393-399.

Judd, L. L., & Akiskal, H. S. (2000). Delineating the longitudinal structure of depressive illness: beyond clinical subtypes and duration thresholds. *Pharmacopsychiatry, 33*(1), 3-7. doi: 10.1055/s-2000-7967

Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Chatterji, S., Lee, S., Ormel, J., . . . Wang, P. S. (2009). The global burden of mental disorders: an update from the WHO World Mental Health (WMH) surveys. *Epidemiologia Psichiatria Sociale, 18*(1), 23-33.

Kessler, R. C., Angermeyer, M., Anthony, J. C., R, D. E. G., Demyttenaere, K., Gasquet, I., . . . Ustun, T. B. (2007). Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World Psychiatry, 6*(3), 168-176.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K. R., . . . National Comorbidity Survey, R. (2003). The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). *JAMA, 289*(23), 3095-3105. doi: 10.1001/jama.289.23.3095

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of dsm-iv disorders in the national comorbidity survey replication. *Archives of General psychiatry, 62*(6), 593-602. doi: 10.1001/archpsyc.62.6.593

Kimberlin, C. L., & Winterstein, A. G. (2008). Validity and reliability of measurement instruments used in research. *American Journal of Health System Pharmacy, 65*(23), 2276-2284.

Koenig, H. G., & Büssing, A. (2010). The Duke University Religion Index (DUREL): a five-item measure for use in epidemological studies. *Religions, 1*(1), 78-85.

Koenig, H. G., Larson, D. B., & Larson, S. S. (2001). Religion and coping with serious medical illness. *Annals of Pharmacotherapy, 35*(3), 352-359.

Kuehner, C. (2003). Gender differences in unipolar depression: an update of epidemiological findings and possible explanations. *Acta Psychiatrica Scandinavica, 108*(3), 163-174.

Lambert, N. M., Fincham, F. D., & Stillman, T. F. (2012). Gratitude and depressive symptoms: The role of positive reframing and positive emotion. *Cognition & emotion, 26*(4), 615-633.

Lépine, J.-P., & Briley, M. (2011). The increasing burden of depression. *Neuropsychiatric Disease and Treatment, 7*(Suppl 1), 3-7. doi: 10.2147/NDT.S19617

Lester, H., & Howe, A. (2008). Depression in primary care: three key challenges. *Postgraduate Medical Journal, 84*(996), 545-548. doi: 10.1136/pgmj.2008.068387

Leventhal, A. M., Chasson, G. S., Tapia, E., Miller, E. K., & Pettit, J. W. (2006). Measuring hedonic capacity in depression: a psychometric analysis of three anhedonia scales. *Journal of clinical psychology, 62*(12), 1545-1558.

Lewinsohn, P. M., Seeley, J. R., Roberts, R. E., & Allen, N. B. (1997). Center for Epidemiologic Studies Depression Scale (CES-D) as a screening instrument for depression among community-residing older adults. *Psychology and aging, 12*(2), 277.

Lopez, A. D., & Murray, C. C. J. L. (1998). The global burden of disease, 1990-2020. *Nature Medicine, 4*(11), 1241-1243.

Lucas, R. E., Diener, E., & Larsen, R. J. (2009). *Measuring positive emotions, In Diener E. Assessing Well-Being*. Netherlands: Springer.

MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological methods, 4*(1), 84.

Maletic, V., Robinson, M., Oakes, T., Iyengar, S., Ball, S., & Russell, J. (2007). Neurobiology of depression: an integrated view of key findings. *International journal of clinical practice, 61*(12), 2030-2040.

Mauss, I. B., Shallcross, A. J., Troy, A. S., John, O. P., Ferrer, E., Wilhelm, F. H., & Gross, J. J. (2011). Don't hide your happiness! Positive emotion dissociation, social connectedness, and psychological functioning. *Journal of Personality and Social Psychology, 100*(4), 738.

McAdams, D. P., Reynolds, J., Lewis, M., Patten, A. H., & Bowman, P. J. (2001). When bad things turn good and good things turn bad: Sequences of redemption and contamination in life narrative and their relation to psychosocial adaptation in midlife adults and in students. *Personality and Social Psychology Bulletin, 27*(4), 474-485.

Mihaljević, S., Aukst-Margetić, B., Vuksan-Ćusa, B., Koić, E., & Milošević, M. (2012). Hopelessness, suicidality and religious coping in Croatian war veterans with PTSD. *Psychiatria Danubina, 24*(3.), 292-297.

Murray, C., & Lopez, A. D. (1996). Summary: The global burden of disease: A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020. *Geneva and Boston: World Health Organization and Harvard School of Public Health*.

Myers, J. K., Weissman, M. M., Tischler, G. L., Holzer, C. E., Leaf, P. J., Orvaschel, H., . . . Kramer, M. (1984). Six-month prevalence of psychiatric disorders in three communities: 1980 to 1982. *Archives of General psychiatry, 41*(10), 959-967.

Nakonezny, P. A., Carmody, T. J., Morris, D. W., Kurian, B. T., & Trivedi, M. H. (2010). Psychometric evaluation of the Snaith–Hamilton Pleasure Scale (SHAPS) in adult outpatients with major depressive disorder. *International clinical psychopharmacology, 25*(6), 328-333. doi: 10.1097/YIC.0b013e32833eb5ee

Ng, C. G., Chin, S. C., Yee, A. H. A., Loh, H. S., Sulaiman, A. H., Wong, S. S. K., & Habil, M. H. (2014). Validation of Malay version of Snaith-Hamilton Pleasure Scale: Comparison between depressed patients and healthy subjects at an out-patient clinic in Malaysia. *The Malaysian Journal of Medical Sciences, 21*(3), 62.

Ng, C. G., Hazli, Z., Zulkifli, G., Firdaus, A. G., Azhar, Z., Au, Y. K. C., & Lim, P. P. (2016). Development And Validation Of The Positive Emotion Rating Scale (PERS). *International Journal Of Academic Research, 8*(1), 31-35. doi: 10.7813/2075-4124.2016/8-1/a.6

Ng, C. G., Yee, A., Subramaniam, P., Loh, H. S., & Moreira, P. (2015). Attitudes Toward Homosexuality Among Nursing Students in a Public University in Malaysia: the Religious Factor. *Sexuality Research and Social Policy, 12*(3), 182-187.

Ng, G. C., Mohamed, S., Sulaiman, A. H., & Zainal, N. Z. (2016). Anxiety and Depression in Cancer Patients: The Association with Religiosity and Religious Coping. *Journal of Religion and Health*, 1-16. doi: 10.1007/s10943-016-0267-y

NICE. (2004). National Collaborating Centre for Mental Health. Depression: Management of Depression in Primary and Secondary Care. Clinical Guideline 23. London: National Institute for Health and Clinical Excellent.

Nurasikin, M., Khatijah, L., Aini, A., Ramli, M., Aida, S., Zainal, N., & Ng, C. (2013). Religiousness, religious coping methods and distress level among psychiatric patients in Malaysia. *International Journal of Social Psychiatry, 59*(4), 332-338. doi:10.1177/0020764012437127

Nutt, D. J. (2008). Relationship of neurotransmitters to the symptoms of major depressive disorder. *Journal of Clinical Psychiatry, 69*(suppl E1), 4-7.

Pargament, Feuille, M., & Burdzy, D. (2011). The Brief RCOPE: Current Psychometric Status of a Short Measure of Religious Coping. *Religions, 2*(4), 51-76. doi: 10.3390/rel2010051

Pargament, Koenig, H. G., Tarakeshwar, N., & Hahn, J. (2004). Religious coping methods as predictors of psychological, physical and spiritual outcomes among medically ill elderly patients: A two-year longitudinal study. *Journal of Health Psychology, 9*(6), 713-730.

Paykel. (2008a). Basic concepts of depression. *Dialogues in Clinical Neuroscience, 10*(3), 279-289.

Paykel. (2008b). Partial remission, residual symptoms, and relapse in depression. *Dialogues in Clinical Neuroscience, 10*(4), 431-437.

Piccinelli, M., & Wilkinson, G. (2000). Gender differences in depression. *The British Journal of Psychiatry, 177*(6), 486-492.

Radloff, L. S. (1977). The CES-D scale a self-report depression scale for research in the general population. *Applied psychological measurement, 1*(3), 385-401.

Rand, K. L., Cripe, L. D., Monahan, P. O., Tong, Y., Schmidt, K., & Rawl, S. M. (2012). Illness appraisal, religious coping, and psychological responses in men with advanced cancer. *Supportive care in cancer, 20*(8), 1719-1728.

Regier, D. A., Farmer, M. E., Rae, D. S., Locke, B. Z., Keith, S. J., Judd, L. L., & Goodwin, F. K. (1990). Comorbidity of mental disorders with alcohol and other drug abuse: results from the Epidemiologic Catchment Area (ECA) study. *JAMA, 264*(19), 2511-2518.

Richman, L. S., Kubzansky, L., Maselko, J., Kawachi, I., Choo, P., & Bauer, M. (2005). Positive emotion and health: going beyond the negative. *Health psychology, 24*(4), 422.

Rottenberg, J. (2005). Mood and emotion in major depression. *Current Directions in Psychological Science, 14*(3), 167-170.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual review of psychology, 52*(1), 141-166.

Sabki, Z. A., Zainal, N., & Guan, N. C. (2014). Exploratory Factorial Analysis And Reliability Of The Malay Version Of Centre For Epidemiological Studies–Depression Scale (MCES-D) In A Group Of Malaysian Junior Doctors. *International Journal of Academic Research 6*(2), 333-337.

Santos, V., Paes, F., Pereira, V., Arias-Carrión, O., Silva, A. C., Carta, M. G., . . . Machado, S. (2013). The Role of Positive Emotion and Contributions of Positive Psychology in Depression Treatment: Systematic Review. *Clinical Practice and Epidemiology in Mental Health : CP & EMH, 9*, 221-237. doi: 10.2174/1745017901309010221

Shiota, M. N., Keltner, D., & John, O. P. (2006). Positive emotion dispositions differentially associated with Big Five personality and attachment style. *The Journal of Positive Psychology, 1*(2), 61-71. doi: 10.1080/17439760500510833

Shorter, E. (2005). *A Historical Dictionary of Psychiatry*. United States of America: Oxford University Press.

Sipon, S., Sakdan, M. F. a., Mustaffa, C. S., Marzuki, N. A., Khalid, M. S., Ariffin, M. T., . . . Abdullah, S. (2015). Spirituality among Flood Victims: A Comparison between Two States. *Procedia-Social and Behavioral Sciences, 185*, 357-360.

Slater, C. L. (2003). Generativity versus stagnation: An elaboration of Erikson's adult stage of human development. *Journal of Adult Development, 10*(1), 53-65.

Snaith, R., Hamilton, M., Morley, S., Humayan, A., Hargreaves, D., & Trigwell, P. (1995). A scale for the assessment of hedonic tone the Snaith-Hamilton Pleasure Scale. *The British Journal of Psychiatry, 167*(1), 99-103.

Surís, A., Holliday, R., & North, C. S. (2016). The Evolution of the Classification of Psychiatric Disorders. *Behavioral Sciences, 6*(1), 5.

Syarinaz, A. A., & Ng, C. G. (2010). Validity and reliability of the Malay version of Duke University Religion Index (DUREL-M) among a Group of Nursing Student. *Malaysian Journal of Psychiatry, 19*(2).

Taylor, R. (1990). Interpretation of the correlation coefficient: a basic review. *Journal of diagnostic medical sonography, 6*(1), 35-39.

Tepper, L., Rogers, S. A., Coleman, E. M., & Malony, H. N. (2001). The prevalence of religious coping among persons with persistent mental illness. *Psychiatric Services, 52*(5), 660-665.

Tugade, M. M., & Fredrickson, B. L. (2007). Regulation of positive emotions: Emotion regulation strategies that promote resilience. *Journal of Happiness Studies, 8*(3), 311-333.

Urry, H. L., & Gross, J. J. (2010). Emotion regulation in older age. *Current Directions in Psychological Science, 19*(6), 352-357.

Vos, T., Barber, R. M., Bell, B., Bertozzi-Villa, A., Biryukov, S., Bolliger, I., . . . Murray, C. J. L. (2015). Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. *The Lancet, 386*(9995), 743-800. doi: 10.1016/S0140-6736(15)60692-4

Werner-Seidler, A., Banks, R., Dunn, B. D., & Moulds, M. L. (2013). An investigation of the relationship between positive affect regulation and depression. *Behaviour Research and Therapy, 51*(1), 46-56.

Whiteford, H. A., Degenhardt, L., Rehm, J., Baxter, A. J., Ferrari, A. J., Erskine, H. E., . . . Vos, T. (2013). Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. *The Lancet, 382*(9904), 1575-1586. doi: 10.1016/S0140-6736(13)61611-6

World Health Organization. (2012) *Depression A Global Public Health Concern*. Geneva: World Health Organization.

Yusoff, N., Low, W., & Yip, C. (2010). Reliability and validity of the Malay version of Brief COPE scale: A study on Malaysian women treated with adjuvant chemotherapy for breast cancer. *Malaysian Journal of Psychiatry, 18*(1).