IBN HALDUN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF PSYCHOLOGY

MASTER THESIS

EXAMINING THE PREVALENCE AND PROFILE OF DEPRESSION, ANXIETY AND STRESS IN AN AUSTRALIAN CLINICAL SETTING

ELİF BESTENİGAR MERT

THESIS SUPERVISOR: ASSIST. PROF. SENEM EREN

ISTANBUL, 2019

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by

ELİF BESTENİGAR MERT

A thesis submitted to the School of Graduate Studies in partial fulfillment of the requirements for the degree of Master of Arts in Clinical Psychology

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APPROVAL PAGE

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Arts in Clinical Psychology.

Thesis Jury Members

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This is to confirm that this thesis complies with all the standards set by the School of Graduate Studies of Ibn Haldun University.

Date of Submission Seal/Signature

ACADEMIC HONESTY ATTESTATION

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ÖZ

AVUSTRALYA KLİNİK ÖRNEKLEMİNDE DEPRESYON, ANKSİYETE VE STRESİN YAYGINLIĞININ VE PROFİLLERİNİN İNCELENMESİ

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Tez Danışmanı: Dr. Öğr. Üyesi Senem Eren
Kasım 2019, 140 sayfa

Depresyon, anksiyete ve stres, kişilerin yaşam kalitelerini olumsuz etkileyen ruh sağlığı problemleridir. Bu çalışmanın amacı, 10 yıl boyunca toplanmış klinik arşivde yaşları 7 ile 77 arasında değişen, 490 Avustralyalı örneklemin depresyon, anksiyete ve stres yaygınlıklarını ve profillerini değerlendirmektir. Hastalar, kabul formu ve kişilerin depresyon, anksiyete ve stres seviyelerini ölçen DASS ölçeği ile değerlendirilmiştir.

Bu çalışmada 281 (57.3%) kadın, 209 (42.7%) erkek katılımcı bulunmaktadır. Veri setinde, depresyon, anksiyete ve stres yaygınlıkları normalin dışında yüksek bulunmuştur. 50 yaş altında, çocuk sahibi, depresyon geçmişi, düşük sosyo-ekonomik durumu, Doğu Akdeniz kültüründen, düşük eğitim ve meslek grubu ve Hristiyanlık veya İslam dini mensubu olan kişilerin şiddetli veya aşırı şiddetli seviyede depresyon yaşama ihtimallerinin yüksek olduğu bulunmuştur. Anksiyete için ise kadın olmanın, depresyon geçmişine sahip olmanın, düşük eğitim ve meslek grubunda olmanın, Doğu Akdeniz kültüründen olmanın ve Hristiyanlık veya İslam dini mensubu olmanın şiddetli veya aşırı şiddetli seviyede anksiyete yaşama ihtimali olduğunu göstermektedir. Son olarak stres sonuçları, evli olmanın, depresyon geçmişine sahip olmanın, düşük eğitim ve meslek grubunda olmanın ve dini inanca sahip olmamanın kişileri şiddetli veya aşırı şiddetli seviyede stres yaşamaya yatkın olduğu bulunmuştur.

Araştırma sonuçları literatür ile kısmî olarak desteklenmektedir. Sonuç olarak demografik faktörler depresyon, anksiyete ve stres ile ilişki olduğundan kişilerin

yaygınlık ve profillemeleri çıkartılabilmiştir. Hem yaygınlıklarının hem de profillerinin değerlendirilmiş olması, bu hastalıkların yükünü anlamayı sağlar, terapi ve danışmanlık gibi sağlık hizmetlerinin sağlanmasını destekler.

Anahtar Kelimeler: Anksiyete, Avustralya, depresyon, klinik arşiv, stres, yaygınlık.

ABSTRACT

EXAMINING THE PREVALENCE AND PROFILE OF DEPRESSION, ANXIETY AND STRESS IN AN AUSTRALIAN CLINICAL SETTING

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Depression, anxiety, and stress are mental health problems that negatively affect individuals' quality of life. This study aims to evaluate the prevalence and profile of depression, anxiety, and stress based on clinical archival data collected in 10 years, and encompassing 490 Australian based sample, aging from 17 to 77 years old. Patients were assessed with in-take forms and DASS which measured depression, anxiety, and stress levels of individuals.

In this study, 281 (57.3%) of the participants were female and 209 (42.7%) were male. In the dataset, the prevalence of depression, anxiety and stress was found to be unusually high. It was identified that people who are being under the age of 50, having children, having a previous history of depression, having a low socio-economic condition, being from an Eastern Mediterranean culture, having a low level of education and occupation and believing in Christianity or Islam are more likely to experience severe or extremely severe levels of depression. In anxiety, results showed that being a female, having a previous history of depression, having a low level of education and occupation, being from an Eastern Mediterranean culture and believing in Christianity or Islam, increased probability of experiencing severe or extremely severe anxiety symptoms. Lastly, stress results indicated that being married, having a previous history of depression, having a low education and occupation levels and being non-religious made individuals become more likely to experience severe or extremely severe levels of stress.

Results of the present study can be partially supported by the literature review. It is concluded that the prevalence and profile of depression, anxiety and stress can be obtained because demographic factors are related to mental health problems. Both prevalence and profile provide an understanding of the burden of these diseases, and support the provision of health services like therapy, and counselling.

Keywords: Anxiety, Australia, clinical archive, depression, prevalence, stress.

DEDICATION

To all my loved ones...

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
APA	American Psychological Association
CSAS	Children's Separation Anxiety Scale
DASS	Depression, Anxiety and Stress Scale
DSM-5	The Diagnostic and Statistical Manual of Mental Disorders
GAD	Generalized anxiety disorder
GAD-7	Generalized Anxiety Disorders 7-item Scale
GP	General Practitioner
HAM-A	Hamilton Anxiety Rating Scale
HDRS	Hamilton Depression Rating Scale
LSAS	Social Anxiety Scale
MDD	Major Depressive Disorder
NCG	Nasihah Consulting Group
OR	Odds Ratio
PSS	Perceived Stress Scale
SE	Standard Error
SEC	Socio-economic condition
SES	Socio-economic status
STAI	State-Trait Anxiety Scale
STATA	Software of Statistics and Data Science
UK	United Kingdom
USA	United States of America
WHO	World Health Organization
f	F value
n	Number of Participants
p	P value
t	t value
$\bar{x}$	Mean

CHAPTER I

INTRODUCTION

People face difficult life circumstances that influence their everyday functioning, mental health, and psychological well-being depending on these circumstances' intensity. Mental health is defined as a state of psychological and social well-being, where the person can be productive, can deal with any stressful event, can contribute to his family and community, and can unleash his abilities (World Health Organization, 2004). Additionally, mental health is not only the state of an individual when no mental illness is experienced, instead it is considered as a capacity of well-functioning in the society in order to make use of cognitive, affective, and relational abilities (Australian Health Ministers, 2012; Commonwealth Department of Health and Aged Care, 2000).

When difficult life circumstances impinge individuals' mental health then, consequently disorders may develop. Mental disorders can be described as syndromes which affect an individual's behavior, emotions, cognitive functioning and indicate biological, psychological, or developmental problems (Butcher, Hooley, & Mineka, 2014). Mental health problems can rise due to life events such as dysfunctional family life, financial difficulties, and physical illness.

Some mental health problems are more common than others; for a disorder to be considered common, its prevalence in the society should be high. Epidemiological studies were conducted aiming to extend the current knowledge of prevalence and profile of mental health disorders. Prevalence can be thought of as the number of individuals suffering from a disease in a population at a certain time. The disorders with the highest prevalence are depressive and anxiety disorders which have an effect on individuals' moods and feelings. For instance, currently there are more than 300 million people suffering from depression, which account for 4.4% of the World's population, and 264 million people suffering from at least one anxiety disorder, which

account for 3.6% of the World's population (World Health Organization, 2018). Moreover, according to country based statistics, stress affects 48% of American population and 35% of Australian population (American Psychological Association, 2007; Australian Psychological Society, 2015).

The abovementioned disorders (depression and anxiety) are clinically diagnosable, and are not to be confused with feelings of sadness, fear, anger that anyone can experience for a short period of time in their lives (World Health Organization, 2018). Another mental health problem is stress, which is not diagnosable as a disorder but since studies have linked stress to anxiety disorders and depressive disorders it was considered acceptable to be analyzed together with depression and anxiety (Eiland & McEwen, 2012; Hammen, Kim, Eberhart, & Brennan, 2009).

The profile of mental health disorders is constructed by individuals' characteristics such as gender, age, socioeconomic conditions, culture, religion, family life and previous mental health history. For example, being female (Baxter, Scott, Vos, & Whiteford, 2013; Bayram & Bilgel, 2008; Blazer, Mcgonagle, Kessler, & Swartz, 1994), living in poverty (Capage & Watson, 2001; Hunt, Slade, & Andrews, 2004; Myers et al., 2005), being a single parent (Helbig, Lampert, Klose, & Jacobi, 2006), divorced (Australian Institute of Family Studies, 2002; Evenson & Simon, 2005; Scott et al., 2010), belonging to a minority group (Al-Maskari et al., 2011; Fabrega, Mezzich, & Ulrich, 1988; Mccallum & Shadbolt, 1989), increases the risk of experiencing depression, anxiety and stress.

Studying mental health problems is crucial because it is a global issue that affects individuals themselves and their communities. Deeply understanding these disorders assists public health policymakers and facilitators on relieving the burden of disorders (Baxter et al., 2013).

In the present study, prevalence and profiles of depression, anxiety and stress will be predicted with a number of variables; age, gender, socio-economic conditions, cultural background, religion, family life and previous mental health history. The results will be discussed in the light of the contemporary literature. Lastly, suggestions will be provided for further studies.

CHAPTER II

LITERATURE REVIEW

2. 1. Prevalence of Mental Disorders in Australia

Mental health disorders refer to a wide range of conditions that involve clinically observable disturbances in behavior, cognition, emotion and social abilities (Australian Institute Health and Welfare, 2018; McNally, 2011; Slade et al., 2009) and cannot be explained by organic or toxic causes (Gove & Tudor, 1973). Whilst there are differences in symptoms and etiology, what all mental health disorders have in common is that they cause dysfunctions in the biological, psychological and developmental functioning of an individual and lead to significant distress or disabilities in social, occupational or daily life (Butcher et al., 2014).

Over the years, numerous studies have been conducted on the prevalence of mental health disorders in Australia, with the most recent and notable epidemiological studies reporting that the lifetime prevalence of developing at least one mental health disorder ranges from 25% to 48% (Al-Sughayr & Ferwana, 2012; Kessler et al., 2005; Shimoyama, Iwasa, & Sonoyama, 2018; World Health Organization, 2001), with the age of onset being the highest between 20 - 28.5 years old (Roberts, Lockett, Bagnall, Maylea, & Hopwood, 2018). Anxiety, mood and substance use disorders have been identified as the most common mental health disorders with a 12-month prevalence of 12.7%, 11.1% and 9.5% respectively (Blay et al., 2018; B. Grant et al., 2006; W. Hall, Teesson, Lynskey, & Degenhardt, 1999).

The National Survey of Mental Health and Wellbeing was conducted by Slade and his colleagues in 2009. This is one of the largest and most respected studies focusing on the prevalence and profile of mental health disorders in Australia and is still used as a primary source for mental health prevention programs and mental health service

annual reports created by the Australian Bureau of Statistics (Slade et al., 2009). The study was comprised of 8,800 participants between the ages of 16-85 years and concluded that 45% of Australians will experience a mental health disorder in their lifetime. In a 12-month period, around 1 in 5 Australians were estimated to experience a mental health disorder. Anxiety disorders (e.g. panic disorders, post-traumatic stress disorder, generalized anxiety disorder) were found to be the most common, with 14.4% of Australian adults experiencing an anxiety disorder over a 12-month period. Affective disorders such as depression were the second most common mental health disorders, with a 12-month prevalence of 6.2%, followed closely by substance use disorders (e.g. alcohol dependence) at 5.1%. Over a 12-month period, anxiety disorders were noted to be more common in females (18%) than males (11%). Similarly, affective disorders were also more common in females (7.1%) than males (5.3%). In contrast, males were twice as more likely to experience a substance use disorder than females (3.3% for women, 7.0% for men). The study also indicated that over a period of 12-months, the prevalence of having a mental health disorder was the highest among young people aged between 16-24 years (26.4%) and the lowest in people aged 75-85 years old (5.9%) (Slade et al., 2009).

Socio-demographic factors such as being unmarried, unemployed, having a physical disability and lack of education were shown to be risk factors for developing a mental health disorder (Slade et al., 2009). These findings are also supported by other epidemiological studies and highlight the impact of socio-demographic factors on the development of mental health disorders (Baxter et al., 2013; Bromet et al., 2011; Merikangas et al., 2010; Somers, Goldner, Waraich, & Hsu, 2006).

Mental health disorders are associated with a number of negative lifestyle and behavioral factors such as smoking, excessive alcohol consumption and misuse of drugs (Bowden JA, Miller CL, & Hiller JA, 2011; Pereira, Wood, Foster, & Haggar, 2013; Shanahan et al., 2003). These findings are supported by results from the National Survey of Mental Health and Wellbeing which has found that almost 32% of smokers, 21% of alcoholics and almost 49% drug misusers in Australia have experienced a mental health disorder in a 12-month period (Slade et al., 2009).

In summary, research demonstrates that there is a high prevalence of mental health disorders in the Australian population (Australian Bureau of Statistics, 2008; Slade et al., 2009). For this reason, mental health disorders have been estimated as being the third biggest burden of disease in Australia, after cancer and cardiovascular diseases (Australian Institute Health and Welfare, 2018).

2. 2. Mental Health Services in Australia

In Australia, individuals can access mental health services through the public system (e.g. hospitals), through government funded specialized services (e.g. disability services, drug and alcohol support services) or through private mental health settings where they can access psychologists and psychiatrists fully or partially subsidized by the government funded Medicare health scheme (Australian Institute Health and Welfare, 2018). Public mental health settings are directly under the control of the government, whereas private mental health settings use implementation guideline systems that ensure service standardization. These systems include informing clients about their rights and responsibilities, maintaining client confidentiality, ensuring client dignity and respect and sharing treatment plans with general practitioners and clients (Australian Government Department of Health and Ageing, 2010). It is aimed that clients will be active participants in the treatment planning that directly affects them.

The Australian government developed the "Better Access" initiative following recommendations from the National Survey of Mental Health and Wellbeing (Slade et al., 2009). The aim was to increase community access to mental health services and improve the quality of care (Australian Government Department of Health and Ageing, 2013). As a result of the Better Access initiative, the government increased funding of mental health services, expended the workforce in the mental health area and encouraged mental health care settings with implementation guideline systems.

The national survey demonstrated that only 35% of individuals who required mental health care were able to access services (Slade et al., 2009). After implementation of the "Better Access" initiative, this number increased to 45% in a 5-year period (Australian Government Department of Health and Ageing, 2013) and allowed 2.1

million Australians suffering from a mental health disorder who were previously unable to access the public mental health services to access treatment in a private mental health setting (Australian Government Department of Health and Ageing, 2010). With time, the impact or functional impairment of a mental health condition becomes more and more severe and the level of psychosocial disruption becomes more intense. We need to get in early so that we have the opportunity to change the long-term trajectory of a mental health condition and reduce secondary morbidity (Commonwealth Department of Health and Aged Care, 2000). Early intervention leads to a better outcome, increased likelihood of recovery and getting back to a normal life.

2. 3. Clinical Presentation of Depression

Depression, or Major Depressive Disorder (MDD), is a mood disorder that can become chronic and recurrent without treatment (Kessler et al., 2005). It is a global mental health issue which the World Health Organization predicts will become the leading cause of disease burden by the year 2030 (Lépine & Briley, 2011). Depression has been associated with a number of conditions such as suicide, excessive substance use and physical health problems like cardiovascular disease and cancer. For this reason, a large number of studies have focused on depression in the last two decades (Gotlib, Lewinsohn, & Seeley, 1998; Kaplan, Harrow, & Clews, 2016; Schubert, Taylor, Lee, Mentari, & Tamaklo, 1992). Over the years, the definition and classification of depression has changed and the latest and most widely used criteria was set in 2013 by the American Psychological Association (APA) *Diagnostic and Statistical Manual of Mental Disorders (DSM-5).* There are eight different types of depressive disorders outlined in the DSM-5 and common symptoms to all of them are the expression of sadness, a feeling of emptiness and a cognitive change that dramatically affects people's lives (American Psychological Association, 2013).

According to the DSM-5, MDD is characterized by depressed mood, loss of interest or pleasure in all or almost all activities (anhedonia), changes in appetite or weight, insomnia or hypersomnia, low psychomotor activation, loss of energy or fatigue, feelings of worthlessness or excessive guilt, problems with concentration or indecisiveness and suicidal ideation. In order to meet the diagnosis for depression, a patient needs to be experiencing 5 or more of these symptoms over the same 2-week

period and one of these symptoms needs to be depressed mood or anhedonia. Symptoms may vary in severity and may be classified as mild, moderate or severe.

As part of the diagnostic process, it is important to note if the MDD is a single episode, which means that it is the first time the individual is experiencing depression and there is no previous history of any depressive, hypomanic, manic or mixed episodes. In case of a recurrent episode, the individual slips back into depression after at least 2 consecutive months of full recovery (Cassano et al., 1993). Research shows that 50-85% of people with first episode depression will experience other episodes of depression again in the future. When individual's experience 2 or 3 episodes of depression, the chance of recurrent depression increases (Burcusa & Iacono, 2007).

Once a diagnosis is made for a mood disorder, specifiers, which are standardized tags, are used to provide additional information about an individual's condition. Diagnostic specifiers can help clinicians' narrow down the best possible treatments and provide information about the anticipated prognosis (Nemade, Reiss, & Dombeck, n.d.). The following specifiers may apply to MDD diagnosis: anxious distress, mixed features, melancholic features, atypical features, mood-congruent psychotic features, mood-incongruent psychotic features, catatonia, peripartum onset or seasonal pattern (American Psychological Association, 2013). Research shows that 76% of depression cases are characterized by an anxious distress specifier and 15% of depression cases are characterized by a mixed features specifier (Hasin et al., 2018).

Epidemiological studies show that depression has a high level of comorbidity (Brown & Barlow, 1992), indicating that it can occur at the same time as other conditions such as anxiety (Gorman, 1996) substance use disorders (Martínez-Vispo, Martínez, López-Durán, Fernández del Río, & Becoña, 2018; Rappeneau & Berod, 2019), panic disorder (Lundin, Forsell, & Dalman, 2018; Petrowski, Wintermann, Kirschbaum, & Bornstein, 2014), obsessive compulsive disorder (Bernardo, Cukiert, & Botelho, 2018; Motivala et al., 2017), anorexia and bulimia nervosa (Gauthier et al., 2014; Mashalpourfard, 2018); and borderline personality disorder (Elnawawy et al., 2019). Individuals with comorbid disorders do not respond as well to treatment, have a prolonged course of illness and poorer quality of life when compared to individuals

who do not suffer from comorbidity (Hasin et al., 2018; Rodriguez-Seijas, Eaton, Stohl, Mauro, & Hasin, 2017).

2. 4. Prevalence and Profile of Depression

The World Health Organization (WHO) reports that more than 322 million people worldwide were living with depression in 2017, with the total number of people diagnosed with depression increasing by more than 18.4% since 2005 (World Health Organization, 2018). Studies have reached a consensus that the lifetime prevalence of developing depression varies between 10% to 30% (Babatsikou et al., 2017; Bromet et al., 2011; Kessler et al., 2005; Lépine & Briley, 2011; Lim et al., 2018; Wei, Li, Hou, Chen, & Qin, 2017).

A number of socio-demographic characteristics such as gender and age, socio-economic condition, cultural background, religion, family life and lifetime history of depression are thought to contribute to the profile of this disorder and will be considered in further detail.

2. 4. 1. Gender and Age

In terms of gender, most studies show that women are more likely to experience depression than men, however, the ratio varies. On Table 2.4.1, a brief summary of research on depression are listed, and studies' sample, country, age, gender, and depression prevalence and/or ratio are provided.

Some studies indicate that females are twice as likely to develop depression than males (Blazer et al., 1994; Farrer, Walker, Harrison, & Banfield, 2018; Szádóczky, Papp, Vitrai, Ríhmer, & Füredi, 1998), whereas other studies indicate that females are 1.5 times more likely to develop depression than males (Gutiérrez-Lobos, Scherer, Anderer, & Katschnig, 2002; K. Wilhelm, Parker, & Hadzi-Pavlovic, 1997). These differences in the prevalence of depression in males and females might come due to biological and psychological factors (Kuehner, 2017). Only a few studies have found that the prevalence of depression does not differ significantly between genders (Piccinelli & Wilkinson, 2000; Sokratis, Christos, Despo, & Maria, 2017).

Age is another factor that needs to be considered in understanding the prevalence of depression. Research shows that adults under the age of 45 are more likely to experience depression (Merikangas et al., 2010) especially between the ages of 20 to 24 (Bromet et al., 2011; Farrer et al., 2018; Geethanjali & Adalarasu, 2014; Mahmoud, Staten, Hall, & Lennie, 2012; Shamsuddin et al., 2013). Studies also demonstrate that young adults experience more severe levels of depression when compared to other age groups. Researchers indicate that comorbidity, engaging in substance abuse, previous suicide attempts, specific personality traits such as introversion or neuroticism, genetic loading and family conflict are factors that are likely to increase the risk of developing depression and may explain the high prevalence of depression in young adults (Bilsen, 2018; Patel, Flisher, Hetrick, & McGorry, 2007; Stein et al., 2001).

When Australian and international studies are compared, it results that the prevalence and/or ratio of depression in Australia are almost the same.

Table 2.4.1. Summary of international studies on depression for gender and age variables

Study	Sample size	Country	Age	Gender	Prevalence/ Ratio of Depression
Australian Bureau of Statistics (2008)	43,616	Australia	16-85	Females	Total prevalence in a 12-month period is 6.2%
				Males	Female to male ratio is 1.40:1
Blazer et al. (1994)	8,098	USA	15-54	Females	Female ratio is 20.8%
				Males	Male ratio is 11%
					Female to male ratio is 2:1
Bromet et al. (2011)	89,037	18 countries	18+	Females	Total prevalence 14.6%
				Males	Female to male ratio is 2:1
Farrer et al. (2018)	71,726	Australia	25+	Females	More prevalent in early ages
				Males	
Geethanjali & Adalarasu (2014)	160	India	$\bar{x}$= 19.5	Females	Total prevalence is 31%
Gutiérrez-Lobos et al. (2002)	2,599	Austria	18-65	Females	Female to male ratio is 1.5:1
				Males	
Kessler et al. (1994)	8,098	USA	15-54	Females	Total prevalence is 17%
				Males	More prevalent in females
Mahmoud, Staten, Hall, & Lennie (2012)	508	USA	18-24	Females	More prevalent in early ages
				Males	

Table 2.4.1. Summary of international studies on depression for gender and age variables (continued)

Study	Sample size	Country	Age	Gender	Prevalence/ Ratio of Depression
Merikangas et al. (2010)	10,123	USA	13-18	Females Males	More prevalent in early ages
Piccinelli & Wilkinson (2000)	Critical Review	UK	Not included	Females Males	Equal for both
Shamsuddin et al. (2013)	506	Malaysia	18-24	Females Males	More prevalent in early ages
Sokratis et al. (2017)	429	Cyprus	11-13	Females Males	Equal for both
Szádóczky et al. (1998)	2,953	Hungary	18-65	Females Males	Total prevalence is 15.1% Female to male ratio is 2.7:1
Wilhelm et al. (1997)	156	Australia	$\bar{x}$=39.1	Females Males	Female ratio is 38% Male ratio is 29% Female to male ratio is 1.5:1

Note: $\bar{x}$=Average age

2. 4. 2. Socio-Economic Condition

One of the predictors of depression might be an individual's socio-economic condition. This variable can be analyzed on a global basis and on a country basis. WHO' s regional division was found to fit the purpose of this research. WHO divides the world into six regions based on their geographical location. A research studying depression conducted by the WHO was based on this regional division. It reports that 27% that the global population diagnosed with depression is found to live in the region of South-East Asia (encompassing the territory from Indonesia to India). It is followed by the Western Pacific region (from Australia to Vietnam) at 21%, the Eastern Mediterranean region (from Bahrain, Qatar to Syria) at 16%, Regions of Americas (all countries from North America to South America) at 15%, European region (it includes the entire continent and the other countries surrounding Russia) at 12%, and in the African region (the whole continent) 9% of the individuals with depression live there (World Health Organization, 2018). Furthermore, it is shown that low-income regions such as South-East Asia and Eastern Mediterranean experience depression more than high-income regions with the exception of the African region. The low prevalence of depression in the African region is thought to be most likely due to measurement problems, and due to the lack of a direct equivalence for the word ‘depression’ in this continent (Sweetland, Belkin, & Verdeli, 2009).

On a country basis, literature review indicates that individuals who live in low-income countries, as shown in Table 2.4.2, are more likely to experience depression than individuals who live in high-income countries (Capage & Watson, 2001; Feder et al., 2008; Gilmer et al., 2005; Lim et al., 2018; Pettit, Lewinsohn, Roberts, Seeley, & Monteith, 2009; Rubio et al., 2011; Szádóczky et al., 1998). For example, on a recent comprehensive study conducted in 30 different countries, with a total of 1,112,73 participants, it was found that the 12-month prevalence of depression in low-income countries (e.g. Sudan, Ethiopia) was 11.1%, in middle-income countries (e.g. Turkey, Malaysia) was 5.9% and in high-income countries (e.g. United State of America, Australia) was 5.5% (Lim et al., 2018). Additionally, both international and Australian studies reach onto the conclusion that the prevalence of depression for Australians is expected to be high in low socioeconomic condition. The reason might be related to

disadvantaged living conditions and limited access to public services such as education and health.

Table 2.4.2. Summary of International and Australia based studies on depression for socio-economic condition

Study	Sample	Country	Region	Socio-economic condition	Results
Capage & Watson (2001)	1,156	USA	Americans	Poverty, Near-poverty, Above-Poverty	More prevalent among poverty condition than above-poverty condition
Gilmer et al. (2005)	1,380	USA	Americans	Low	High depression symptoms
Lim et al. (2018)	1,112,573	30 countries	World-wide	Low	High depression symptoms
Mackinnon, Jorm, & Hickie (2004)	28,559	Australia	Western Pacific	Low	High depression symptoms
Pettit et al. (2009)	1709	USA	Americans	Low	High depression symptoms
Szádóczky et al. (1998)	2,953	Hungary	European	Low	High depression symptoms
Wilhelm, Mitchell, Slade, Brownhill, & Andrews (2003)	10,641	Australia	Western Pacific	Low	High depression symptoms

Notes: Region = According to World Health Organization's divisions of the world.

2. 4. 3. Cultural Background

Studies examining the relationship between cultural background and depression have reported divisive findings. A number of studies indicate that individuals from Western cultures are more likely to develop depression than individuals from Asian cultures (Butcher et al., 2014; Kessler et al., 2009). Similarly, another study which compares Caucasian/white people as an example of Western cultures to African American and Latinos representing collectivistic cultures concludes there is a higher depression severity in individualistic cultures (Mellick et al., 2019).

In contrast, other research shows that depression levels are higher in collectivist cultures when compared to individualistic cultures. For instance, individuals from low socioeconomic backgrounds like Latinos or African Americans, in general report a higher level of depression than Europeans (Myers et al., 2005). Another study conducted with Malay and non-Malay students demonstrated that Malay students had higher depression levels than non-Malay students (Yusoff et al., 2013).

This convoluted relationship between cultural background and depression level is found in both international and Australian studies, and it is displayed below on Table 2.4.3. These differing results regarding cultural background and depression might be a product of measurement problems for depression symptoms (Sweetland et al., 2009), the nature of participants' language (Al-Maskari et al., 2011) and different perceptions of culture (eastern versus western and/or individualistic versus collectivistic) (Mellick et al., 2019).

Table 2.4.3. Summary of International and Australia based studies on depression for cultural background

Study	Sample	Country	Region	Cultural background	Results
Al-Maskari et al. (2011)	319	UAE	Eastern Mediterranean	Arabs (A), Bangladesh (B), Indians (I), Pakistani (P)	B > A > P > I
Mellick et al. (2019)	244	USA	Americas	African American (AA), Caucasian (C), Latinos (L)	C > L > AA
Myers et al. (2005)	125	USA	Americas	African American (AA), Caucasian (C), Latinos (L)	L> AA > C
Oei & Notowidjojo (1990)	342	Australia	Western Pacific	Australian (AUS), Overseas (O)	O > AUS
Simpson, Schumaker, Dorahy, & Shrestha (1996)	561	Australia	Western Pacific and South-East Asia	Australian (AUS), Nepalese (N)	AUS = N
Yusoff et al. (2013)	743	Malaysia	Western Pacific	Malay, Non-Malay	Malay > Non-Malay

Notes: Region = According to World Health Organization's divisions, > = More prevalent

2. 4. 4. Religion

There has been a limited number of studies that have examined the relationship between religion and depression, despite increasing evidence of sociodemographic characteristics effecting the onset and development of depression (Walpole, McMillan, House, Cottrell, & Mir, 2013). One cross-sectional study reports that Jews are more likely to develop depressive symptoms than non-Jews, especially when they have Eastern European descent (McCullough & Larson, 1999). This is most likely thought to be a result of holocaust experiences, transgenerational passing of psychological trauma, social exclusion arising from anti-Semitism and overprotective parental rearing behaviors (Ullmann et al., 2013). As depicted in Table 2.4.4, a study of individuals of Christian faith shows that Protestant women are more likely to develop depression than Catholic women (McCullough & Larson, 1999). Another study found that Catholics are more religiously involved in their community than Protestants and the more religiously involved one is, the lower their levels of depression are predicted to be (Seomun, Park, Geem, & Lee, 2017). Al-Maskari and colleagues (2011) carried out a study in the United Arab Emirates examining the depression, anxiety and stress levels of immigrant workers. Results indicated that Muslim immigrant workers had the highest prevalence of depression (31.4%) followed by Hindus (12.1%) and Sikhs (2%). The researchers suggested that the language of the scales used may have affected the results. All of the Hindu participants and most of the Muslim participants responded in their mother tongue, whereas the Sikhs responded in English. Thus, language may have biased the given responses (Al-Maskari et al., 2011).

Meanwhile, a study conducted on Australian population, that measured spirituality and being religious, found instead no significant relationship between these variables (Moxey, Mcevoy, Bowe, & Attia, 2011). To conclude, mixed results have been found throughout the international and Australian literature.

Table 2.4.4: Summary of international and Australian studies on depression for religion

Study	Sample	Country	Religion	Results
Al-Maskari et al. (2011)	319	UAE	Islam (I) Christianity (C) Hindus (H) Sikh (S)	I > H > S > C
McCullough & Larson (1999)	A review	USA	Judaism(J) Non-Judaism (NJ)	J > NJ
Seomun et al. (2017)	1,149	Korea	Buddhism (B), Roman Catholic (RC), Protestants (P)	P > RC > B
Ullmann et al. (2013)	89	USA and Germany	Christian Females (CF) Protestant Females (PF)	PF > CF

Notes: > = More prevalent

2. 4. 5. Family Life

Individuals' family life can be evaluated as either a risk factor or a protective one for depression and its related symptoms. A brief summary of articles on this relationship is listed in the Table 2.4.5.

A study conducted by Evenson and colleagues (2005) with more than 11,000 participants found that being a single parent and having more than one child was a risk factor for the development of depression and its related symptoms (2005). Almost

similar variables were used in another study carried out in Germany by Helbig et. al. that found similar results as well (2006).

When comparing International and Australian studies being single (separated, divorced or widowed) is found to be related to experiencing more depression symptoms compared to being in a relationship (Australian Institute of Family Studies, 2002; Kay Wilhelm et al., 2003). This result might be explained by social support: the lower social support, the higher depression symptoms (Ioannou, Kassianos, & Symeou, 2019).

Table 2.4.5. Summary of international and Australia based studies on depression for family life

Study	Sample	Country	Relationship Status	Child/ren	Results
Australian Institute of Family Studies (2002)	10,641	Australia	Never Married, Divorced	Not Included	High depressive symptoms
Evenson & Simon (2005)	11,473	USA	Single, Cohabiting	One or more	More prevalent among parents compare to nonparents
Helbig et al. (2006)	2,801	Germany	Single, Parent	One or more	More prevalent among single compare to couple
Wilhelm et al (2003)	10,641	Australia	Separated, Divorced, Widowed	Not Included	High depressive symptoms

2. 4. 6. Lifetime History of Depression

Burcusa and Lacono conducted a review aiming to deeply understand a number of factors such as gender, marital status, socio-economic status and prior episode of depression that might affect its occurrence and recurrence (2007). They found that these factors increased the risk of recurrence of depression with a 50% probability (Burcusa & Iacono, 2007). Solomon et. al. also support these results in their 15 years longitudinal study (as seen in Table 2.4.6) (Solomon et al., 2004).

Australian Health Ministry also focused on occurrence and recurrence of depression to analyze the burden of depression on a national level. It is found that the probability of recurrence of depression is between 30-50% in Australia (Australian Health Ministers, 1999). To conclude there is a 50% probability that if an individual suffers from depression symptoms at one time of their life, they will reoccur at a later point in his life.

Table 2.4.6. Brief summary of international and Australia based studies on lifetime history of depression

Study	Sample	Country	History of depression	Depression re-occurent probability
Australian Health Ministers (1999)	-	Australia	Yes	30-50%
Burcusa & Iacono (2007)	A review	USA	Yes	50%
Solomon et al. (2004)	290	USA	Yes	49%

2. 5. Clinical Presentation of Anxiety

Anxiety disorders are the second most common mental health disorder group after depression (World Health Organization, 2018). There are a total of eleven different anxiety disorders outlined in the DSM-5 that share common attributes such as the experience of excessive fear in response to a stressful life event, intense anxiety associated with future threat, and some behavioral disturbance (American Psychological Association, 2013). Anxiety disorders can be differentiated by the type of situation that creates fear, worry or avoidance for an individual. For example, social anxiety disorder may be observable in situations that involve social interactions, whereas separation anxiety disorder may arise when there is a possible separation from attachment figures like parents or other caregivers. Generalized anxiety disorder (GAD) on the other hand can be evaluated as a broader disorder that may be observed in any aspect of life, all the way from major events like being diagnosed with a severe health problem to minor life events like being late to work (Henning, Turk, Mennin, Fresco, & Heimberg, 2007).

According to DSM-5 (American Psychological Association, 2013), GAD is characterized by excessive worry and pathological anxiety, which is difficult to control, interferes with day-to-day activities, persists for at least 6 months and causes clinically significant distress or impairment in the areas of social, occupational, or personal functioning. The physical signs of GAD may include three or more of the following symptoms: restlessness or feeling on edge, fatigue, difficulty concentrating or mind going blank, irritability, muscle tension and sleep disturbance (American Psychological Association, 2013).

These somatic and autonomic symptoms make differential diagnosis of GAD challenging because they can easily be mistaken for other medical conditions. This situation leads to the fact that people suffering from GAD are not getting the treatment that they need. However, if anxiety related somatic symptoms are diagnosed early, patients will have shorter episode durations (Ormel, Koeter, Brink, & Willige, 1991).

Like in a GAD, non-pathological anxiety is also characterized by unpleasant anxiety and worry but these feelings do not cause clinically significant impairment that

restricts or interferes with psychosocial functioning. When an individual experiences non-pathological anxiety, s/he has realistic concerns and control over their worry that cannot be determined as excessive or out of proportion to be diagnosed as pathological anxiety by clinicians. For example, a student feeling anxious during the final weeks of semester and getting worried about getting high grades is an appropriate psychological reaction to the circumstances if this anxiety guides the student to study harder and more effectively.

Research shows that GAD has the highest comorbidity with MDD (Major Depressive Disorder), with 46%-70% of individuals with GAD also experiencing MDD (Carter, Wittchen, Pfister, & Kessler, 2001; Wittchen, Zhao, Kessler, & Eaton, 1994; Zhou et al., 2017). GAD is found to be comorbid with other anxiety disorders, ranging between 13%-41% (Brown & Barlow, 1992; Carter et al., 2001; Moxey et al., 2011; Noyes, 2001; Sanderson & Barlow, 1990; Simon, 2009; R. Williams & Hunt, 1997); and any somatoform disorders, ranging between 26%-35.9% (Carter et al., 2001; Waal, Arnold, Eekhof, & Hemert, 2004). An epidemiological study conducted by Wittchen and colleagues (1994) indicated that almost 70% of people currently diagnosed with GAD have comorbidity with other psychiatric diagnoses and almost 90% of them have a lifetime history of at least another psychiatric diagnosis.

2. 6. Prevalence and Profile of Anxiety

A large-scale study conducted by the World Health Organization indicated that approximately 264 million people were living with at least one anxiety disorder in 2017 (World Health Organization, 2018). Many epidemiological studies that have considered profiles and demographics of people with anxiety disorders show that lifetime prevalence of anxiety disorders varies between 11.6% to 16.6% (Baxter et al., 2013; Bijl, Ravelli, & Van Zessen, 1998; Somers et al., 2006). Socio-demographic characteristics such as gender, age, country of origin, cultural background, religion, family life and previous history of anxiety will be examined in detail in order to understand the prevalence and profile of anxiety.

2. 6. 1. Gender and Age

In the Table 2.6.1 a list of Australian and International studies on the relationship between anxiety disorders and gender and age can be found. Some studies focus on the relationship between gender and anxiety disorders and have found no statistically significant differences (Henning et al., 2007; Hunt et al., 2004), while other studies have reported that women have greater prevalence than men to be diagnosed with any of the anxiety disorders. The ratio can vary according to the type of anxiety disorder in general, the results demonstrate that the prevalence of being diagnosed with an anxiety disorder is 1.5 to 2 times higher for women (Baxter et al., 2013; Carter et al., 2001; Somers et al., 2006). Women tend to experience anxiety stronger than men due to biological factors (i.e. hormones and genes), psychological factors (i.e. experiencing life difficulties), and environmental factors (i.e. abuse, violence) (Kendler et al., 1995; Pigott, 2003).

A systematic review and meta-regression study has found that compared to other age groups, being a young adult (between the age of 18 to 35) has been associated with undergoing at least one anxiety disorder during their lifetime (Baxter et al., 2013). However, other systematic review studies have shown that when taking into consideration all anxiety disorders, there is an increasing pattern of lifetime prevalence between the ages 18 to 64 years old (Bijl et al., 1998; Somers et al., 2006). The findings show that aging increases the prevalence of having any anxiety disorder and elderly people older than 65 are more likely to be diagnosed with any of them (Andreescu & Varon, 2015). The authors propose that one of the reasons why this is the case, might be because of increased vulnerability due to aging bodily systems (Vitlic, Lord, & Phillips, 2014).

Comparing Australian to International studies, it is clear that globally females are found to have a higher prevalence of anxiety disorders. But, Hollingworth and her colleagues found similar results with other studies on anxiety, that being individuals younger than 50 years old have a higher risk in developing any anxiety disorder.

Table 2.6.1. Brief summary of international and Australia based studies on anxiety for gender and age variables

Study	Sample	Country	Age	Gender	Prevalence and/or ratio
Australian Bureau of Statistics (2008)	43,616	Australia	16-85	Females Males	Total prevalence in a 12-month period is 14.4%
Baxter et al. (2013)	456,012	22 countries	3-54	Females Males	Female to male ratio 2:1
Bijl et al. (1998)	7,076	Netherlands	18-64	Females Males	Female to male ratio 1.8:1
Carter et al. (2001)	4,181	Germany	18-65	Females Males	More prevalent among females compare to men
Henning et al. (2007)	107	USA	$\bar{x}$= 33.0	Females Males	Female to male ratio 1:1
Hollingworth, Burgess, & Whiteford (2010)	8,841	Australia	18-64	Females Males	More prevalent among females compare to men and more prevalent under the age of 50
Somers et al. (2006)	A review	World-wide	18-64	Females Males	Female to male ratio 2:1

Notes: $\bar{x}$ = Average age in the study

2. 6. 2. Socio-Economic Condition

According to the WHO of regions in 2017 the South-East Asia Region (includes countries from Indonesia to India) had the highest rates for anxiety disorders at 23% cases. The second highest rates (21%) belong to the Americas region which includes all countries from North America to South America and it is closely followed by Western Pacific region (including Australia to Vietnam) at 20%. The European (the whole continent), Eastern Mediterranean (from Bahrain, Qatar to Syria) and African (the whole continent) regions show anxiety prevalence rates at 14%, 12% and 10% respectively (World Health Organization, 2018). The outcomes of this study conducted by WHO has shown mixed results for comparison of low-income regions and anxiety disorders level. The expected pattern observed in depression where a relationship between living in low-income regions and having a higher rate of psychopathology has not been found for anxiety disorders. However, in the literature several comprehensive studies indicated that living with low-income might be a risk factor for developing anxiety disorders (Baxter et al., 2013; Gilmer et al., 2005; Hunt et al., 2004).

Australian studies have found a relationship between belonging to a low socio-economic status and having high anxiety levels, as shown by International studies as well on Table 2.6.2 (Hunt et al., 2004; McEvoy, Grove, & Slade, 2011).

Table 2.6.2.: Summary of international and Australia based studies on anxiety for socio-economic condition (SEC)

Study	Sample	Country	Region	SEC	Results
Baxter et al. (2013)	456,012	22 countries	World-wide	Low	High anxiety symptoms
Gilmer et al. (2005)	1,380	USA	Americas	Low	High anxiety symptoms
Hunt et al. (2004)	10,641	Australia	Western Pacific	Low	High anxiety symptoms
McEvoy et al. (2011)	1,045	Australia	Western Pacific	Low	High anxiety symptoms

2. 6. 3. Cultural Background

Studies show that culture can produce either risk or protection on the development and maintenance of anxiety disorders (Kirmayer, 2001; Varela & Hensley-Maloney, 2009). For example, authoritarian parenting styles have been related to clinical pathological anxiety in western cultures. However, this may not apply to clinical anxiety cases in non-western cultures (Oh, Shin, Moon, Hudson, & Rapee, 2002; Wood, McLeod, Sigman, Hwang, & Chu, 2003). A large number of studies conducted on the Latinos show that this culture is more likely to develop anxiety symptoms and disorders than European American culture (U.S. Department of Health and Human Services, 2001). Latinos are the highest growing minority in the United State of America (USA) is one of the reasons that leads to increasing needs for mental health services; thus making it insufficient for everyone to access these services (Kouyoumdjian, Zamboanga, & Hansen, 2003; Varela & Hensley-Maloney, 2009). Another reason is that these minorities feel as if they will face unfair and disrespectful behavior from mental health professionals because of their race and cultural background (LaVeist, 2000). Other research studies have also found similar results; showing that minorities have higher anxiety levels than the majorities (Fabrega et al., 1988; Myers et al., 2005).

On the contrary, a study conducted by Mellick and colleagues (2019) in the USA showed that Caucasians had the highest anxiety levels, followed by Latinos, and lastly by African Americans (As seen in Table 2.6.3 below). Another research study, this time conducted in Malaysia found the same results; the majority (Malaysians) showed a higher anxiety level than the minority (Non-Malaysians) (Yusoff et al., 2013). The reason could be whether the individual is a member of an individualistic culture or a collectivistic culture. Hofman and Hinton found that White American people who live in an individualistic culture, have a higher chance to be diagnosed with anxiety disorders compared to African people regarded as collectivistic (Hofman & Hinton, 2014).

When comparing the Australian study results to International ones, it seems that the relationship between the cultural background and anxiety levels becomes more complex. A study conducted by Comino and his colleagues show that Asians who

reside in Australia (minority) have lower anxiety levels than the majority, whereas, Europeans (also a minority) show higher anxiety levels than the majority (Comino, Silove, Manicavasagar V, Harris, & Harris, 2001).

Table 2.6.3. Summary of studies on anxiety for cultural background

Study	Sample	Country	Region	Cultural background	Results
Comino et al. (2001)	4,753	Australia	Western Pacific	Australian (AUS), English Speaking Countries (ESC) European (E) Asian (A) Non-English-Speaking Countries (N-ESC)	E > AUS AUS> A
Fabrega et al. (1988)	6,673	USA	Americas	African American (AA), Caucasian (C)	AA > C
Mellick et al. (2019)	344	USA	Americas	African American (AA), Caucasian (C), Latinos (L)	C > L > AA
Myers et al. (2005)	125	USA	Americas	African American (AA), Caucasian (C), Latinos (L)	L > C
Yusoff et al. (2013)	743	Malaysia	Western Pacific	Malay (M) Non-Malay (NM)	M > NM

Notes: Region = According to World Health Organization's divisions of the world, > = More prevalent

2. 6. 4. Religion

Mental health professionals have found significant evidence that shows the relationship between religion and mental well-being (Koenig, 1998; Shreve-Neiger & Edelstein, 2004). However, this relationship varies. According to seven clinical trials and sixty-nine observational studies examining the religion-anxiety relationship found that half of these studies report that when people are more religious, they have lower levels of anxiety; the other seventeen studies have found no relationship between religion and the prevalence of anxiety; seven of these studies reported complex and unclear results and then the rest suggest a higher level of anxiety among more religious people (Glas & Poort, 2007); thus showing mixed results. An article on a Muslim community found that being religious was associated with a low level of anxiety (Abdel-Khalek, 2011). However, another study conducted on a Christian community showed that there was no relationship between religion and anxiety (Koenig, Ford, George, Blazer, & Meador, 1993). Whereas a study conducted in Korea compared Christian believers to Protestant believers and reached the conclusion that Protestants have a higher level of anxiety.

In the Table 2.6.4 when contrasting between an Australian study conducted by Ata (Ata, 2012) and other international studies conducted throughout the world, it can be seen that individuals belonging to different religion groups, show different anxiety levels in different studies.

These mixed results regarding the relationship between religion and anxiety, are generally explained in the literature with three main reasons. Firstly, the internalization or externalization of the disorder, secondly the usage of religion as a coping or improving adjustment, and lastly being a practicant of the religion or not, contribute to the mixed results on the effect of religion on anxiety (Kendler et al., 2003; Konstam, Moser, & De Jong, 2005; McCoubrie & Davies, 2006).

Table 2.6.4. Summary of international and Australia based studies on anxiety for religion

Study	Sample	Country	Religion	Results
Abdel-Khalek (2011)	499	Kuwait	Islam	Low anxiety symptoms
Ata (2012)	269	Australia	Christianity, Catholic, Islam, Buddhism, Sikhism, Hinduism, No religion	Muslims > Catholics > No religion
Glas & Poort (2007)	A review	Netherlands	More than one religion group	Mixed results
Koenig (2001)	A review	USA	More than one religion group	Mixed results
Koenig et al. (1993)	1,025	USA	Christianity	No relationship with anxiety
Park, Hong, Park, & Cho (2012)	6,275	Korea	Christianity, Protestantism, Atheism	Higher anxiety for Protestants

Note: > = More prevalent

2. 6. 5. Family Life

Regarding family life, being married or previously married and having a child or not might be considered an influential socio-demographic characteristic for anxiety. A comprehensive study covered 15 countries and 34 493 participants showed that never being married and previously experiencing a marriage can be a risk factor for developing anxiety related symptoms as given in the Table 2.6.5 (Scott et al., 2010). This result is also supported by Helbig, Lampert (2006). They found that individuals might demonstrate higher level of anxiety if they are single parents and have two or more children (Helbig et al., 2006).

When the studies listed on the table are compared, two more Australian studies found similar results with International ones. Except the research conducted by Osborne and his colleagues, where it was concluded that marital status might not have an effect on anxiety levels (2003). Furthermore, it is indicated that there might be other factors affecting anxiety such as individuals' education level (Osborne et al., 2003).

Table 2.6.5. Summary of international and Australia based studies on anxiety for family life

Study	Sample	Country	Relationship status	Child/ren	Results
Australian Institute of Family Studies (2002)	10,641	Australia	Never Married Divorced	Not included	High anxiety symptoms
Helbig et al. (2006)	2,081	Germany	Having a partner No partner	One child, 2 children, More than 2	Higher anxiety for having no partner and 2 or more children
Neyland & Shadbolt (1987)	500	Australia	Never Married Married	Not included	Similar anxiety symptoms for both
Osborne et al. (2003)	731	Australia	Never Married Married	Not included	Not significant for both
Scott et al. (2010)	34,493	15 countries	Never Married Previously Married Stably Married	Not included	More prevalent among never married compare to married More prevalent among previously married compare to stably married

2. 6. 6. Previous History of Anxiety

Bruce and his colleagues conducted a longitudinal study for 12 years in the US based on recurrence of anxiety (2005). They examined 179 participants and found that if an individual has a history of anxiety in his/her lifetime, there is a 42% probability that s/he might experience recurrent anxiety episodes (Bruce et al., 2005). However, in another study conducted in the Netherlands researchers found a 23.5% probability, which is lower than most of the studies in the literature (Scholten et al., 2013). They explain this low level of recurrence with the representation problem of the study's sample. During the follow-up interventions, most of the participants who had reported high levels of anxiety in prior stages, were not willing to join the research again. Thus, final results are not representable and it is difficult to draw reliable results (Scholten et al., 2013).

Another study where the data was retracted from five different countries (including Australia), showed that nearly half of the participants experience recurrence of anxiety (as seen in Table 2.6.6) (Hoffman, Dukes, & Wittchen, 2008). Thus, it can be observed that all studies examining international and Australian population indicated similar patterns that experiencing an episode of anxiety might lead to its recurrence in the following years.

Table 2.6.6. Brief summary of international and Australia based studies on lifetime history of anxiety

Study	Sample	Country	History of anxiety	Anxiety re-occurent probability
Bruce et al. (2005)	179	USA	Yes	42%
Hoffman et al. (2008)	A review	Australia, Canada, Germany, Netherlands, USA	Yes	Nearly half of the participants
Scholten et al. (2013)	429	Netherlands	Yes	23.5%

2. 7. Clinical Presentation of Stress

Stress is defined as a psychological condition that comprises emotional, physical and mental responses after an individual perceives a stimulus that causes a bodily or mental reaction. Stress may considered as acute or chronic; depending on how long the individual has been affected by stress symptoms, on the intensity of the symptoms, and on how manageable this level of stress has been for him/her. Acute stress is beneficial to the individual in finishing the tasks and achieving results. However, when the level of stress becomes constant, intense, and unmanageable (chronic stress), it can cause negative physical and mental health consequences for the individual (Araiza & Lobel, 2018; Monroe, 2008). Stress creates a dynamic interaction between the body and mind by activating the sympathetic nervous system (Monroe, 2008). When the sympathetic nervous system is activated, the body produces and releases hormones (Vitlic et al., 2014) which cause the fight or flight response. Due to the active sympathetic nervous system, when an individual is stressed, they may experience symptoms such as headaches, hypertension, muscle spasms, high pulse rate and dizziness (Kvistad et al., 2016; Largo-Wight, O'Hara, & Chen, 2016; Nasab, Yousefian, & Sehatti, 2019; Vachon-Presseau, 2018).

In chronic stress, when the sympathetic nervous system is activated, the individual enters a "survival mode", where the body deactivates some of its systems, such as the immune system (Sorrells & Sapolsky, 2007). Although, if the level of stress passes the threshold and it becomes chronic, this state may create anti-inflammatory effects on the body by suppressing the immune system which might cause a negative impact on physical and mental health (Chrousos, 2009; B. Leonard, 2000; B. E. Leonard, 1990; Munckt, Guyre, & Holbrooke, 1984; Reiche, Nunes, & Morimoto, 2004).

Studies examining the physical impact of stress found that individuals who suffered from chronic stress, were more likely to experience sleep disturbance (Waqas, Khan, Sharif, Khalid, & Ali, 2015), hypertension (Schulte & Neus, 1983), diabetes (Maritim, Sanders, & Watkins, 2003), and cardiovascular diseases (Brydon, Magid, & Steptoe, 2006; Chandola et al., 2008; Glozier et al., 2013; Kurd et al., 2014). Extensive research on stress and its physical effects have been conducted especially on cardiovascular diseases since they are considered a leading cause of death in developed countries

(Kubzansky & Adler, 2010; World Health Organization, 2018). A meta-analysis published by Richardson and colleagues takes into account prospective cohort studies in the literature regarding coronary heart disease and stress. The total number of subjects in all studies was 118,696 and results show that risk of coronary heart disease was moderately increased with the higher stress level perceived (Richardson et al., 2012).

Stress is not classified as a psychopathology in the DSM-5 (American Psychological Association, 2013), instead it is evaluated as a risk factor for developing certain mental health conditions (K. Grant, Compas, Thurm, McMahon, & Gipson, 2004; Hammen et al., 1987) such as depression and anxiety (Eiland & McEwen, 2012; Hammen et al., 2009; Revollo, Qureshi, Collazos, Valero, & Casas, 2011). One of the studies that consider the relationships between stress and depression was conducted by Kessler. He showed that stressful life events might predict subsequent depression and the onset of depression could be predicted by both personality and stressful life events (Kessler, 1997).

To conclude, stress is a psychological state that can be acute and chronic, that is studied as a risk factor, rather than a mental health illness, that affects the individual physically and psychologically.

2. 8. Prevalence and Profile of Stress

Stress has already been established as a common problem worldwide with 79% of Americans think they experience unhealthy stress levels in their day to day life. A third of Americans report extreme levels of stress, and 48% of them think that in the last five years their stress level has increased (American Psychological Association, 2007). Whereas in Australia, a study conducted by Australian Psychological Society for five years consecutively, only 35% of surveyed Australians report experiencing stress, and 13% of them report severe stress levels (Australian Psychological Society, 2015). In this section socio-demographic features of the sample (gender, age, socio-economic conditions, cultural background, religion, and family life) will be examined. In the light of the examination the prevalence and profile of stress will be obtained.

2. 8. 1. Gender and Age

In the literature it has been consistently shown that women have higher chances of displaying stress related symptoms when compared to men (Bayram & Bilgel, 2008; Mahmoud et al., 2012; Shamsuddin et al., 2013). Another factor that impacts individuals' stress level is their age. A study conducted on aging and immune system reached the result that ageing had a negative effect on people's immune system and body which led to older individuals become more vulnerable to stress than younger individuals (Vitlic et al., 2014).

A very important Australian research study with a sample size of 16,015,300, reached the conclusion that lifetime prevalence of high levels of stress is 9% and lifetime prevalence of very high level of stress is 3.1% (Australian Bureau of Statistics, 2008).

Table 2.8.1. Brief summary of international and Australia based studies on stress for gender and age

Study	Sample size	Country	Age	Gender	Prevalence/ Ratio of Depression
Australian Bureau of Statistics (2008)	16,015,300	Australia	18-65	Females, Males	High level of stress in a lifetime period is 9% Very high level of stress in a lifetime period is 3.1
Australian Psychological Society (2015)	1,521	Australia	18+	Females, Males	Equal for both gender
Bayram & Bilgel (2008)	1,617	Turkey	$\bar{x}$ = 20.7	Females, Males	Total prevalence is 20.8% More prevalent among females compare to men
Geethanjali & Adalarasu (2014)	160	India	$\bar{x}$ = 19.5	Females	Total prevalence is 46%
Mahmoud et al. (2012)	508	USA	18-24	Females, Males	Total prevalence is 24% More prevalent among females compare to men
Shamsuddin et al. (2013)	506	Malaysia	18-24	Females, Males	Total prevalence is 23.7% More prevalent among females compare to men

Notes: $\bar{x}$ = Average age

2. 8. 2. Socio-Economic Condition

A comprehensive study that included 18 countries, was carried out by Bromet and his colleagues and it indicated that low socio-economic condition might be a risk factor for high stress level (2011). Myers et. al. conducted their study on American adult participants and found that having low socio-economic conditions (living in a crime area, financial issues, and being unemployed) is related with high levels stress (2005). Furthermore, Mackinnon et. al (2004) conducted a study on a large Australian sample and reached the same result as Myers and his colleagues. The comparison between international studies and this Australian study, shows that a parallel pattern is observed, as given in the Table 2.8.2.

Table 2.8.2: Summary of international and Australia based studies on stress for socio-economic condition (SEC)

Study	Sample	Country	Region	SEC	Results
Bromet et al. (2011)	89,037	18 countries	World-wide	Low	High stress level
Mackinnon et al. (2004)	28,559	Australia	Western Pacific	Low	High stress level
Myers et al. (2005)	125	USA	Americas	Low	High stress level

Notes: Region = According to World Health Organization's divisions of the world, SEC = Socio-economic condition

2. 8. 3. Cultural Background

Another important factor that affects how individuals experience stress is cultural background. For instance, a study with Chinese participants concluded that they considered as the most stressful event in life the death of a spouse. This was found similar to European cultural background individuals. However, in other questionnaire items Western individuals were significantly different to Chinese individuals on the impact of divorce (Zheng, Lin, & Rahe, 1994). Several studies conducted on various

cultural backgrounds also provide a deep perception for different stress levels among cultures such as Malays, Indians, African Americans and Caucasians as listed in the Table 2.8.3. For example, a study conducted by Shamsuddin et. al. (2013) shows that prevalence of stress levels are the highest for Malays, followed by Indians, Chinese and Others.

An Australian study shows that being a migrant with a non-English background has significantly higher effects on the prevalence of stress compared to the individuals with an English background; therefore being non-English is might increase the individuals stress levels (Mccallum & Shadbolt, 1989). It can be seen that cultural background is therefore a risk factor that might affect the prevalence of stress not only in Australia, but also internationally.

Table 2.8.3. Summary of international and Australia based studies on stress for cultural background

Study	Sample	Country	Region	Cultural background	Results
Mccallum & Shadbolt (1989)	1,110	Australia	Western Pacific	Mainstream Australians (MA), British Migrants (BM), Non-BM with good English (NGE), Non-BM with poor English (NPE)	NGE, NPE > MA, BM
Myers et al. (2005)	125	USA	Americas	African American Women (AAW), Caucasian Women (CW), Latinos Women (LW)	LW > AAW > CW
Shamsuddin et al. (2013)	506	Malaysia	Western Pacific	Malay (M), Chinese (C), Indian (I), Others (O),	M > I > C > O
Yusoff et al. (2013)	743	Malaysia	Western Pacific	Malay, Non-Malay	Malay > Non-Malay

Notes: Region = According to World Health Organization's divisions of the world, > = More prevalent

2. 8. 4. Religion

Religious beliefs also significantly affect an individual's experience of stress. Ross (2014) measured the relationship between religion and stress and found that there was a curvilinear effect on how strength of beliefs and stress were related. She explains that low stress level on religious people led to low psychological distress because religion provides hope and meaning. Furthermore, individuals adhering to Protestantism displayed the lowest stress level when compared to Catholics, Jews, and others. This study reaches the result that the strength of belief has more importance on the stress level, rather than which religious beliefs the individual adheres to (Ross, 2014). Two other studies support these results; both Handal et. al. (1989) and Williams et. al. (1991) found that being religious significantly decreases the level of stress regardless of which religious beliefs one has (as seen in Table 2.8.4).

However, in the United Kingdom (UK), a study on migrant population show that being Muslim increased stress level when compared to general population. Researchers explained the differences between the two groups with living in lower standards or being a subcultural group who express stress in a distinctive way from the general population (R. Williams & Hunt, 1997).

In Australia, Moxey and her colleagues examined the relationship between stress, spirituality and religious affiliation (2011). However, they found no relationship between these variables (Moxey et al., 2011). Considering both Australian and international studies, the relationship between religion and stress, a distinct conclusion cannot be reached.

Table 2.8.4. Summary of international and Australia based studies on stress for religion

Study	Sample	Country	Religion	Results
D. R. Williams et al. (1991)	720	UK	Being religious	Being religious decrease stress level
Handal et al. (1989)	114	USA	Being religious	Being religious decrease stress level
Moxey et al. (2011)	752	Australia	Spirituality, Being religious	No association found between distress and spirituality or being religious
R. Williams & Hunt (1997)	478	UK	Muslims (M), Non-Muslims (NM)	M > NM
Ross (2014)	1,984	USA	Protestant (P), Catholic(C), Jewish (J), Other (O), No Religion (NR)	C, J, O > P

Notes: > = More prevalent

2. 8. 5. Family Life

For the profile of stress, family life of an individual are examined. Marital status and/or parenthood might be evaluated as effective factors that influence stress-related symptoms. A study based on marital status and gender differences in stress is conducted by Gutierez et. al. in Austria (2002). They found that being unmarried increases the risk of developing stress when compared to being married. Furthermore,

they found that married women are more likely to experience higher stress levels than married men. The reason might be that women have more responsibility within a family than men. This result is also supported by Myers and his colleagues' study, as shown on the Table 2.8.5 (2005).

Evenson & Simon reached the conclusion that being a single parent of one or more children, is an important factor in developing stress (2005). However, an Australian study conducted on working married mothers, working single mothers, and their family conflicts reported that being married or not has no effect on depression level nor mental health (Westrupp et al., 2016). Researchers found that they might alleviate their family conflict with getting advantage from working policies and workplace practices (Westrupp et al., 2016). These alternative results when compared to international studies might explain only the features of the samples which examine working mothers.

Table 2.8.5. Summary of international and Australia based studies on stress for family life

Study	Sample	Country	Relationship status	Child/ren	Results
Evenson & Simon (2005)	2,801	USA	Single Parent (SP), Married Parents (MP)	One or more	SP > MP
Gutiérrez-Lobos et al. (2002)	2,599	Australia	Married(M), Not Married (NM), Married Women (MW), Married Men (MM)	Not included	NM > M MW > MM
Myers et al. (2005)	125	USA	Married or Cohabiting (MC), Single or Unattached (SU)	Not included	SU > MC
Westrupp et al. (2016)	2,449	Australia	Employed Mothers , Single Employed Mothers	One or more	No association found between stress and employed mothers or single employed mothers

Notes: > = More prevalent

2. 8. 6. Conclusion

In conclusion, studies related to stress and socio-demographic variables are given above. It is indicated that females, older people, having limited and low socio-economic conditions, being unmarried and/or a single parent, is related to high levels of stress and its related symptoms. As both in depression and anxiety, cultural background and religion demonstrated mixed results. In the literature, cultural background has been associated with stress for both minority and majority groups. Furthermore, both international and Australian studies do not reach a consensus on religion.

2. 9. Risk Factors for the Development of Depression, Anxiety and Stress

Over the past 30 years, a growing body of research has been examining the risk factors that predispose an individual to develop mental health disorders. Risk factors are defined as characteristics, variables or hazards which increase the probability of developing a mental health disorder or exacerbate the burden of an existing disorder (Commonwealth Department of Health and Aged Care, 2000; Mrazek & Haggerty, 1994). These risk factors are grouped in three categories: physical risk factors (i.e. presence of chronic medical conditions, family history of mental health disorders), psychological risk factors (i.e. previous experience of traumatic life events such as abuse and neglect) and social risk factors (i.e. low social support, previous experience of discrimination) (Butcher et al., 2014; Pinto et al., 2014; Torgersen, 1983). In the current section, risk factors for the development of depression, anxiety and stress will be considered in detail.

2. 9. 1. Risk Factors for the Development of Depression and Anxiety

2. 9. 1. 1. Physical Risk Factors

Studies show that medical illness in general (Katon, Lin, & Kroenke, 2007) and in particular the presence of cardiovascular diseases, cancer, diabetes (Cirulli, Laviola, & Ricceri, 2009; Krishnan, 2002), hormonal imbalances (Butcher et al., 2014) and traumatic brain injuries (Fann, Katon, Uomoto, & Esselman, 1995) increase the risk of developing both depression and anxiety. When a person experiences a medical

condition or a stressful life event for a long time, his/her body lives in survival mode and this may create some anti-inflammatory effects, consequently, causing physical problems for the person (B. Leonard, 2000).

Genetic factors (Krifcher et al., 1992; Torgersen, 1983) and family history of mental health issues also increase or decrease the probability of developing depression and anxiety. Since they create a vulnerability or resilience to depression and anxiety.

2. 9. 1. 2. Psychological Risk Factors

Psychological risk factors are grouped into interpersonal and intrapersonal. Some interpersonal problems such as low-income, being in a judicial process, living or growing up in disadvantaged areas are found to be related to higher depression and anxiety levels. Experiencing more traumatic life events like rape, abuse, and neglect also have a significant impact on displaying depressive and anxiety symptoms (Bacon, Child, & Barry, 1963; Kendler et al., 1995; Pigott, 2003; Santiago, Wadsworth, & Stump, 2011; Shechory & Ben-David, 2005).

Intrapersonal characteristics such as low self-esteem, lack of motivation, emotional dysregulation, and pessimism can also be possible explanations for why an individual experiences depressive and anxiety related symptoms (Sowislo & Orth, 2012).

2. 9. 1. 3. Social Problems

Meanwhile, problems like low social status, and discrimination are considered as social risk factors for depression and anxiety. Hoebel and his colleagues studied an individual's socio-economic status (SES) that was measured with years of education, occupation and income levels combined. They reached the conclusion that having low SES increased the risk for depression (2017). Mwinyi et. al. also reached similar results for anxiety (2017).

Another risk factor that might affect the development of depression and anxiety is experiencing discrimination. In a study conducted on migrant domestic workers it was found that being exposed to discrimination, rises the burden of both depression and

anxiety due to factors such as: low level of social support, negative attitudes toward the community where people live, and negative cognitive biases (B. J. Hall, Pangan, Chan, & Huang, 2019).

2. 9. 2. Risk Factors for the Development of Stress

There are several risk factors with have been shown to relate to developing stress-related symptoms such as: difficulty in relaxation, over competitiveness, having less self-efficacy, poor social skills, and low coping strategies. Matsushima and Shiomi examine the relationships between interpersonal stress and self-efficacy, social skills, coping strategies respectively (2003). They found that if an individual is high in these three domains in his/her life, s/he is more likely to experience lower levels of stress (Matsushima & Shiomi, 2003).

2. 10. Measuring Depression, Anxiety and Stress

Clinical diagnostic interviews, self-report questionnaires and skilled observation form the gold standard for the assessment of mental health disorders (Butcher et al., 2014). Over the years, a number of measures have been developed to cost-effectively and time-efficiently assess symptoms of depression, anxiety and stress in terms of symptomatology and severity in both clinical and research settings (Lader, 1981). A summary of the most widely used scales of depression, anxiety and stress are presented below.

2. 10. 1. Depression

There are many scales that measure depression and its related symptoms, most of which are structured in a quantitative format with self-report statements. These include the Hamilton Depression Rating Scale (HDRS), which consists of 21 items and has to be clinician administered (J. B. W. Williams, 1996); the Raskin Depression Rating Scale, which consists of 21 items and rates the severity of symptoms into three categories: verbal, behavioral and secondary symptoms of depression (e.g. dry mouth, gastrointestinal complaints, recent suicide attempts) (Rush, Beck, Kovacs, & Hollon, 1977); Zung's Self-Rating Depression Scale, which includes 20 items regarding

psychological and somatic symptoms of depression (Biggs, Wylie, & Ziegler, 1978); and the Beck Depression Inventory, which includes 21 self-report statements (Beck & Steer, 1984).

2. 10. 2. Anxiety

The most commonly used scales of anxiety disorders include the Hamilton Anxiety Rating Scale (HAM-A), which consists of 14 items and is clinician administered (Wolfgang, Raimund, Philipp, & Heuser, 1988); and the State-Trait Anxiety Scale (STAI), which is comprised of 40 items and was designed to differentiate anxiety from depression related symptoms (Shahid, Wilkinson, Marcu, & Shapiro, 2012). Researchers and clinicians assessing anxiety disorders often select a scale that is specific to the condition they would like to investigate. For example, the Generalized Anxiety Disorders 7-item Scale (GAD-7) is a widely used tool to assess GAD (Löwe et al., 2009), Liebowitz Social Anxiety Scale (LSAS) evaluates the effect of social anxiety on an individual's life (Fresco et al., 2001) and the Children's Separation Anxiety Scale (CSAS) assesses separation anxiety symptoms in children (Méndez, Espada, Orgilés, Llavona, & García-Fernández, 2014).

2. 10. 3. Stress

The earliest scale used to measure stress is the Holmes and Rahe Stress Scale, (also known as the Social Readjustment Rating Scale), which was first used to determine the influence of stress on 2500 US sailors (Holmes & Rahe, 1967). This scale is composed of 43 life events that an individual may experience, such as the death of a spouse, imprisonment or changes in financial circumstances (Lester, Leitner, & Posner, 2011). Participants identified which of the 43 events they had experienced, such scored their stress level. After the Holmes and Rahe Stress Scale, the number of stress scales developed and standardized increased sharply to a total of sixteen and included options for applications in both children/adolescents and adults (Dohrenwend, 2006). Researchers later came to a consensus that stress affects an individual's life depending on how they perceive it. As a result, the 10-item Perceived Stress Scale (PSS) was developed, which remains as one of the most widely used stress scales(Cohen, 1994).

2. 10. 4. Depression, Anxiety and Stress Scale (DASS)

Until the development of the Depression, Anxiety and Stress Scale (DASS), depression, anxiety and stress were assessed by separate measures (Brown, Bruce, Korotitscw, & Barlow, 1997). The DASS provides an opportunity for both researchers and clinicians to evaluate all three mental health domains simultaneously. Mental health conditions such as depression and anxiety are dimensional, which means they vary along a continuum of severity (Lovibond S.H. & Lovibond, 1995). Psychometrically, the DASS is fundamentally different from diagnostic measures because it reflects the underlying continuity of severity of symptoms and is dimensional rather than being categorical (Lovibond S.H. & Lovibond, 1995). Understanding the dimensional nature of depression, anxiety and stress leads to a more sophisticated assessment of disturbance and allows clinicians to recognize individuals at high risk of developing more extreme symptoms. In the current study, which is based on a clinical audit, the DASS was used to assess for symptoms of depression, anxiety and stress. Detailed psychometric properties of the DASS are provided in the methodology section.

2. 11. About Current Study

There is a growing body of research examining the relationship between depression, anxiety and stress and socio-demographic variables (Bayram & Bilgel, 2008; Mahmoud et al., 2012). The majority of research examines depression and anxiety but only a limited amount of studies examining the prevalence and profile of stress in a clinical setting.

The current study contributes useful information for future research projects intending to predict prevalence and profile for all three mental health conditions. The distinctive features of the current study include its scale and its setting. The current study utilized the DASS (Depression, Anxiety and Stress Scale). This scale differently from other scales measures depression, anxiety and stress simultaneously and assesses mental health conditions in a dimensional scale, which allows both clinicians and researchers, to distinguish high-risk patients and thus contributing the preventing further deterioration of their symptoms. Due to the limited number of research studies have

used the DASS in a clinical setting which has been frequently suggested by researchers should be considered for further studies. The current study examined depression, anxiety and stress in an Australian clinical setting, therefore contributing to the gap in research.

2. 11. 1. Aim

The aim of the current study is (1) to examine the prevalence of depression, anxiety and stress in a clinical setting and (2) to determine the profile of depression, anxiety and stress and socio-demographic characteristics of clinical population and (3) to determine the probability of developing depression, anxiety and stress levels according to age, gender, relationship status, a history of depression, a history of anxiety, socio-economic condition, level of education and occupation, cultural background, religion and regions of Melbourne. The findings obtained from the study will be discussed based on the literature review, then suggestions for further research will be mentioned.

It was hypotheses that:

H1: Symptoms of depression will be the more prevalent than symptoms of anxiety which will be just as prevalence of stress symptoms.

H2: Being female, being under the age of 50, being single, having children, having a previous history of depression, having a previous history of anxiety, living in a low socio-economic condition, having a low level of education and occupation, being a member of minority religious belief, being a member of minority cultural background and living in Outer Melbourne will increase the severity level of depression.

H3: Being female, getting older, being single, having children, having a previous history of depression, having a previous history of anxiety, living in a low socio-economic condition, having a low level of education and occupation, being a member of minority religious belief, being a member of minority cultural background and living in Outer Melbourne will increase the severity level of anxiety and stress.

CHAPTER III

METHODOLOGY

3. 1. Study Design

This study is designed and carried out as a descriptive study. Descriptive research design consists of observing, identifying, labeling, counting and categorizing data, as well as providing some basic descriptive statistics such as means, standard deviations and correlational relationships between variables. Rather than manipulating the study responses, the purpose of this design is to demonstrate the study in its natural conditions (Heppner, Kivlighan, & Wampold, 2008). In this descriptive study, all variables are provided in quantitative format. Quantitative descriptions are generally based on the prevalence, incidence, size and measurable features of data (Polit & Beck, 2010).

3. 2. Data Source

The current study is a clinical audit based on a database that consists of 1836 participants. This database was created by Nasihah Consulting Group (NCG) which is a psychology private practice based in Melbourne, Australia. The database is comprised of children/adolescents and adults who presented for psychological treatment anytime between 2009- 2018 and contains information gathered during the normal course of clinical treatment. To protect and maintain patient confidentiality, data was provided to the current study in a de-identified form.

3. 3. Participants

The current study was approved by the Ethics Committee of Ibn Haldun University. Participants were extracted from the main database based on the following inclusion

criteria: (1) They had completed a DASS during the course of their treatment. If they had completed more than one DASS assessment, the first one they completed was utilized in the current study; (2) They had completed an intake form; (3) they were over the age of 17 years. A total of 1293 participants were excluded from the study because they did not complete a DASS, and a total of 53 participants were excluded because they were under the age of 17 years. A total of 490 individuals who met the inclusion criteria were extracted from the database and were included in the current study.

3. 4. Measures

3. 4. 1. DASS - Development and Validation of the Depression, Anxiety and Stress Scale

The Depression, Anxiety and Stress Scale (DASS) was developed by S. H Lovibond and P. F Lovibond in 1995 at the University of New South Wales (Australia). The scale was first administered to 950 first year university students and then in the process of standardization was administered to a community sample of 2914 individuals (1044 males, 1870 females) aged between 17 and 69.

The initial intention of the researchers was to create a non-clinical scale that measured symptoms of depression and anxiety. However, in the process, they perceived that there is a significant correlation between depressive and anxious symptoms and stress. Hereby, they added items related with stress to the scale. As a result, the DASS consists of three subscales: Depression, Anxiety and Stress.

The DASS includes a total of 42 self-report statements which individuals respond to by considering their mental state over the past week. Examples of items include '*I could not seem to experience any positive feelings at all*', '*I found it difficult to relax'*, '*I found it hard to calm down after something upset me*' respectively. The depression subscale measures low self-esteem, hopelessness, inability to experience enjoyment or satisfaction and devaluation of life; the anxiety subscale evaluates symptoms such as hyperarousal, fearfulness and skeletal musculature effects; and finally, the stress

subscale measures irritability, low threshold for becoming upset or frustrated and impatience (Brown et al., 1997; Lovibond & Lovibond, 1995).

The DASS is a widely used clinical measure and has been translated into approximately 50 different languages (Brown, Bruce, Korotitscw, & Barlow, 1997, Crawford & Henry, 2003, Antony, Cox, Enns, Bieling, & Swinson, 1998). There are two versions of the DASS, one with 42 items and a shorter version with 21 items. Researchers initially developed the DASS-42 and then subsequently validated and standardized the DASS-21. The current study utilizes the DASS-42 (a copy of the DASS-42 is provided in Appendix A).

3. 4. 2. Psychometric Properties of the DASS

Each of the subscales of the DASS-42 consist of 14 items which are randomly dispersed throughout the scale. The depression score is calculated with the statements 3, 5, 10, 13, 16, 17, 21, 24, 26, 31, 34, 37, 38 and 42, the anxiety score is calculated with the statements 2, 4, 7, 9, 15, 19, 20, 23, 25, 28, 30, 36, 40 and 41, the stress score is calculated with the statements 1, 6, 8, 11, 12, 14, 18, 22, 27, 29, 32, 33, 35 and 39. These statements are scored on a 4-point Likert scale, ranging from 0 (did not apply to me) to 3 (applied to me very much, most of the time).

Once the total scores are derived for each sub-scale, Table 3.4.2 is used to determine the severity of symptoms; ranging from normal to mild, moderate, severe and extremely severe in intensity (Crawford & Henry, 2003).

Table 3.4.2. Severity levels of depression, anxiety and stress

Severity	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18

Table 3.4.2. Severity levels of depression, anxiety and stress (continued)

Severity	Depression	Anxiety	Stress
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

In 1997, Brown and colleagues conducted a study about an application of DASS both in a large clinical sample and in an independent clinical sample. According to the findings, in a clinical sample (N=437), internal consistency (Cronbach's alpha) is provided with excellent alpha values for depression, anxiety and stress alpha= .96, .89 and .93 respectively. These results also matched up with the independent clinical sample. Moreover, in the study, the depression subscale provided significantly higher scores on mood disorders than on anxiety disorder groups. For the anxiety subscale, patients with panic disorder obtained higher anxiety scores than other patient groups. In brief, results show that subscales of DASS have a correlation with psychopathologies. (1997).

3. 4. 3. Intake Form & Clinical Variables

On their first visit to the NCG clinic, clients complete an intake form which collects demographic information such as their gender, date of birth, the suburb they live in, religion and cultural background. For each client, information about who they were referred by, their date of first presentation, their relationship status, whether they had children and whether they had a history of depression and anxiety was also collated from their clinical records.

3. 5. Analysis

3. 5. 1. Data Preprocessing

Several substantive factors such as gender, age, suburb, cultural background and religion were categorized according to the most inclusive and comprehensive level of estimate. Gender was classified in two categories: male and female. Age was aggregated into five age categories: 17-20, 20-29, 30-39, 40-49, and 50 and above. Clients came from one hundred and sixteen different suburbs, which were collated under the regions of Melbourne; Central Highlands and Goldfields, Gippsland, Goulburn Valley, Inner Melbourne, Mallee, Metropolitan Melbourne, Outer Melbourne, and Southwest. There were 3 clients who attended NCG clinic from outside of the state of Victoria and were categorized as 'Other'.

Clients came from more than sixty different cultural backgrounds, which were aggregated and evaluated under World Health Organization's regions; African Region, Regions of Americas, Eastern Mediterranean, European Region, South-East Asia and Western Pacific (World Health Organization, 2018). Beside these, there are two more categories; 'Dual' refers to people who are two different cultural background and 'Not Given' refers to not stated information regards to cultural background. Clients belonged to 12 different religions, which were grouped into five categories; Christianity, Islam, No Religion, Other Religions and Not Given. 'Not Given ' refers to not stated information regards to religion. Participant's referral sources were collected under three categories; General practitioner (GP), Lawyer, and Other.

3. 5. 2. Analysis Process

Statistical analysis was conducted using STATA (Software of Statistics and Data Science). Participants who did not fit the inclusion criteria were removed from the analysis. Descriptive statistics were used to identify the socio-demographic characteristics of the participants. Multiple statistical tests were conducted, including the D'Agostino and Pearson's tests for normality, Wilcoxon rank-sum test to determine the distributions, Levene's test for the homogeneity of variance, and Pearson and Spearman Correlation to assess the relationships between dependent

variables. Finally, *t*-test to compare two groups' means, one way ANOVA (Analysis of Variance) to contrast variables with more than two groups, Post-Hoc as a follow up, and lastly logistic regression was conducted for further description and prediction of probability for the results of the dichotomous variables.

CHAPTER IV

RESULTS

In this chapter, the results displaying the relationship between socio-demographic characteristics (gender, age, relationship status, having children, previous history of depression, previous history of anxiety, socio-economic condition, level of education and occupation, cultural background, religion, regions of Melbourne and referrer sources) and depression, anxiety and stress will be presented.

4. 1. Socio-Demographic Characteristics

The current study examines 490 participants, of which 281 (57.3%) are female and 209 (42.7%) are male. The age range of the participants are 17-20 (*n*=38), 20-29 (*n*=185), 30-39 (*n*=127), 40-49 (*n*=87) and 50+ (*n*=53) (Figure 4.1.1). The majority of the participants (37.76%) are between the ages 20 to 29, with the second biggest age group falling between 30 to 39 (25.92%). The average age of the participants is 34.1.

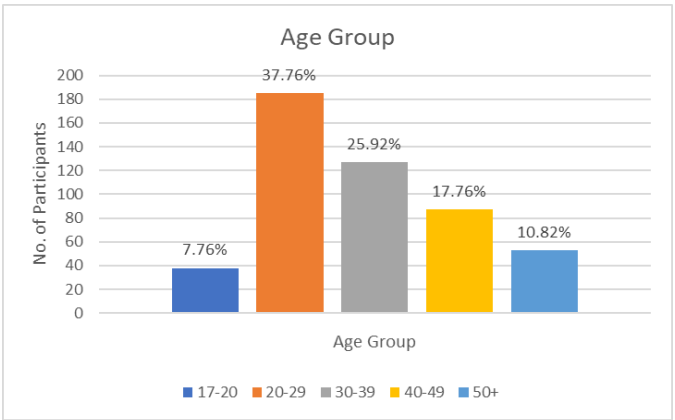

Figure 4.1.1. Age groups of participants

As shown in Figure 4.1.2, most of the participants were single (*n*= 207), followed by married (*n*= 197), in a relationship (*n*= 71) and other (*n*= 7).

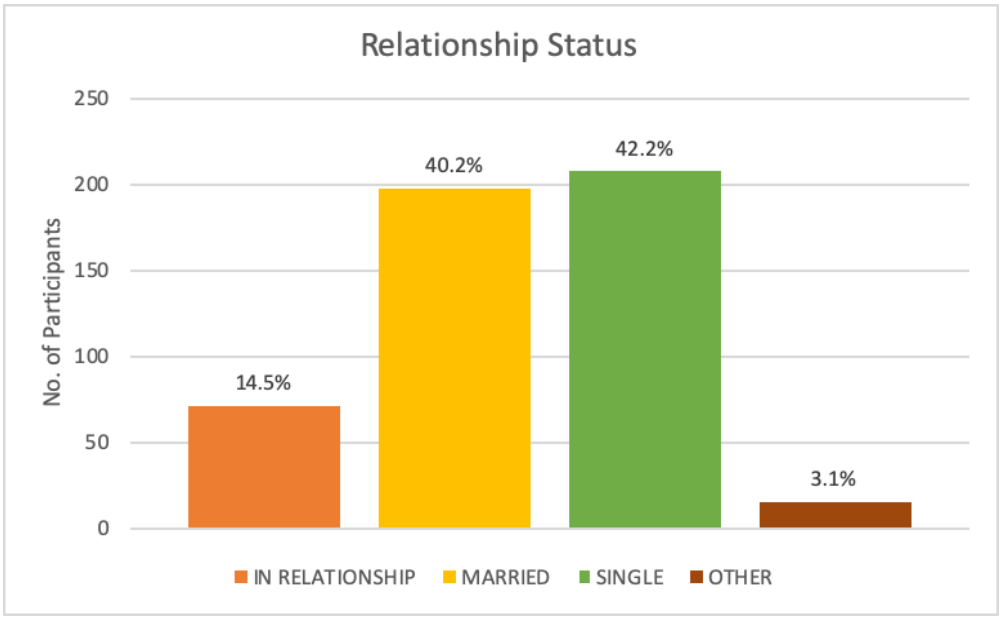

Figure 4.1.2. Marital status of participants

Figure 4.1.3 presents the participant with and without children. More than half of the participants had children (*n*= 272), 206 participants did not have any children and the rest of the participants did not report any information about their parental status.

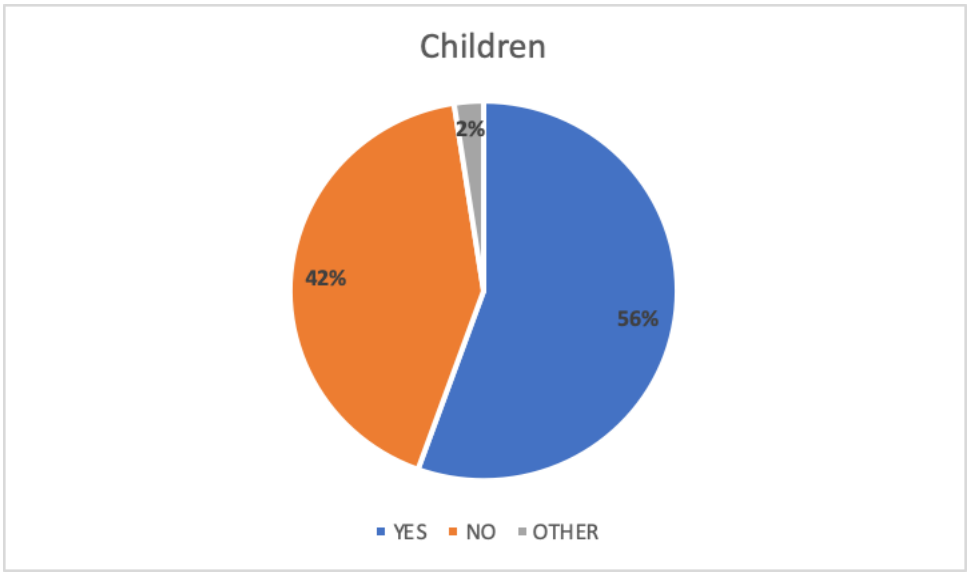

Figure 4.1.3. Participants with or without children

As shown in Figure 4.1.4 a total of 228 participants reported that they had previously experienced depression, whereas 258 participants had no previous history of depression.

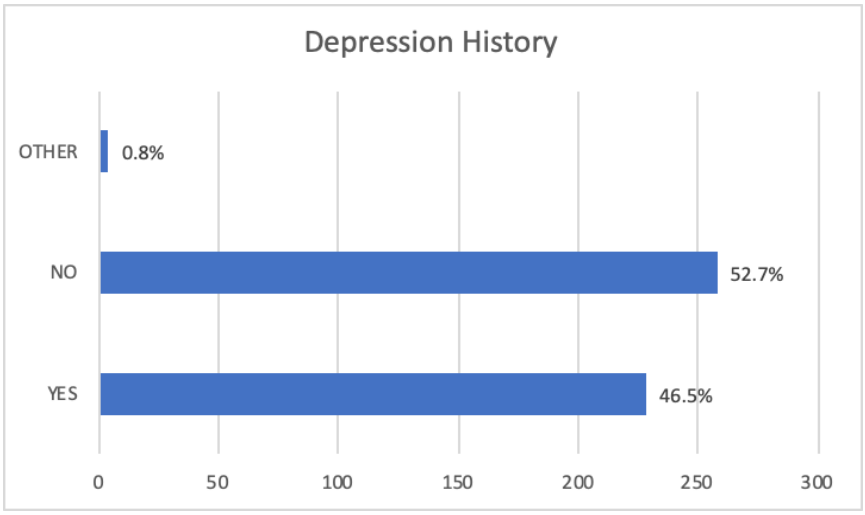

Figure 4.1.4. Depression history of participants

As shown in Figure 4.1.5, 176 participants reported a previous history of anxiety symptoms and 310 participants reported no previous history or anxiety .

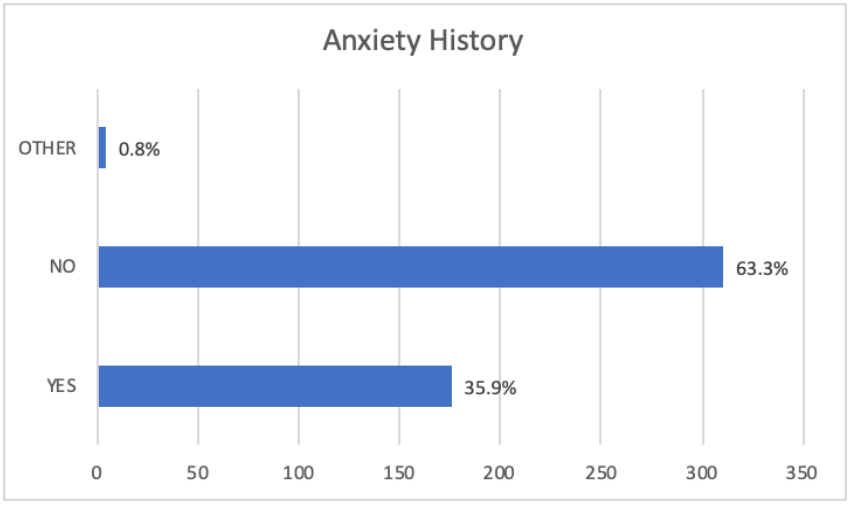

Figure 4.1.5 Anxiety history of participants

As seen in Figure 4.1.6, participants who presented in NCG clinic were geographically distributed into nine regions: Outer Metropolitan (*n*= 335), Metropolitan Melbourne (*n*= 131), Central Highlands and Goldfields (*n*= 9), Inner Melbourne (*n*= 8), the region

of Gippsland (*n*= 1), Goulburn Valley (*n*= 1), Mallee (*n*= 1), Southwest (*n*= 1) and Other regions (*n*= 3).

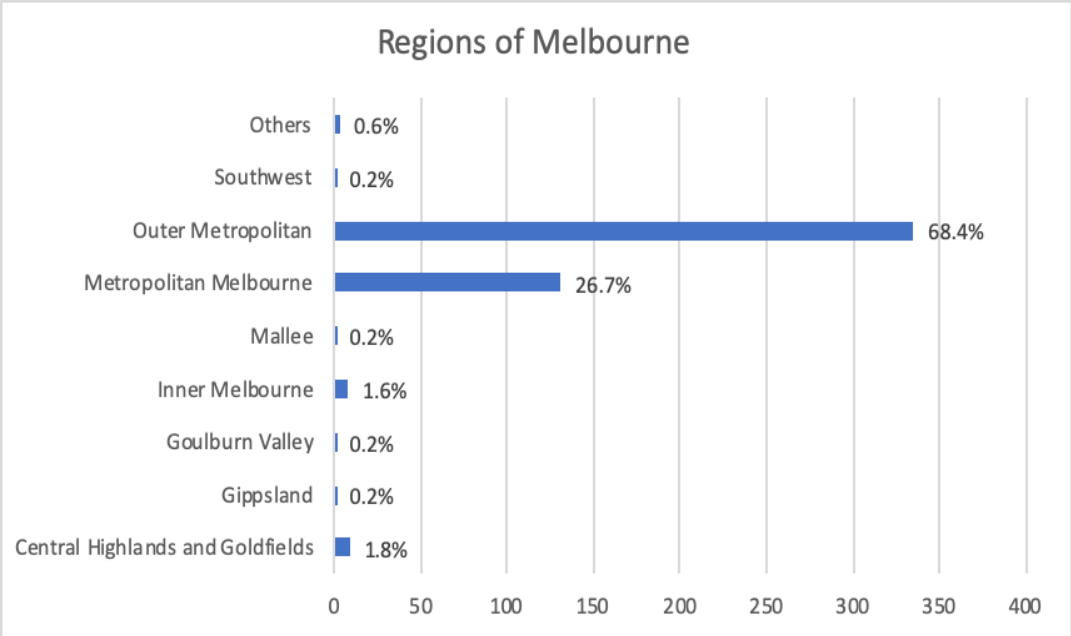

Figure 4.1.6. Geographical locations of participants

Socio-economic condition was extrapolated from the disadvantage scores of each region. Disadvantage scores of regions are obtained from Australian Bureau of Statistic. In Figure 4.1.7, regions of Melbourne were presented with their disadvantage score; whereby low score reflected low socio-economic conditions, and high score reflected high socio-economic condition. In the dataset, Inner Melbourne had the highest socio-economic condition, followed by Central Highlands and Goldfields, Southwest, Metropolitan Melbourne, Gippsland, Mallee, Goulburn Valley and Outer Metropolitan.

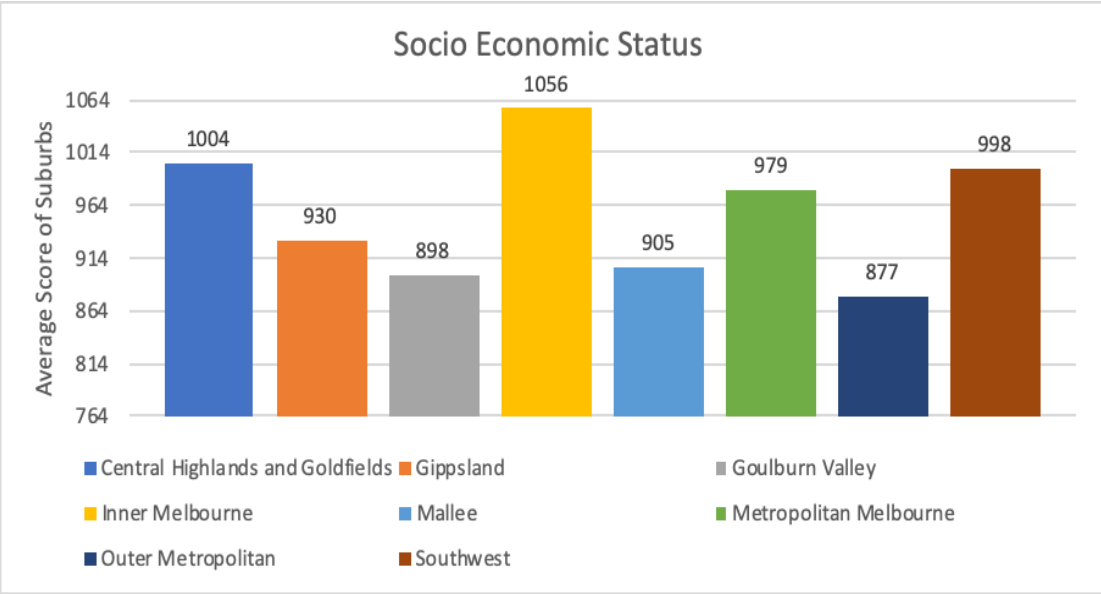

Figure 4.1.7. Socio-economic conditions of regions

The level of education and occupation scores are presented in Figure 4.1.8. Among the scores, the highest score showed the highest level of education and occupation, whereas the lowest score showed the lowest level of education and occupation. According to the results, Inner Melbourne had the highest level of education and occupation scores followed by Metropolitan Melbourne, Southwest, Central Highlands and Goldfields, Gippsland, Mallee, Outer Melbourne and Goulburn Valley.

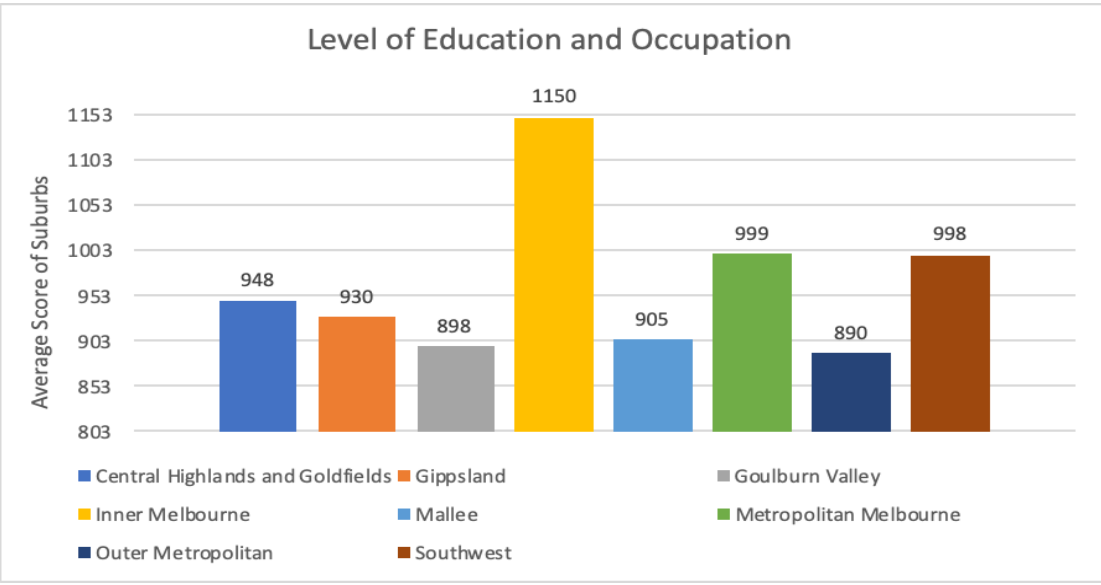

Figure 4.1.8. Level of education and occupation scores of regions

As shown in Figure 4.1.9, the majority of participants were from a European cultural background (*n*=159), followed by Eastern Mediterranean (*n*=123), Western Pacific (*n*=86), African (*n*=14), South-East Asia (*n*=14) and Americas (*n*=3). A total of 53 participants did not report their cultural background. A total of 38 participants were from a dual cultural background.

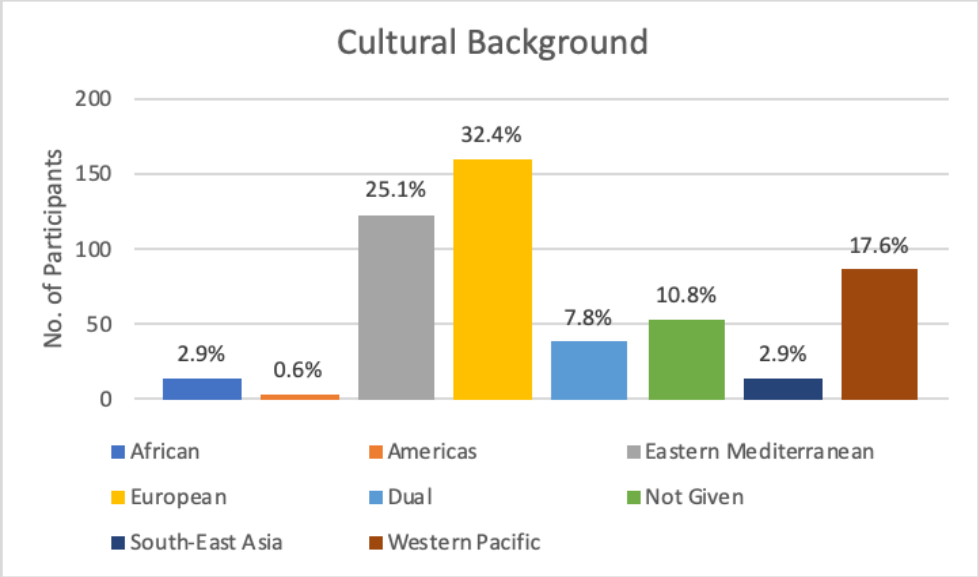

Figure 4.1.9. Distribution of participants' cultural background

As shown in Figure 4.1.10, 180 participants identified as being Christian and 309 identified as being Muslim. A total of 5 participants reported no religion, with 7 participants being grouped into other religions (*n*=7). A total of 97 participants did not report their religion in the intake form. Among the religions, most of the participants were members of Islam.

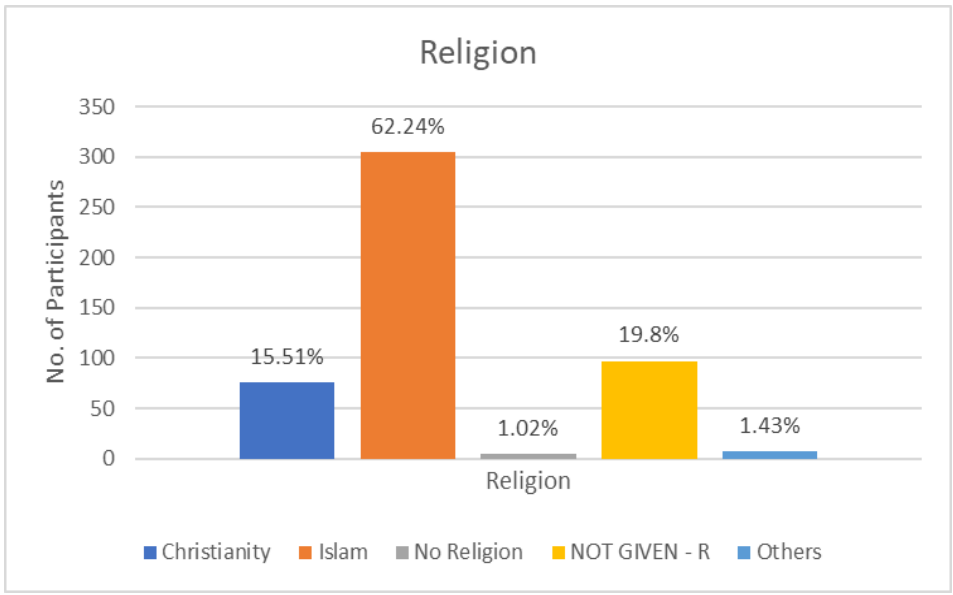

Figure 4.1.10: Participants' religions

As shown in Figure 4.1.11, half of the participants were referred by a general practitioner (GP) (*n*=251), more than a quarter were referred by a lawyer (*n*=143) and the rest of the participants were referred by other sources (*n*=96).

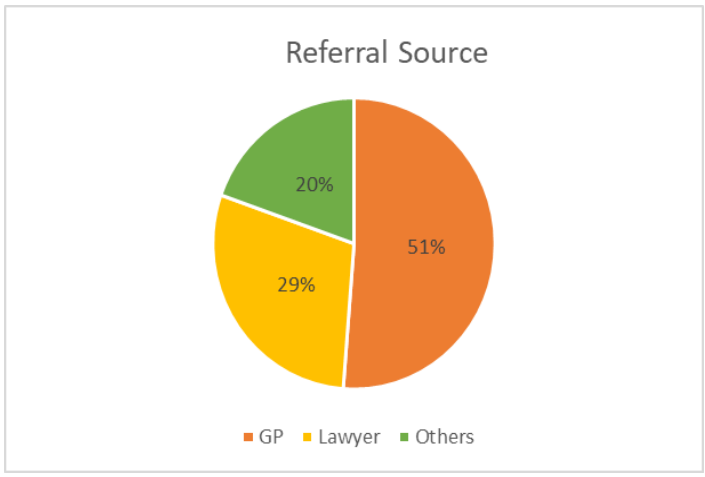

Figure 4.1.11: Participants' referral sources

4. 2. Socio-Demographic Characteristics for Depression, Anxiety and Stress

4. 2. 1. Socio-Demographic Characteristics for Depression

A detailed breakdown of socio-demographic variables according to severity levels of depression is presented in Table 4.2.1. Based on the descriptive statistics, participants who reported a normal level of depression were mainly females between the ages of 20-29, living in the Outer Metropolitan region, were Muslim, from a European cultural background, referred by their GP, married, had children and had no history of depression or anxiety. Individuals who had mild levels of depression were mostly females between the ages of 20-29, living in the Outer Metropolitan, were Muslim, from Eastern Mediterranean or European cultural backgrounds, were referred by their GP, were married, had at least one child and had no history of depression or anxiety. Individuals who had moderate levels of depression were mainly females, between the ages of 20 to 29, living in the Outer Metropolitan, were Muslim, from a European cultural background, referred by their GP, single, had at least one child and had no history of depression or anxiety. Individuals who were categorized into the severe and extremely severe levels of depression showed similar results regarding socio-demographic characteristics. They were mostly 20-29-year-old females, residing in the Outer Metropolitan, were Muslims, single, referred by their GP and had no history of anxiety. However, participants with severe levels of depression were from an Eastern Mediterranean cultural background, had no children and had no history of depression, whereas individuals with extremely severe levels of depression were originally from a European cultural background, had at least one child and had a history of depression.

Table 4.2.1. Descriptive statistics of severity levels of depression

	Severity levels of depression				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Age					
17-20	1.8% (9)	0.8% (4)	1.8% (9)	1.0% (5)	2.2% (11)
20-29	5.9% (29)	3.3% (16)	7.3% (36)	8.0% (39)	13.3% (65)
30-39	3.5% (17)	2.7% (13)	4.9% (24)	4.5% (22)	10.4% (51)
40-49	3.7% (18)	1.2% (6)	2.2% (11)	2.9% (14)	7.8% (38)
50+	1.2% (6)	0.4% (2)	1.6% (8)	1.4% (7)	6.1% (30)
Gender					
Female	8.6% (42)	4.9% (24)	9.8% (48)	10.4% (51)	23.7% (116)
Male	7.6% (37)	3.5% (17)	8.2% (40)	7.3% (36)	16.1% (79)
Relationship Status					
Single	4.3% (21)	3.5% (17)	8.2% (40)	8.2% (40)	18.2% (89)
Married	6.7% (33)	3.3% (16)	7.1% (35)	7.1% (35)	15.9% (78)
In a Relationship	4.3% (21)	1.6% (8)	2.2% (11)	1.8% (9)	4.5% (22)
Not Given	0.8% (4)	0% (0)	0.4% (2)	0.6% (3)	1.2% (6)

Table 4.2.1. Descriptive statistics of severity levels of depression (continued)

	Severity levels of depression				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Having Children					
Yes	9% (44)	4.7% (23)	9.2% (45)	8.4% (41)	24.3% (114)
No	5.9% (29)	3.5% (17)	8.8% (43)	8.8% (43)	15.1% (74)
Not Given	1.2% (6)	0.2% (1)	0% (0)	0.6% (3)	0.4% (2)
History of Depression**					
Yes	3.1% (15)	2.7% (13)	8.4% (41)	7.3% (36)	25.1% (123)
No	12.9% (63)	5.7% (28)	9.6% (47)	10.2% (50)	14.3% (70)
Not Given	0.2% (1)	0% (0)	0% (0)	0.2% (1)	0.4% (2)
History of Anxiety					
Yes	3.9% (19)	2.9% (14)	8.0% (39)	5.1% (25)	16.1% (79)
No	12.0% (59)	5.5% (27)	10.0% (49)	12.4% (61)	23.3% (114)
Not Given	0.2% (1)	0% (0)	0% (0)	0.2% (1)	0.4% (2)

Table 4.2.1. Descriptive statistics of severity levels of depression (continued)

	Severity levels of depression				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Culture					
African	0.8% (4)	0.4% (2)	0.2% (1)	0.4% (2)	1.0% (5)
Americas	0% (0)	0% (0)	0.2% (1)	0% (0)	0.4% (2)
Eastern Mediterranean	2.0% (10)	2.2% (11)	4.3% (21)	5.5% (27)	11.0% (54)
European	7.1% (35)	2.2% (11)	6.3% (31)	4.5% (22)	12.2% (60)
Dual	1.2% (6)	0.2% (1)	1.2% (6)	1.6% (8)	3.5% (17)
Not Given	2.2% (11)	1.0% (5)	2.0% (10)	1.8% (9)	3.7% (18)
South-East Asia	0.4% (2)	0.2% (1)	0.4% (2)	1.0% (5)	0.8% (4)
Western Pacific	2.2% (11)	2.0% (10)	3.3% (16)	2.9% (14)	7.1% (35)
Religion					
Christianity	2.2% (11)	1.0% (5)	3.3% (16)	3.1% (15)	5.9% (29)
Islam	11.0% (54)	4.7% (23)	10.4% (51)	10.8% (53)	25.3% (124)
No Religion	0% (0)	0.2% (1)	0.6% (3)	0.0% (0)	0.2% (1)
Not Given	2.9% (14)	2.4% (12)	3.7% (18)	3.7% (18)	7.1% (35)

Table 4.2.1. Descriptive statistics of severity levels of depression (continued)

	Severity levels of depression				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Religion					
Other	0% (0)	0% (0)	0% (0)	0.2% (1)	1.2% (6)
Regions of Melbourne					
Central Highlands and Goldfields	0% (0)	0.4% (2)	0.4% (2)	0.4% (2)	0.6% (3)
Gippsland	0% (0)	0% (0)	0% (0)	0% (0)	0.2% (1)
Goulburn Valley	0% (0)	0% (0)	0% (0)	0% (0)	0.2% (1)
Inner Melbourne	0.2% (1)	0% (0)	0.4% (2)	0.4% (2)	0.6% (3)
Mallee	0% (0)	0% (0)	0% (0)	0% (0)	0.2% (1)
Metropolitan Melbourne	3.7% (18)	3.1% (15)	5.7% (28)	4.5% (22)	9.8% (48)
Outer Metropolitan	12.0% (59)	4.9% (24)	11.4% (56)	12.0% (59)	28.0% (137)
Southwest	0.2% (1)	0% (0)	0% (0)	0.2% (1)	0.2% (1)
Other	0% (0)	0% (0)	0% (0)	0.2% (1)	0% (0)

Table 4.2.1. Descriptive statistics of severity levels of depression (continued)

	Severity levels of depression				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Referrer					
GP	8.2% (40)	4.9% (24)	8.6% (42)	9.4% (46)	20.2% (99)
Lawyer	5.3% (26)	2.4% (12)	4.5% (22)	5.5% (27)	11.4% (56)
Other	2.7% (13)	1.0% (5)	4.9% (24)	2.9% (14)	8.2% (40)

n = number of participants, *% =* percentage, *$p < .05$, **$p < .001$.

Further statistical measures such as *t*-test and ANOVA results showed that on the depression subscale, there were no statistically significance differences in terms of gender [$t(488) = 0.868$, $p = .385$)], age [$F(4, 486) = 1.83$, $p = 0.121$)], having children [$t(476) = -0.786$, $p = .432$)], anxiety history [$t(488) = -4.05$, $p = .685$)], relationship status [$F(2, 498) = 2.09$, $p = .100$)], regions of Melbourne [$F(7, 483) = 0.64$, $p = 0.724$)], and cultural background [$F(7, 483) = 1.12$, $p = 0.349$)]. On the other hand, statistically significant differences were found with regards to depression history [$t(488) = -5.447$, $p = .000$)].

4. 2. 2. Socio-Demographic Characteristics for Anxiety

The descriptive statistics for anxiety according to severity levels are presented in Table 4.2.2. Across all severity levels, participants were mainly between the ages of 20 to 29, from the Outer Metropolitan, Muslim, referred by their GP and had no anxiety history. In addition, individuals who have symptoms that fell within the normal level of anxiety were mainly male participants, originally came from a European cultural background, single, had no children and had no history of depression. Individuals who had mild levels of anxiety were mainly male, from an Eastern Mediterranean cultural background, were married, had no children and reported no history of depression. Individuals who had moderate level of anxiety were female, from European cultural background, single, had children, and had no previous history of depression and anxiety. Participants categorized on the severe levels of anxiety were mostly female, originally from European cultural background, were single, had children, and had previously experienced depression in their lives. Among the individuals who had reported an extremely severe level of anxiety, female participants outnumbered male participants by almost twice. Furthermore, they were mostly from Eastern Mediterranean cultural background, were married, had children, and had experienced depression before

Table 4.2.2. Descriptive statistics of severity levels of anxiety

	Severity levels of anxiety				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Age					
17-20	2.0% (10)	0% (0)	1.6% (8)	1.4% (7)	2.7% (13)
20-29	8.8% (43)	3.5% (17)	4.3% (21)	5.5% (27)	15.7% (77)
30-39	4.3% (21)	2.0% (10)	2.9% (14)	4.1% (20)	12.7% (62)
40-49	3.9% (19)	0.6% (3)	3.7% (18)	1.8% (9)	7.8% (38)
50+	1.4% (7)	0.4% (2)	1.6% (8)	2.2% (11)	5.1% (25)
Gender*					
Female	9.6% (47)	3.1% (15)	7.3% (36)	9.2% (45)	28.2% (138)
Male	10.3% (53)	3.5% (17)	6.7% (33)	5.9% (29)	15.7% (77)
Relationship Status**					
Single**	8.0% (39)	2.4% (12)	6.3% (31)	6.7% (33)	18.8% (92)
Married	7.6% (37)	3.3% (16)	4.5% (22)	5.7% (28)	19.2% (94)
In a Relationship**	3.9% (19)	0.8% (4)	3.3% (16)	2.0% (10)	4.5% (22)
Not Given	1.0% (5)	0% (0)	0% (0)	0.6% (3)	1.4% (7)

Table 4.2.2. Descriptive statistics of severity levels of anxiety (continued)

	Severity levels of anxiety				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Having Children*					
Yes	9.6% (47)	3.1% (15)	7.3% (36)	8.0% (39)	27.6% (135)
No	10.0% (49)	3.5% (17)	6.3% (31)	6.3% (31)	15.9% (78)
Not Given	0.8% (4)	0% (0)	0.8% (4)	0.4% (2)	0.4% (2)
History of Depression**					
Yes	5.7% (28)	2.4% (12)	5.9% (29)	8.4% (41)	24.1% (118)
No	14.5% (71)	4.1% (20)	8.2% (40)	6.7% (33)	19.2% (94)
Not Given	0.2% (1)	0% (0)	0% (0)	0% (0)	0.6% (3)
History of Anxiety*					
Yes	4.7% (23)	2.4% (12)	5.1% (25)	5.9% (29)	17.8% (87)
No	15.5% (76)	4.1% (20)	9.0% (44)	9.2% (45)	25.5% (125)
Not Given	0.2% (1)	0% (0)	0% (0)	0.2% (1)	0.6% (3)

Table 4.2.2. Descriptive statistics of severity levels of anxiety (continued)

	Severity levels of anxiety				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Culture					
African	1.0% (5)	0.4% (2)	0% (0)	0.2% (1)	1.2% (6)
Americas	0% (0)	0% (0)	0.2% (1)	0.2% (1)	0.2% (1)
Eastern Mediterranean	2.4% (12)	2.4% (12)	2.9% (14)	3.5% (17)	13.9% (68)
European	9.4% (46)	1.6% (8)	4.5% (22)	4.9% (24)	12.0% (59)
Dual	1.2% (6)	0.2% (1)	1.4% (7)	0.8% (4)	4.1% (20)
Not Given	1.8% (9)	1.2% (6)	2.4% (12)	1.6% (8)	3.7% (18)
South-East Asia	0.6% (3)	0.0% (0)	0.2% (1)	0.6% (3)	1.4% (7)
Western Pacific	3.9% (19)	0.6% (3)	2.4% (12)	3.3% (16)	7.3% (36)
Religion					
Christianity	2.7% (13)	0.6% (3)	2.9% (14)	2.7% (13)	6.7% (33)
Islam	13.7% (67)	4.1% (20)	7.6% (37)	8.2% (40)	28.8% (141)
No Religion	0.6% (0)	0% (0)	0.2% (1)	0%(0)	0.2% (1)
Not Given	3.5% (17)	1.8% (9)	3.5% (17)	4.1% (20)	6.9% (34)
Other	0% (0)	0% (0)	0% (0)	0.2% (1)	1.2% (6)

Table 4.2.2. Descriptive statistics of severity levels of anxiety (continued)

	Severity levels of anxiety				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Regions of Melbourne					
Central Highlands and Goldfields	0.6% (3)	0% (0)	0%(0)	0.4% (2)	0.8% (4)
Gippsland	0% (0)	0% (0)	0% (0)	0% (0)	0.2% (1)
Goulburn Valley	0% (0)	0% (0)	0% (0)	0% (0)	0.2% (1)
Inner Melbourne	0.6% (3)	0% (0)	0.6% (3)	0% (0)	0.4% (2)
Mallee	0% (0)	0% (0)	0% (0)	0% (0)	0.2% (1)
Metropolitan Melbourne	6.1% (30)	2.4% (12)	3.9% (19)	4.5% (22)	9.8% (48)
Outer Metropolitan	12.7% (62)	4.1% (20)	9.6% (47)	12.2% (50)	31.8% (156)
Other	0.4% (2)	0% (0)	0% (0)	0% (0)	0.2% (1)
Southwest	0% (0)	0% (0)	0% (0)	0% (0)	0.2% (1)

Table 4.2.2. Descriptive statistics of severity levels of anxiety (continued)

	Severity levels of anxiety				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Referrer					
GP	10.4% (51)	3.5% (17)	5.9% (29)	8.2% (40)	23.3% (114)
Lawyer	5.9% (29)	1.4% (7)	4.5% (22)	4.9% (24)	12.4% (61)
Other	4.1% (20)	1.6% (8)	3.7% (18)	2.0% (10)	8.2% (40)

n = number of participants, *% =* percentage, *$p < .05$, **$p < .001$.

On the anxiety subscale, there were significant differences with regards to gender [$t(488) = 2.951$, $p = .003$)], depression history [$t(488) = -4.561$, $p = .00$], having children [$t(476) = -2.357$, $p = .018$], previously experienced anxiety [$t(488) = -2.233$, $p = .026$)] and relationship status [$F(2, 498) = 3.74$, $p = .01$)]. According to Post HOC results for relationship status, being single [$F(2, 498) = 7.54$, $p = .00$)] and being in a relationship [$F(2, 498) = 8.25$, $p = .00$)] were found to be statistically significant. On the anxiety subscale, there were no statistically significant differences in terms of age [$F(4, 494) = 1.37$, $p = .242$)], religion [$F(4, 494) = 2.05$, $p = .085$)], regions of Melbourne [$F(7, 493) = 1.40$, $p = .204$)] and cultural background [$F(4, 493) = 1.69$, $p = .108$)].

4. 2. 3. Socio-Demographic Characteristics for Stress

The descriptive statistics for stress according to severity levels are presented in Table 4.2.3. Across all severity levels, participants were mainly between 20-29 years old, Muslim, from the Outer Metropolitan, referred by their GPs and had no previous history of anxiety. Individuals who reported a normal or mild level of stress were mostly women, from a European cultural background, single and had no depression history. Nearly half of the participants who reported mild levels of stress had no children, the rest of them had children. Whereas, for the moderate level of stress, the number of male participants was slightly higher than female participants and most of these male participants were European, single, had no children and had no history of depression. Individuals who fell within the severe or extremely severe levels of stress were mostly females. However, for the severe level of stress individuals were mainly European, single and had no history of depression. For extremely severe levels of stress, individuals were mainly from an Eastern Mediterranean cultural background, married, had children and had previously experienced depression.

Table 4.2.3. Descriptive statistics of severity levels of stress

	Severity levels of stress				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Age					
17-20	2.7% (13)	0.6% (3)	1.6% (8)	1.4% (7)	1.4% (7)
20-29	7.1% (35)	5.9% (29)	6.5% (32)	6.7% (33)	11.4% (56)
30-39	4.9% (24)	2.7% (13)	4.5% (22)	6.5% (32)	7.3% (36)
40-49	4.1% (20)	1.6% (8)	2.9% (14)	4.3% (21)	4.9% (24)
50+	1.2% (6)	1.6% (8)	1.8% (9)	2.7% (13)	3.5% (17)
Gender*					
Female	10.2% (50)	6.7% (33)	8.8% (43)	12.7% (62)	19.0% (93)
Male	9.8% (48)	5.7% (28)	8.6% (42)	9.0% (44)	9.6% (47)
Relationship Status*					
Single	8.0% (39)	5.7% (28)	7.6% (37)	10.0% (49)	11.0% (54)
Married	7.1% (35)	4.3% (21)	6.7% (33)	8.0% (39)	14.1% (69)
In a Relationship	4.1% (20)	2.2% (11)	2.2% (11)	3.3% (16)	2.7% (13)
Not Given	0.8% (4)	0.2% (1)	0.8% (4)	0.4% (2)	0.8% (4)

Table 4.2.3. Descriptive statistics of severity levels of stress (continued)

	Severity levels of stress				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Having Children*					
Yes	9.2% (45)	6.1% (30)	9.0% (44)	13.5% (66)	17.8% (87)
No	9.8% (48)	6.1% (30)	7.8% (38)	7.8% (38)	10.6% (52)
Not Given	1.0% (5)	0.2% (1)	0.6% (3)	0.4% (2)	0.2% (1)
History of Depression**					
Yes	5.1% (25)	5.7% (28)	8.8% (43)	9.2% (45)	17.8% (87)
No	14.7% (72)	6.7% (33)	8.4% (41)	12.2% (60)	10.6% (52)
Not Given	0.2% (1)	0% (0)	0.2% (1)	0.2% (1)	0.2% (1)
History of Anxiety**					
Yes	5.9% (29)	4.1% (20)	5.1% (25)	8.2% (40)	12.7% (62)
No	13.9% (68)	8.4% (41)	12.0% (59)	13.3% (65)	15.7% (77)
Not Given	0.2% (1)	0% (0)	0.2% (1)	0.2% (1)	0.2% (1)

Table 4.2.3. Descriptive statistics of severity levels of stress (continued)

	Severity levels of stress				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Culture					
African	0.6% (3)	0.6% (3)	0.6% (3)	0% (0)	1.0% (5)
Americas	0% (0)	0% (0)	0.2% (1)	0.2% (1)	0% (0)
Eastern Mediterranean	3.7% (18)	1.8% (9)	4.5% (22)	6.3% (31)	8.8% (43)
European	8.8% (43)	4.5% (22)	4.9% (24)	6.9% (34)	7.3% (36)
Dual	1.4% (7)	0.6% (3)	1.4% (7)	1.6% (8)	2.7% (13)
Culture					
Not Given	2.0% (10)	2.4% (12)	1.4% (7)	2.0% (10)	2.9% (14)
South-East Asia	0.4% (2)	0.2% (1)	1.0% (5)	0.6% (3)	0.6% (3)
Western Pacific	3.1% (15)	2.2% (11)	3.3% (16)	3.7% (18)	5.3% (26)
Religion					
Christianity	3.1% (15)	2.2% (11)	3.3% (16)	3.3% (16)	3.7% (18)
Islam	13.7% (67)	6.5% (32)	9.0% (44)	13.5% (66)	19.6% (96)
No Religion	0.4% (2)	0.4% (2)	0% (0)	0.2% (1)	0% (0)
Not Given	2.9% (14)	3.1% (15)	4.7% (23)	4.5% (22)	4.7% (23)

Table 4.2.3. Descriptive statistics of severity levels of stress (continued)

	Severity levels of stress				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Religion					
Other	0% (0)	0.2% (1)	0.4% (2)	0.2% (1)	0.6% (3)
Regions of Melbourne					
Central Highlands and Goldfields	0.4% (2)	0.4% (2)	0.2% (1)	0.4% (2)	0.4% (2)
Gippsland	0% (0)	0% (0)	0% (0)	0.2% (1)	0% (0)
Goulburn Valley	0% (0)	0% (0)	0% (0)	0% (0)	0.2% (1)
Inner Melbourne	0.6% (3)	0.2% (1)	0.2% (1)	0.2% (1)	0.2% (1)
Mallee	0% (0)	0% (0)	0% (0)	0.2% (1)	0% (0)
Metropolitan Melbourne	6.1% (30)	3.5% (17)	5.3% (26)	5.5% (27)	6.3% (31)
Outer Metropolitan	12.7% (62)	8.4% (42)	11.6% (57)	14.9% (73)	20.8%(102)
Other	0.2% (1)	0% (0)	0% (0)	0.2% (1)	0.2% (1)
Southwest	0% (0)	0% (0)	0% (0)	0% (0)	0.2% (1)

Table 4.2.3. Descriptive statistics of severity levels of stress (continued)

	Severity levels of stress				
	Normal	**Mild**	**Moderate**	**Severe**	**Ext Severe**
	% (*n*)	**% (*n*)**	**% (*n*)**	**% (*n*)**	**% (*n*)**
Referrer					
GP	10.2% (50)	5.9% (29)	8.8% (43)	11.0% (54)	15.3% (75)
Lawyer	5.7% (28)	4.3% (21)	5.7% (28)	6.1% (30)	7.3% (36)
Other	4.1% (20)	2.2% (11)	2.9% (14)	4.5% (22)	5.9% (29)

n = number of participants, *% =* percentage, *$p < .05$, **$p < .001$.

Statistically significant results were found for gender [$t(488) = 2.956$, $p = .003$)], depression history [$t(488) = -4.561$, $p = .00$)], having children [$t(476) = -2.357$, $p = .018$)], anxiety history [$t(488) = -2.341$, $p = .01$)] and relationship status [$F(2, 498) = 2.85$, $p = .03$)]. For relationship status, Post Hoc analysis revealed the relationship status is significant when all three subcategories are all together but not individually. On the stress subscale, there were no statistically significant differences in terms of age [$F(4, 494) = 1.08$, $p = .366$)], religion [$F(4, 494) = 1.32$, $p = .262$)], regions of Melbourne [$F(7, 493) = 1.04$, $p = .400$)] and cultural background [$F(4, 493) = 1.50$, $p = .164$)].

4. 3. Relationships Between Depression, Anxiety and Stress

4. 3. 1. Correlation

Correlational relationships between depression, anxiety and stress are shown in Table 4.3.1 According to the correlational matrix results, depression is positively and strongly correlated to anxiety ($r = 0.69$), anxiety is positively and strongly correlated to stress ($r = 0.76$), and lastly there is a positively and strongly correlation between depression and stress ($r = 0.74$) as well.

Table 4.3.1. Correlation matrix for each subscale

	Depression	**Anxiety**	**Stress**
Depression	1		
Anxiety	0.69	1	
Stress	0.74	0.76	1

4. 3. 2. Normality Tests

D'Agostino and Pearson's tests were conducted for normality. These tests combine skewness and kurtosis to measure normality. For all three subscales $p < 0.001$, therefore variables are found to be non-parametric. For the mean comparison of three

subscales, one-way ANOVA and Wilcoxon rank sum tests were utilized. The results show that depression and stress have identical means and are likely taken from the same distribution ($p = 0.08$) but the same results are not valid for depression-anxiety ($p < 0.01$) and anxiety-stress ($p < 0.01$), since there is evidence that their medians differ from each other.

Levene's test is commonly used to test non-parametric distributions. Depression-stress ($p = 0.163$) and anxiety-stress ($p = 0.076$) have equal variances but depression-anxiety have different variances since it shown to be significant ($p = 0.003$).

4. 3. 3. Prevalence of Depression, Anxiety and Stress

The prevalence of depression, anxiety and stress is presented in Table 4.3.3. For all three subscales, results show that the highest level of prevalence is extremely severe. Also, in an extremely severe level, anxiety has the highest prevalence rate among the subscales. For prevalence of depression, 83.29% participants rated having at least a mild or higher level of depression severity. The prevalence of anxiety for participants who had mild or a higher level of anxiety accounts to 79.59%, whereas for the stress prevalence 80% of the individuals reported at least a mild level of stress.

Table 4.3.3. Prevalence of Severity of Depression, Anxiety and Stress

	Normal ***n* (%)**	**Mild** ***n* (%)**	**Moderate** ***n* (%)**	**Severe** ***n* (%)**	**Ext. Severe** ***n* (%)**
Depression	79 (16.12)	41 (8.37)	88 (17.96)	87 (17.76)	195 (39.80)
Anxiety	100 (20.41)	32 (6.53)	69 (14.08)	74 (15.10)	215 (43.88)
Stress	98 (20.0)	61 (12.45)	85 (17.35)	106 (21.63)	140 (28.57)

n = number of participants, % = percentage

4. 3. 4. Female to Male Ratios of Depression, Anxiety and Stress

The female to male ratios of depression, anxiety and stress are presented in Table 4.3.4. According to DASS, if the depression score is lower than 9, the individual is considered as normal; if it is 9 or more, then the individual is categorized as showing depression symptoms. In the present study, for depression, the female to male ratio was 1.34:1. For anxiety scores, DASS considered all the individuals who have a score of less than 7 as normal, and those who have a score of 7 or more as having anxiety symptoms. For anxiety, the female to male ratio was 1.50:1. For stress scores, DASS considered all the individual who have a score less than 14 is considered normal, and those who have a score of 14 or more as having either mild, moderate, severe or extremely severe level of stress. For stress, the female to male ratio was 1.43:1.

Table 4.3.4. Female to male rations of depression, anxiety and stress

DEPRESSION		
Cut off Score	**Female (*n*)**	**Male (*n*)**
<9	42	37
9+	231	172
Ratio	1.34	1
ANXIETY		
Cut off Score	**Female (*n*)**	**Male (*n*)**
<7	47	53
7+	234	156
Ratio	1.50	1
STRESS		
Cut off Score	**Female (*n*)**	**Male (*n*)**
<14	50	48
14-48	231	161
Ratio	1.43	1

n = number of participants

4. 4. Prediction of Developing Depression, Anxiety and Stress Symptoms

In order to test the study hypotheses, logistic regression is conducted to determine which demographic factors increase the severity levels of depression, anxiety and stress. The severity of depression, anxiety, and stress are clustered into two categories to conduct logistic regression. Normal, mild, and moderate severity levels of subscales are evaluated as the first category, therefore noted as 0. Severe and extremely severe levels of are evaluated as the second category, marked as 1. Consequently, if the odd ratio of a variable is between zero and one, then it belongs to normal, mild, or moderate severity levels. If it is higher than one, then it is either severe or extremely severe level. During the statistical analysis process, in Model 1 all predictors were included. When running Model 2, the significant variables were maintained, whereas the rest was removed. Then the Model 3 was run, after repeating the same procedure as in Model 2.

4. 4. 1. Depression

The summary of logistic regression models for predicting the severity level of depression is shown in Table 4.4.1 with 95% confidence interval of crude odds ratio, standard errors (SE) and *p*-values (P>|t|). Logistic regression includes all the independent variables of the study: age, gender, socio-economic condition, regions of Melbourne, religion, cultural background, referrer, relationship status, having children, depression history and anxiety history.

Hypothesis 2 proposes that socio-demographic characteristics such as being female, under the age of 50, being single, having children, having a previous history of depression, having a previous history of anxiety, living in a low socio-economic condition, having a low level of education and occupation, being a member of minority religious belief, being a member of minority cultural background and living in Outer Melbourne will increase the severity level of depression, anxiety and stress. Logistic regression analysis for Model 1 identified that being between the ages of 30-30 (OR= .28, 95% CI= 0.82-0.98) or 40-49 (OR= 0.42, 95% CI= 0.19-0.94), having depression history (OR= 3.43, 95% CI= 2.46-4.79), having a low socio-economic condition (OR= 0.01, 95% CI= 0.00-1.08), having low levels of education and occupation (OR= 0.00,

95% CI= 0.010-0.93) and believing in Christianity (OR= 8.66, 95% CI= 1.06-64.47) or Islam (OR= 9.36, 95% CI= 1.13-76.9) were statistically significant for predicting severe or extremely severe levels of depression. In contrast, gender, relationship status, having children, anxiety history, cultural background, referrer and regions of Melbourne did not predict the severity of depression.

In Model 2, significant results were obtained for being between the ages of 17-20 (OR= 0.15, 95% CI= 0.06-0.35), 20-29 (OR= 0.24, 95% CI= 0.09-0.58), 30-39 (OR= 0.26, 95% CI= 0.11-0.61), 40- 49 (OR= 0.40, 95% CI= 0.20-0.76), having children (OR= 0.59, 95% CI= 0.35-0.99), having previous history of depression (OR= 3.27, 95% CI= 2.33-4.59), having a low socio-economic condition (OR= 0.15, 95% CI= 0.00-0.75), having low levels of education and occupation (OR= 0.00, 95% CI= 0.00-0.18), being from an Eastern Mediterranean cultural background (OR= 1.99, 95% CI= 0.98-4.01) and believing in Christianity (OR= 9.63, 95% CI= 1.31-70.55) or Islam (OR= 10.26, 95% CI= 1.28-82.04). Individuals characterized with these variables were more likely to experience severe or extremely severe levels of depression compared to others.

Since gender was not a significant variable to predict the probability of depression, it has been removed in Model 3. When running Model 3, the same results that were obtained in Model 2 were found.

Table 4.4.1. Summary of logistic regression analysis for depression variables (N = 490)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Age									
17-20	0.15 (0.21-1.13)	.15	0.06	0.15 (0.06-0.35)	.06	0.00**	0.16 (0.07-0.35)	.06	0.00**
20-29	0.25 (0.59-1.12)	.19	0.07	0.24 (0.09-0.58)	.10	0.00*	0.25 (0.11-0.57)	.10	0.00**
30-39	0.28 (0.82-0.98)	.17	0.04*	0.26 (0.11-0.61)	.11	0.00*	0.27 (0.12-0.62)	.11	0.00**
40-49	0.42 (0.19-0.94)	.17	0.03*	0.40 (0.20-0.76)	.13	0.00*	0.41 (0.22-0.77)	.13	0.00**
50+	1			1			1		
Gender									
Female	1.24 (0.71-2.16)	.35	0.44	1.23 (0.70-2.15)	.35	0.46			
Male	1			1					
Relationship Status									
Single	0.97 (0.38-2.44)	.45	0.95						
Married	0.78 (0.49-1.25)	.18	0.31						
In a relationship	0.75 (0.32-1.72)	.31	0.49						
Having Children	0.579 (0.29-1.15)	.20	0.12	0.59 (0.35-0.99)	.15	0.04*	0.62 (0.39-0.98)	.14	0.04*
Depression History	3.43 (2.46-4.79)	.58	0.00**	3.27 (2.33-4.59)	.56	0.00**	3.22 (2.92-4.52)	.55	0.00**
Anxiety History	0.77 (0.50-1.19)	.16	0.24						

Table 4.4.1. Summary of logistic regression analysis for depression variables (N = 490) (continued)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Socio-economic condition	0.01 (0.00-1.08)	.02	0.05*	0.15 (0.00-0.75)	.03	0.03*	0.01 (0.00-0.65)	.02	0.03*
Level of education and occupation	0.00 (0.00-0.93)	.00	0.04*	0.00(0.00-0.18)	.00	0.01**	0.00 (0.00-0.17)	.00	0.01**
Cultural Background									
African	1.06 (0.21-5.15)	.85	0.93	1.04 (0.24-4.51)	.77	0.95			
American	1.28 (0.39-4.12)	.76	0.67	1.03 (0.46-2.34)	.43	0.92	1.86 (1.23-2.82)		
Eastern Mediterranean	1.99 (0.93-4.24)	.76	0.07	1.99 (0.98-4.01)	.71	0.05*			
European	0.90 (0.37-2.13)	.39	0.81	0.90 (0.40-2.06)	.38	0.82			
Half	1.86 (0.85-4.09)	.74	0.11	1.91 (0.90-4.07)	.73	0.09			
Not Given	1.24 (0.63-2.42)	.42	0.51	1.28 (0.68-2.42)	.41	0.43			
South-East Asia	1.14 (0.25-5.17)	.88	0.85	1.18 (0.28-4.93)	.86	0.81			
Western Pacific	1			1					

Table 4.4.1. Summary of logistic regression analysis for depression variables (N = 490) (continued)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Religion									
Christianity	8.26 (1.06-64.47)	8.66	0.04*	9.63 (1.31-70.55)	9.78	0.02*	7.65 (1.16-50.40)	7.36	0.03*
Islam	9.36 (1.13-76.90)	10.05	0.03*	10.26 (1.28-82.04)	10.88	0.02*	8.11 (1.07-61.23)	8.36	0.04*
No Religion	7.18 (0.51-100.73)	9.68	0.14	1	10.09	0.11	1	7.51	0.12
Not Given	1			7.83 (0.62-97.74)			6.31 (0.61-64.91)		
Other	1			1			1		
Regions of Melbourne									
Central Highlands and Goldfields	0.94 (0.16-5.51)	.84	0.94						
Gippsland	1								
Goulburn Valley	1.34 (0.17-10.38)	.40	0.77						
Inner Melbourne	1								
Mallee	0.87 (0.45-1.67)	.28	0.69						
Metropolitan Melbourne	1								

Table 4.4.1. Summary of Logistic Regression Analysis for Depression Variables (N = 490) (continued)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Regions of Melbourne									
Outer Metropolitan	1								
Other	1								
Southwest									
Referrer									
GP	0.97 (0.66-1.41)	.18	0.88						
Lawyer	1.10 (0.71-1.70)	.24	0.65						
Other	1								
R^2		0.10			0.09			0.06	

*$p < .05$, **$p < .01$.

4. 4. 2. Anxiety

The results of logistic regression models partially confirmed hypothesis 3. The summary of results is listed in Table 4.4.2. According to Model 1, being between the ages of 40-49 (OR= 1.18, 95% CI= 0.04 – 0.71), being female (OR= 0.70, 95% CI= 1.08 – 2.68), being single (OR= 0.53, 95% CI= 0.27-1.01), having a history of depression (OR= 2.56, 95% CI= 1.64-3.99), having a history of anxiety (OR= 1.49, 95% CI= 0.99-2.24) and being a member of Christianity (OR= 13.51, 95% CI= 1.94-93.76), Islam (OR= 11.95, 95% CI= 1.74-82.13), or Not Given religion group (OR= 10.92, 95% CI= 1.24-95.49) significantly predicted severe or extremely severe levels of anxiety.

When conducting Model 2, only statistically significant variables in Model 1 were included. The results showed that being female (OR= 1.66, 95% CI= 1.07 – 2.57), having a history of depression (OR= 2.69, 95% CI= 1.71 – 4.22), being from a Eastern Mediterranean cultural background (OR= 1.69, 95% CI= 1.00 – 2.85), being a member of Christianity (OR= 9.21, 95% CI= 0.91 – 92.39) or Islam (OR= 8.73, 95% CI= 0.93 – 81.92) significantly predicted severe or extremely severe levels of anxiety. In contrast, gender did not predict the anxiety.

Since socio-economic condition and regions of Melbourne were not found as a significant variable in Model 1 and Model 2, they have been removed in Model 3. In this model, significant results were obtained for female (OR= 1.81, 95% CI= 1.19-2.75), having a previous history of depression (OR= 2.74, 95% CI= 1.78-4.22), having a low level of education and occupation (OR= 0.09, 95% CI= 0.01-0.63), being from an Eastern Mediterranean cultural background (OR= 2.04, 95% CI= 1.26-3.28), believing in Christianity (OR= 8.76, 95% CI= 1.16-66.08) or Islam (OR= 7.49, 95% CI= 1.02-54.71).

Table 4.4.2. Summary of logistic regression analysis for anxiety variables (N = 490)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Age									
17-20	0.12 (0.00-2.15)	17	0.15						
20-29	0.14 (0.13-1.63)	.18	0.11						
30-39	0.21 (0.35-1.27)	.19	0.09						
40-49	0.18 (0.04-0.71)	.12	0.01**						
50+	1								
Gender									
Female	1.70 (1.08-2.68)	.39	0.02*	1.66 (1.07-2.57)	.37	0.02*	1.81 (1.19-2.75)	.388	0.00**
Male	1			1			1		
Relationship Status									
Single	0.67 (0.39-1.14)	.18	0.14	0.65 (0.39-1.10)	.17	0.11			
Married	0.53 (0.27-1.01)	.17	0.05*	0.66 (0.37-1.16)	.19	0.15			
In a relationship	0.53 (0.26-1.08)	.19	0.08	0.56 (0.30-1.05)	.18	0.07			
Having Children	1.15 (0.68-1.95)	.30	0.59						
Depression History	2.56 (1.64-3.99)	.58	0.00**	2.69 (1.71-4.22)	.62	0.00**	2.74 (1.78-4.22)	.60	0.00**
Anxiety History	1.49 (0.99-2.24)	.31	0.05*						

Table 4.4.2. Summary of logistic regression analysis for anxiety variables (N = 490) (continued)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Socio-economic condition	13.72 (0.13-1417.8)	32.48	0.26	2.13 (0.44-10.18)	1.70	0.34			
Level of education and occupation	20.02 (0.01-33734.6)	75.91	0.42				0.09 (0.01-0.63)	.08	0.01**
Cultural Background									
African	0.85 (0.23-3.10)	.56	0.81	0.67 (0.17-2.51)	.45	0.55			
American	0.92 (0.35-2.43)	.45	0.87	0.85 (0.40-1.78)	.32	0.67			
Eastern Mediterranean	1.70 (0.96-3.00)	.49	0.06	1.69 (1.00-2.85)	.45	0.04*	2.04 (1.26-3.28)	.49	0.00**
European	0.74 (0.46-1.20)	.18	0.23	0.76 (0.43-1.31)	.21	0.33			
South-East Asia	0.90 (0.23-3.46)	.62	0.88	0.98 (0.30-3.17)	.58	0.97			
Western Pacific	1			1					
Half	1.48 (0.56-3.89)	.72	0.42	1.28 (0.54-3.02)	.56	0.56			
Not Given	1.02 (0.48-2.17)	.39	0.94	0.92 (0.52-1.61)	.26	0.77			

Table 4.4.2. Summary of logistic regression analysis for anxiety variables (N = 490) (continued)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Religion									
Christianity	13.51 (1.94-93.76)	13.35	0.00**	9.21 (0.91-92.39)	10.83	0.05*	8.76 (1.16-66.08)	9.03	0.03*
Islam	11.95 (1.74-82.13)	11.75	0.01**	8.73 (0.93-81.92)	9.97	0.05*	7.49 (1.02-54.71)	7.60	0.04*
No Religion	1			1			1		
Not Given	10.92 (1.24-95.49)	12.08	0.03*	7.89 (0.61-101.10)	10.26	0.11	7.71 (0.80-73.86)	8.89	0.07
Other	1			1			1		
Regions of Melbourne									
Central Highlands and Goldfields	1.40 (0.36-5.44)	.97	0.62	1.65 (0.45-6.00)	1.08	0.44			
Gippsland	1			1					
Goulburn Valley	1			1					
Inner Melbourne	0.09 (0.12-0.75)	.10	0.06	0.15 (0.02-0.94)	.14	0.07			
Mallee	1			1					
Metropolitan Melbourne	0.59 (0.33-1.06)	.17	0.07	0.72 (0.45-1.16)	.17	0.18			

Table 4.4.2. Summary of logistic regression analysis for anxiety variables (N = 490) (continued)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Regions of Melbourne									
Outer Metropolitan	1			1					
Other	1			1					
Southwest	1			1					
Referrer									
GP	1.02 (0.62-1.68)	.26	0.91						
Lawyer	1.42 (0.82- 2.45)	.39	0.20						
Other	1								
R^2		0.11			0.09			0.07	

*$p < .05$. **$p < .01$.

4. 4. 3. Stress

The results of logistic regression models for stress partially confirmed hypothesis 3. The summary of results is presented in Table 4.4.3. In Model 1, the logistic regression results for the severity levels of stress identified that being married (OR= 1.57, 95% CI= 1.01-2.45) and having had a depression history (OR= 1.90, 95% CI= 1.39 – 2.58) were statistically significant for predicting severe or extremely severe level of stress.

In Model 2, only statistically significant variables in Model 1 were included. Findings of Model 2 displayed that having a previous history of depression (OR= 1.85, 95% CI= 1.36-2.53), having a low level of education and occupation (OR= 0.16, 95% CI= 0.03-0.75), and having no religious belief (OR= 0.10, 95% CI= 0.12-0.95) significantly predicted severe or extremely severe levels of stress.

Model 3 was conducted after maintaining only the significant variables in the equation. In Model 3 results showed that being married (OR= 1.60, 95% CI= 1.09-2.35), having a previous history of depression (OR= 2.02, 95% CI= 1.48-2.75), and having a low education and occupation levels (OR= 0.16, 95% CI= 0.03-0.82), more likely to predict severe or extremely severe levels of stress.

Table 4.4.3. summary of logistic regression analysis for stress variables (N = 490)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Age									
17-20	1.16 (0.10-13.09)	.43	0.90						
20-29	1.56 (0.27-8.85)	1.38	0.61						
30-39	1.24 (0.32-4.78)	.85	0.75						
40-49	0.91 (0.27-3.09)	.56	0.88						
50+	1								
Gender									
Female	1.69 (0.95-3.00)	.49	0.06	1.57 (0.91-2.70)	.43	0.10	1.62 (0.96-2.75)	.43	0.06
Male	1			1			1		
Relationship Status									
Single	1.57 (1.01-2.45)	.35	0.04*	1.45 (0.96-2.20)	.30	0.07	1.60 (1.09-2.35)	.31	0.01*
Married	1.08 (0.54-2.15)	.37	0.81	0.85 (0.50-1.47)	.23	0.57			
In a relationship	1.11 (0.59-2.10)	.36	0.73	0.84 (0.45-1.56)	.26	0.59			
Having Children	0.98 (0.52-1.83)	.31	0.96	1.11 (0.59-2.07)	.35	0.73			
Depression History	1.90 (1.39-2.58)	.29	0.00*	1.85 (1.36-2.53)	.29	0.00*	2.02 (1.48-2.75)	.31	0.00**
Anxiety History	1.41 (0.85-2.35)	.36	0.17	1.51 (0.94-2.40)	.35	0.08			

Table 4.4.3. Summary of logistic regression analysis for stress variables (N = 490) (continued)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Socio-economic condition	0.08 (0.00-3.96)	.16	0.20						
Level of education and occupation	0.00 (0.00-5.66)	.02	0.14	0.16 (0.03-0.75)	.21	0.02*	0.16 (0.03-0.82)	.13	0.02*
Cultural Background									
African	0.43 (0.09-2.07)	.34	0.29						
American	2.79 (0.44-17.65)	2.63	0.27						
Eastern Mediterranean	1.40 (0.63-3.10)	.56	0.40						
European	0.70 (0.30-1.59)	.29	0.39						
South-East Asia	0.81 (0.26-2.517)	.46	0.72						
Western Pacific	1								
Half	1.44 (0.59-3.48)	.64	0.41						
Not Given	1.03 (0.33-3.20)	.59	0.95						

Table 4.4.3. summary of logistic regression analysis for stress variables (N = 490) (continued)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Religion									
Christianity	0.58 (0.14-2.47)	.43	0.47	0.57 (0.16-1.98)	.36	0.38			
Islam	0.94 (0.22-3.87)	.67	0.93	0.73 (0.23-2.27)	.42	0.59			
No Religion	0.10 (0.00-1.26)	.13	0.07	0.10 (0.12-0.95)	.12	0.04*			
Not Given	0.67 (0.13-3.37)	.55	0.62	0.61 (0.18-2.02)	.37	0.42			
Other	1			1					
Regions of Melbourne									
Central Highlands and Goldfields	0.79 (0.26-2.39)	.44	.68						
Gippsland	1								
Goulburn Valley	1								
Inner Melbourne	1.05 (0.17-6.38)	.96	0.95						
Mallee	1								
Metropolitan Melbourne	0.92 (0.50-1.68)	.28	0.79						
Outer Metropolitan	1			1					

Table 4.4.3. Summary of Logistic Regression Analysis for Stress Variables (N = 490) (continued)

	Model 1			Model 2			Model 3		
Variable	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***	***Odds Ratio (95%)***	***SE***	***p-value***
Regions of Melbourne									
Other	1								
Southwest	1								
Referrer									
GP	0.76 (0.50-1.16)	.16	0.21						
Lawyer	0.78 (0.45- 1.35)	.21	0.37						
Other	1								
R^2		0.08			0.05*			0.04*	

*$p < .05$. **$p < .01$.

CHAPTER V

DISCUSSION

The aim of the current study was to examine (1) the prevalence of depression, anxiety and stress in a clinical setting; (2) to determine the profile of depression, anxiety and stress based on the socio-demographic characteristics (such as age, gender, relationship status, having children, history of depression, and socio-economic condition); (3) to examine the relationship between the socio-demographic characteristics and the probability of developing depression, anxiety and stress.

In this section, the findings of the current study will be evaluated and compared to previous research. Furthermore, the limitations of the current study will also be discussed and suggestions made for future research.

5. 1. Depression, Anxiety and Stress

5. 1. 1. Correlations

All three subscales of the DASS were highly correlated to each other. Correlations between depression, anxiety and stress scores are consistent with findings in previous studies using the DASS scale (Clara, Cox, & Enns, 2001; Crawford & Henry, 2003; Gloster et al., 2008).

5. 1. 2. Prevalence

In the current study, the total prevalence of all 3 subscales when collapsed across severity groups was unusually high. The high prevalence of depression, anxiety and stress is most likely a reflection of the assessment protocol at Nasihah Consulting. The DASS was administered only in cases where symptoms of depression, anxiety or stress

were clinically implicated in the referral information and intake assessment. The highest percentage of participants fell into the extremely severe level of functioning for all three subscales.

As hypothesized, the findings reveal that depression was more prevalent than anxiety, whereas stress had a similar rate of prevalence when compared to anxiety. Whilst the prevalence of depression, anxiety and stress was noted to be higher than that reported in previous studies, the trends in the rate of prevalence was found to be consistent with previous research (Bayram & Bilgel, 2008; Mahmoud et al., 2012).

5. 2. Profile of Depression, Anxiety and Stress

5. 2. 1. Gender and Age

In the current study, there were more female participants than males in each severity level and in total with the exception of the normal and mild levels of severity in anxiety. The literature indicates that females are more likely to seek help for their psychological problems when compared to males (Kessler, Brown, & Broman, 1981; Oliver, Pearson, Coe, & Gunnell, 2005). For example, Kessler and his colleagues (1981) conducted a study that included four large-scale surveys and found that female participants spoke more about their psychological challenges than male participants.

An examination of the female to male ratio for symptoms of depression, anxiety and stress were found to be 1:1.38, 1.50:1 and 1.43:1, respectively. These findings are consistence with previous studies (Baxter et al., 2013; Bayram & Bilgel, 2008; Bijl et al., 1998; Carter et al., 2001; Gutiérrez-Lobos et al., 2002; Mahmoud et al., 2012; Shamsuddin et al., 2013; Somers et al., 2006; K. Wilhelm et al., 1997; Wong et al., 2007).

In contrast to our hypothesis, being female increased the severity level of anxiety only and did not impact the severity levels of depression or stress. Female participants were more likely to experience severe or extremely severe levels of anxiety when compared to males. According to the literature, being female generally increases the risk for developing anxiety (Baxter et al., 2013; Bayram & Bilgel, 2008; Bijl et al., 1998).

Kendler and colleagues (1995) and Pigott (2003) indicate that biological (i.e. genetic, hormones and physiology), psychological (i.e. neuroticism, absence of positive effect and body shame) and environmental factors (i.e. childhood sexual abuse, interpersonal violence and societal structures) could increase the risk for anxiety.

As hypothesized, it was found that being under the age of 50 (except in Model 1) can be a predictor for severe or extremely severe levels of depression. These findings were consistent with the literature. Kessler and colleagues (1994) conducted a National survey in the US and found that being under the age of 54 is a risk factor for developing depression. This risk for developing depression was found to decrease as age increased. For anxiety, significant results were only obtained in Model 1. The current study showed that individuals who were between the ages of 40-49 were more likely to develop severe or extremely severe levels of anxiety than other age groups. This result can be supported by a systematic review conducted by Andreescu and Varon (2015), who found that getting older increased the risk for developing anxiety. It has been found that aging negatively impacts an individuals' body and immune system, whereby they more vulnerable to anxiety as they get older (Vitlic et al., 2014).

5. 2. 2. Socio Economic Condition

As hypothesized, individuals who had a low socio-economic condition (SEC) were more likely to experience severe or extremely severe levels of depression. The literature also indicates that low SEC is associated with more severe levels of depression (Capage & Watson, 2001; Gilmer et al., 2005; Mackinnon et al., 2004; Pettit et al., 2009; Szádóczky et al., 1998; Kay Wilhelm et al., 2003). Rubio and colleagues (2011) conducted a national epidemiologic survey and found that having low SEC was a risk factor for developing depression. They explained this relationship with social causation theories which suggested that low SEC might become a chronic stressor in people's lives and create a risk for developing depression.

5. 2. 3. Level of Education and Occupation

As hypothesized, individuals with a low level of education and occupation were more likely to experience severe or extremely severe levels of depression, anxiety and stress.

These findings were consistent with the literature (Al-Maskari et al., 2011; Australian Psychological Society, 2015; Helbig et al., 2006; Hoebel et al., 2017; Kim & Kim, 2017; Osborne et al., 2003; Rubio et al., 2011). Santiago and colleagues (2011) reached the conclusion that level of education and occupation generally increased individuals socio-economic conditions and decreased the stress related with poverty. Thus a low level of education and occupation might be evaluated as a risk factor for developing psychological symptoms (Santiago et al., 2011).

5. 2. 4. Cultural Background

Whilst we hypothesized that being from a minority cultural group increased the risk for developing depression, anxiety and stress, this was only the case for depression and anxiety. Results showed individuals who are from Eastern Mediterranean cultures (e.g. being Lebanese, Egyptian or Pakistani) were more likely to experience severe or extremely severe levels of depression and anxiety. These findings can be supported by several studies in the literature. Oei and colleagues (1990) conducted their study on Australian and Overseas participants who lived in Australia and found that having a minority cultural background increased the risk for developing depression. Similarly, another study conducted with Latinos and European Americans who lived in the US found that Latinos were more likely to develop anxiety symptoms than European Americans (U.S. Department of Health and Human Services, 2001). Researchers gave two possible explanations for why minority groups may be different from the majority in psychological symptoms. One of the reasons was that the participants' language may have resulted in them assigning different meanings to the questionnaire items, depending on their mother tongue (Al-Maskari et al., 2011). The second reason was related to cultural differences in the perception of mental health (Mellick et al., 2019)

5. 2. 5. Religion

As hypothesized, the results of the current study showed that individuals who believed in Islam were more likely to experience severe or extremely severe levels of depression and anxiety. These findings were consistent with several studies that proposed that being a member of a minority group increased the risk for depression. In addition, McCullough and Larson (1999) found that Jews in the USA were more likely to have

symptoms of depression than non-Jews. Ullman and colleagues (2013) indicated that being exposed to social exclusion as a minority religious group might be a risk factor for developing depression.

In contrast to a hypothesis, believing in Christianity was also found to be as a risk factor for developing depression and anxiety. In the literature, most of the studies conducted on the relationship between Christianity and mental health conditions have examined denominations of Christianity. However, in the current study individuals were not divided into the denominations of Christianity, therefore it cannot be inferred why and which denomination had a higher tendency to develop depression and anxiety. The non-representative sample of the current study might be a further explanation for these unexpected results.

In the current study, having no religious affiliation was found to be a risk factor developing stress. Handal and colleagues (1989) and Williams and colleagues (1991) examined the relationship between being religious and experiencing stress and found that having any religious affiliation was a factor that decreased the level of stress among participants.

5. 2. 6. Family Life

As hypothesized, individuals who had children were more likely to experience severe or extremely severe levels of depression. This result is consistent with the literature (Evenson & Simon, 2005; Helbig et al., 2006). Evenson and Simon (2005) conducted a study on more than 11.000 parents and found that being a single parent and having more than one child increased the risk for developing depression. They concluded that experiencing depression in parenthood may be related to parenting styles (Evenson & Simon, 2005).

As hypothesized, single individuals were more likely to experience severe or extremely severe levels of anxiety. In the literature, there are many studies that are consistent with these findings (Australian Institute of Family Studies, 2002; Helbig et al., 2006; McEvoy et al., 2011; Monroe, 2008; Mwinyi et al., 2017; Scott et al., 2010).

A study conducted on 34,493 participants from 15 countries found that never being married increased the risk for developing anxiety (Scott et al., 2010).

In contrast to a hypothesis, individuals who were married were more likely to develop severe or extremely severe levels of stress. These results might be related to the features of participants in the current study. Almost 62% of the participants who reported to be married were women. Thus, by considering married women, it can be said that the result was consistent with a study conducted by Gutierrez and colleagues (2002). They included married women and married men in their study and examined the gender differences and their stress levels. They found that being a married woman was a risk factor for developing stress (Gutiérrez-Lobos et al., 2002). They explained this finding by psychosocial interpretation of women's role in the community and said that due to the demands and social expectations from women, marriage might be a stressful experience for them compared to married men.

Studies have examined as one variable both, the relationship status and having children or not. However, in the present study, these variables have been analyzed separately. For this reason, there is a variety of findings in our study.

5. 2. 7. A Previous History of Depression and/or Anxiety

As hypothesized, individuals with a previous history of depression were more likely to experience severe or extremely severe levels of depression, anxiety and stress. These results were consistent with the literature (Australian Health Ministers, 1999; Burcusa & Iacono, 2007; Solomon et al., 2004). Studies showed that having a previous history of depression increased the risk for reoccurrence of depression (Solomon et al., 2004), anxiety and stress. A possible explanation might be that after the onset of the depression, it caused cognitive impairments on individual's brain and increased the tendency to reoccurrence (Ganguli, 2009).

In contrary to hypothesis, having a previous history of anxiety was not found as a risk factor for developing depression, anxiety and stress, this was only the case for anxiety. This result was still consistent with several studies that showed that having a previous history of anxiety increased the risk for reoccurrence of anxiety (Bruce et al., 2005;

Hoffman et al., 2008; Scholten et al., 2013). Researchers explained this reoccurrence with the low recovery rates of anxiety and diagnosed with another disorder in axis II (Bruce et al., 2005).

5. 3. Conclusion

In conclusion, the prevalence of depression, anxiety and stress was high, compared to what has been reported in the literature. As other studies have previously found, we reached the conclusion that, among the three, depression was the most prevalent condition whereas anxiety had a similar prevalence with stress. For the profile of depression, individuals who were under the age of 50, were living in low socio-economic conditions, possessed a low level of education and occupation, had a previous history of depression, had children, were a member of Eastern Mediterranean culture and believed in Christianity or Islam were more likely to experience severe or extremely severe levels of depression. For the profile of anxiety individuals who were female, had a previous history of depression, were from an Eastern Mediterranean culture, had a low level of education and occupation and believed in Christianity or Islam were more likely to develop severe or extremely severe levels of anxiety. For the profile of stress, people who were married, had a previous history of depression, had a low level of education and occupation and did not have any religious affiliation were more likely to experience severe or extremely severe levels of stress. Understanding the profile of depression, anxiety and stress allows us to be mindful the risk factors that may contribute to development of mental health conditions.

5. 4. Limitations and suggestions for further studies

In this section the limitations of the study will be examined and suggestions for further studies will be provided. Firstly, the prevalence of depression, anxiety and stress was analyzed. One of the limitations was that the DASS was not systematically administered to all patients presented at the clinic, but rather only in cases where there was a clinical implication for depression, anxiety or stress. This has skewed the prevalence of all three subscales towards being unusually high. For further studies, in order to provide a more accurate representation of the prevalence of depression,

anxiety and stress, the DASS should be applied to all individuals presenting for treatment.

Secondly, the NCG clinic is preferred by clients because it provides culturally and religiously sensitive psychological services, with psychologists who understand the clients' faith, culture, and might even be native speakers of their mother tongue. It is also important to mention that the clinic is located in Outer Melbourne, which is an area highly populated with Turkish and other Muslim communities. Thus, these characteristics of both the clinic and patients, creates a problem related to the representation of Australian profile of depression, anxiety, and stress. Therefore it is suggested that future studies take into account the demographic data of the clients and the respective clinic. It is recommended that this study is used as basis of comparison.

In the current study we drew onto extrapolate information about the socio-economic condition and level of education and occupation of individual's based on suburb. Because we did not directly measure socio-economic condition. Future studies could show this variables are totally examined in the study design to provide a more comprehensive and representative profile of depression, anxiety and stress.

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