HAIGAZIAN UNIVERISTY

# Predictors of Mental Health Literacy in a Sample of University Students in Lebanon

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**Abstract**

Increasing evidence-based knowledge about mental health issues is a national priority in Lebanon. Mental Health Literacy (MHL) has been repeatedly studied internationally given its effectiveness in increasing service use and overall mental health. However, MHL has not yet been studied in Lebanon. MHL refers to the ability to correctly recognize specific mental disorders along with their recommended treatments. MHL is based on the theoretical framework explaining that recognizing a mental health problem is an essential first step towards seeking mental health help. To this end, the present study examines the socio-demographic predictors of MHL, and the relationship between MHL and symptoms of anxiety, depression, and suicidality among univers0ity students in Lebanon. Data was collected through survey methods using measures of MHL, anxiety, depression, and suicidality. The sample consisted of 171 university students recruited from 3 universities within the Beirut region. Findings show higher literacy of depression than GAD and suicidality, and that enrollment in psychology courses was the strongest predictor of MHL. A further examination of the results along with implications for public interventions are expanded on in the manuscript.

*Keywords:* mental health literacy, university students, anxiety, depression, suicide, Lebanon.

Predictors of Mental Health Literacy in a Sample of University Students in Lebanon

## Introduction & Problem Statement

Mental health is a major public health concern in Lebanon (Ministry of Public Health; MoPH, 2015). Mental disorders are highly prevalent in Lebanon, have an early age of onset, and if attended to, seeking treatment for them is significantly delayed (Karam et al., 2008). For instance, it has been noted that approximately 25.8% of the Lebanese population meets criteria for at least one mental disorder, with an average age of onset of 19 years old (Karam et al., 2008). The most common mental disorders in Lebanon are mood and anxiety disorders (Karam et al., 2008). Furthermore, a high rate of people who experience mental disorders in Lebanon do not seek professional help. And those who do, report a 6 to 28-year delay between the onset of the disorder and onset of treatment (Karam et al., 2008). This in turn may lead to detrimental mental health outcomes, and to public health burdens on a national level (MoPH, 2015). This is so because untreated mental disorders in adolescence and young adulthood are significant predictors of adult interpersonal, vocational, and family dysfunction, and are associated with several medical conditions, reduced life expectancy, and suicide (Wei et al., 2015; Rugulies, 2002; Bhatia, 2007).

As a result of the above-mentioned issues related to mental health in Lebanon, the Ministry of Public Health (MoPH) in Lebanon recently prioritized the implementation of research that seeks to inform prevention and intervention strategies that aim to reduce the impact of mental disorders in Lebanon (MoPH, 2015). Specifically, the MoPH (2015) called for an increase in research targeting public perceptions and attitudes towards mental health/illness and mental health service utilization in order to accurately tackle this major problem. One of the reasons for this proposition is because very little data is available regarding the public's perception in Lebanon towards mental health and mental health service use, and relevant national strategic plans should be informed by evidence-based findings (MoPH, 2015).

The relationship between Mental Health Literacy (MHL), factors associated with MHL, and mental health status is important to take into consideration when designing and implementing mental health prevention and intervention programs (Kelly, Jorm, & Wright, 2007; Lam, 2014; Loureiro et al., 2013; Smith & Shochet, 2011). That is, higher MHL has been associated with higher likelihood for mental health service utilization (Pescosolido & Boyer, 2010), more positive attitudes towards service use (Gulliver, Griffiths, Christensen, & Brewer 2012), and higher overall mental health (Kelly et al., 2007). Increasing MHL has also been recommended as one of the effective national strategies to improve mental health (Jorm et al., 2006; Kelly, Jorm, & Wright, 2007). The term MHL was coined by Jorm et al. (1997, p. 182), and it is defined as the "knowledge and beliefs about mental disorders which aid in their recognition, management, and prevention." Particularly, the MHL framework refers to (1) the ability to identify a mental disorder, (2) knowing how to prevent a mental disorder, (3) knowing effective self-help strategies, (4) knowing available help-seeking options and treatments, and (5) knowing how to support others experiencing mental health problems and related skills (Jorm, 2012).

Given the current situation pertaining to mental health in Lebanon, MHL is a crucial construct to be examined, especially among young adults, since this developmental period characterizes the average onset of mental disorders in Lebanon (Karam et al., 2008). Also, studies show that among young adults, research on MHL helps in understanding their perceptions towards mental health and mental health service utilization (Gulliver, Griffiths, & Christensen, 2010). This is important because according to Jorm (2012), young adults may often lack important information and experiences to effectively handle their mental health conditions. Jorm (2012) recommends that efforts be aimed towards increasing MHL before increasing access to mental health services; it is important to first raise awareness and acceptance of mental disorders.

Previous international studies have focused on socio-demographic and psychological factors associated with MHL in order to better understand how to tailor prevention and intervention strategies (Kelly et al., 2007; Kim et al., 2015). For instance, it has been shown that MHL among young adults may vary according to psychological symptom severity (i.e. symptoms of anxiety, depression etc..), the disorder being portrayed, and socio-demographic variables such as age, gender, socio-economic Status (SES), education, and ethnicity (Kim et al., 2015). Despite the above, MHL remains an understudied construct in Lebanon. To date and to the best of my knowledge, no known study has examined MHL in this context. Therefore, the present study examines the predictors of MHL in a sample of university students in Lebanon. Specifically, this study focuses on the MHL of depression and anxiety, as they relate to symptoms of depression, anxiety, suicidality, and socio-demographic factors.

**Rationale for the Study**

Mental disorders usually emerge during early adulthood (De Girolamo, Dagani, Purcell, Cocchi, & McGorry, 2012), however 70% to 80% of young adults worldwide do not receive the mental health care they need (Leaf et al., 1996; Waddell, McEwan, Shepherd, Offord, & Hua, 2005). These findings are in line with data from Lebanon (Karam et al., 2008). Generally, research shows that early age of onset for mental disorders is associated with longer duration of untreated mental illness, and with poorer clinical outcomes (De Girolamo et al., 2012; Essau et al., 2010), such as more chronic illness (Angst et al., 2009) longer duration of episodes (Korczak & Goldstein, 2009) and a higher probability of hospitalization (Korczak & Goldstein, 2009). Whereas early detection and treatment of mental disorders is usually associated with reduced mental illness severity and with better mental health outcomes (De Girolamo et al., 2012). Therefore, this study focuses on university students because data from this sample reflects an age range that mostly falls between 18 and 25. In addition to that, data from this age range reflects a transitional developmental period that is considered high-risk

(Jorm, 2012) because it is at this period that mental disorders usually emerge (De Girolamo et al., 2012). Developmental theorists have argued that this developmental period maybe especially stressful because it is at this time that young adults explore and ascertain their identity (Erikson, 1968). Findings from this sample may thus help in the design of tailored national strategies to address mental health issues among young adults in Lebanon. A sample of university students was chosen as opposed to one of young adults who are non-university students because this makes up a convenience sample of university students.

Limiting MHL to the literacy of mood (i.e. Depression) and anxiety (i.e. Generalized Anxiety Disorder) disorders in the present study was informed by the most recent large-scale national epidemiological study in Lebanon, where the latter disorders were the most common mental disorders (Karam et al., 2008). Across the literature, literacy of depression and anxiety are defined as the ability to recognize these disorders, and to make informed decisions about treatment recommendations (Wang et al., 2007). In this regard, higher literacy of depression and anxiety is associated with better help-seeking behavior from formal sources (Wright, Jorm, Harris, & McGorry, 2007).

Symptoms of depression and anxiety are studied because research shows that among university students, literacy of depression and anxiety may be influenced respectively by symptom severity of depression and anxiety (Kim et al., 2015). This is relevant since symptom severity of anxiety and depression may be important predictors of MHL among university students in Lebanon. In this study, symptoms of depression and anxiety are defined by the diagnostic criteria for depression and Generalized Anxiety Disorder (GAD) in the Diagnostic and Statistical Manual of mental disorders (DSM-IV-TR; APA, 2000). In specific, the focus on GAD as opposed to other anxiety disorders such as Post-Traumatic Stress Disorder (PTSD) or other specific phobias is because GAD is usually normalized and unnoticed (Paulus, Wadsworth, & Hayes-Skelton, 2015). This in turn may complicate correct recognition of GAD

as opposed to other anxiety disorders because people tend to attribute general worry as opposed to symptoms of a mental disorder. For example, in Thompson et al. (2008), participants with GAD took the longest time to recognize GAD and seek treatment for it, as opposed to participants with other anxiety disorders. Therefore, within the context of MHL, recognition of GAD warrants closer examination when compared to other more obvious anxiety disorders.

Moreover, given that suicide is a major public health concern in Lebanon (Karam et al., 2006; Mahfoud, Afifi, Haddad, & DeJong, 2011), suicidality is studied in relation to MHL. The World Health Organization (WHO) in collaboration with the Lebanese organization Embrace (WHO, 2014) recently reported that among the general population in Lebanon, one person commits suicide every three days. Furthermore, students and young adults account for the highest rates of attempted suicide in Lebanon (Karam, Hajjaf, & Salamoun, 2008). Previous research shows that higher MHL may lead to more positive attitudes towards help seeking, and may thus be essential to suicide prevention among university students (Drum et al., 2009; Oliffe et al., 2015).

This study also examines the socio-demographic predictors of MHL. Accordingly, socio-demographic predictors of MHL are important to be taken into consideration because mental health policies should be developed based on the characteristics of the studied population (Park, Jeon, Kim, Kim, & Roh, 2014). In this sense, identifying the demographic factors that predict higher MHL could inform future strategies to develop a better tailored approach for this population. Specifically, and in addition to the previously studied socio-demographic variables in the literature, this study investigates the variable of religion. Religion is important to be studied because it is a dominant factor in the Lebanese culture, and may influence beliefs and attitudes towards mental health and mental health service use. For example, mental illness is believed to be an act of evil possession in many Lebanese villages (Doumit et al., 2017), and a large number of people in Lebanon resort to religious healers for

help with mental illness (Karam et al., 2008). In turn, the inclusion of religiosity in this study may add to cultural considerations pertaining to the MHL literature.

To-date and to the best of my knowledge, only one study examined MHL as it relates to psychological symptoms of depression and anxiety in a sample of university students (Kim et al., 2015). However, this research extends the latter study on two dimensions. First, in addition to examining symptoms of depression and anxiety, this research reports results of suicidality in relation to literacy of suicide. Second, Kim et al. (2015) recruited participants on the basis of their enrollment in psychology courses, an aspect that potentially biases their results. Therefore, this study employs a different methodology by recruiting students from a convenient sample, disregarding their major of study.

Finally, this research extends the international literature on MHL as it relates to suicidality among university students. That is, although MHL and suicidality have been studied previously, this research differs on several levels. For example, Hollinger (2016) investigated suicide literacy among school students, however this study focuses on university students; both populations differ in age gap and developmental period. Oliffe et al. (2016) examined depression and suicide literacy of men in a nationally representative sample, however this study focuses on university students of both genders. Lastly, Ram et al. (2017) and Chan et al. (2014) researched depression and suicide literacy among university students with a focus on those who were enrolled in majors relating to the healthcare profession. This research however, focuses on university students in general, disregarding their enrollment in majors relating to the healthcare profession, and examines the association between literacy of suicide and psychological symptoms.

**Significance of the Study**

This study is the first, to the best of our knowledge, to investigate the predictors of MHL among a sample of university students in Lebanon. To-date, there is no known data

regarding this topic in Lebanon. Given the situation in Lebanon, and the relevance of MHL in increasing mental health service utilization and overall mental health, gaining a better understanding of the predictors of MHL among university students is very important to inform future prevention and intervention programs. The results of this study can lay the foundation for relevant interventions that target university students, and may contribute to lowering the burdens of mental disorders among this population in Lebanon. Specifically, some of the profiles of at-risk students can be identified from the findings of this research.

Furthermore, findings from this study contribute to the international literature on MHL by providing relevant data from an understudied, and non-western culture. This is important because the context of mental health and service use in Lebanon differs from other more advanced countries, who have given more attention to this issue. For instance, in Lebanon, most of the mental health services are located within the private sector, which are usually very costly for the general population (MoPH, 2015). The available mental health services in the public sector are significantly underfunded, and mostly attend to the mental health needs of displaced refugees following the Syrian crisis (MoPH, 2015). This in turn reduces the availability and utilization of cost-effective mental health services, and may especially impact people with low MHL (WHO, 2014). Furthermore, mental health service provision and utilization in Lebanon are negatively impacted by overarching stigma and discrimination against mental illness (MoPH, 2015). The reasons stated above may make up important barriers for treatment seeking among university students, and may account for some of the results of this study. Certainly, this adds to its value internationally.

Finally, findings from this study extend the literature on MHL because of the inclusion of the suicidality measure. Specifically, no known research to-date has investigated suicidality in relation to MHL among university students disregarding the major they are enrolled in. This

is important because results may inform other researchers about the relevance of suicidality in such studies.

**Research Questions & Hypotheses**

This research seeks to answer the following:

RQ.1: Do symptoms of anxiety predict literacy of anxiety among university students in Lebanon?

RQ.2: Do symptoms of depression predict literacy of depression among university students in Lebanon?

RQ.3: Does being at risk of suicide predict literacy of suicide?

RQ.4: Do sociodemographic factors of religion, gender, enrollment in psychology courses, and parental education predict higher MHL among university students in Lebanon?

Because literacy of depression has been found to be negatively associated with symptoms of depression in a sample of university students, but literacy of GAD and suicidality was not associated with symptoms of GAD or risk of suicide (Kim et al., 2015; Batterhman et al., 2013) we expect that:

H1: Literacy of depression will be negatively associated with symptoms of depression.

H2: Literacy of GAD will not be associated with symptoms of GAD.

H3: Literacy of suicide will not be associated with being at risk of suicide.

Because previous research has found that (1) women (Kim et al., 2015; Wong 2006), (2) students enrolled in psychology courses (Kim et al., 2015), and (3) students from higher SES (Knesebeck et al., 2013) are more likely to have higher MHL, we expect that:

H4: The sociodemographic factors of (1) gender, (2) enrollment in psychology courses, (3) parental education will predict higher MHL.

Because religion is an important cultural indicator in Lebanon, which may have an influence over conceptualization of mental health and mental illness (Domit et al., 2017), we expect that:

H5: Associating with a religion will predict lower MHL.

# CHAPTER TWO

# LITERATURE REVIEW

## Discussion of the MHL Framework

The literature on mental health across countries has shown the importance of MHL as it relates to understanding (1) public perceptions about mental health issues (Jorm et al., 1997a; Jorm et al., 1997b), (2) attitudes and barriers to mental health service use (Eckert, Kutek, Dunn, Air, & Goldney, 2010; Gulliver, Griffiths, & Christensen, 2010), and (3) factors associated with MHL (Kim et al., 2015; Reavley, McCann, & Jorm, 2012). The relevance of MHL is based on the empirically validated theoretical framework explaining that recognizing a problem is a crucial first step towards seeking help. In this sense, accurately recognizing a mental health problem is usually related to seeking help from formal sources (Wright, Jorm, & Mackinnon, 2012) and results in better mental health outcomes. Jorm (2012) suggests that correct recognition of a mental disorder activates a mental schema related to taking appropriate action. In contrast, delays in treatment seeking are usually associated with failure to recognize/identify mental health problems (Thompson, Issakidis, & Hunt, 2008). For instance, based on their longitudinal study, Bonabi et al. (2016) found that higher MHL, positive attitudes to help seeking, and higher perceived need of service use are important predictors for the use of psychotherapy over time.

As per the framework proposed by Jorm et al. (1997), MHL has usually been assessed through questions targeting opinions toward brief vignettes representing certain mental disorders (e.g depression, generalized anxiety disorder, specific phobia, schizophrenia, bulimia etc…), with a focus on symptomatology based on the Diagnostic and Statistical Manual (DSM-IV-TR; American Psychiatric Association, 2000) criteria. The vignettes recount the story of a man or a woman, while highlighting symptoms revolving around the mental disorder being portrayed. The questions are dichotomized to address two main aspects of MHL, namely (1)

recognition of the mental disorder, and (2) intended actions to seek help. Higher MHL is usually reflected by correct identification of a mental disorder, and correct treatment recommendation (Jorm et al., 1997).

**MHL Among Young Adults and University Students**

A large number of studies in various contexts have focused on the MHL of young adults because of the high prevalence of mental disorders, and the low rates of professional help seeking in this population (Blanco et al., 2008; Loureiro et al., 2013; Rickwood, Deane, Wilson, & Ciarrochi, 2005). However, no such investigations have been done in Lebanon. On average, research reveals that in the general population worldwide, people have poor MHL (Jorm, et al., 2006). In Portugal and in China, rates of depression literacy among young adults were lower than expected, and studies have pointed towards a need to increase relevant interventions (Lam, 2014; Loureiro et al., 2013). In the U.S, depression literacy was found to be higher among young people than has been shown from other countries, despite the fact that less than half of the sample in one study was able to correctly identify depression (Coles, Ravid, Gibb, & McLeod, 2016). Similar findings were reported from Canada with regard to their higher rates of MHL (Marcus, & Westra, 2012). In Australia, higher levels of MHL have been reported among young people than other countries (Reavley, McCane, & Jorm, 2011). In Saudi Arabia, MHL levels were found to be intermediate among a sample of undergraduate students (Mahfouz et al., 2016), and low among a sample of the general population (Khalil, 2017). Furthermore, depression recognition in the U.S, Canada, and Australia was higher than anxiety recognition among young adults (Coles et al., 2016; Kim et al., 2015; Reavley & Jorm, 2011). This may be due to the fact that symptoms of anxiety could be attributed to general life stress, shyness, or low self-confidence as opposed to symptoms of a mental disorder (Reavley & Jorm, 2011). The latter mentioned cross-cultural differences in levels of MHL may be due to several factors, such as the fact that MHL is a westernized concept, that which may impact knowledge

and stigma regarding mental disorders. This may be a clear indicator of why western countries tend to show higher MHL and lower stigma towards mental disorders than non-western countries (Angermeyer & Dietrich, 2006; Jorm, 2000). Another factor may be the increased availability of mental health services in western countries, which may influence the extent to which people may endorse professional help to manage symptoms of a mental disorder (Altweck et al., 2015).

Furthermore, Reavley & Jorm (2011) found that literacy of depression is higher because young adults may over-generalize the labeling of depression and tend to use it to describe other disorders such as schizophrenia and psychosis. These results are expected to be similar among young adults in Lebanon. This is because most of the Lebanese people have had at least one exposure to war related events, which has been found to increase their odds of developing an anxiety disorder (Karam et al., 2008). Therefore, people living in Lebanon may be more accustomed to anxiety disorders than depression. This may influence their correct recognition and normalization of anxiety as opposed to depression.

**MHL in Lebanon and Cultural Considerations**

Although MHL is important in understanding perceptions and attitudes towards mental health and mental health service use, previous findings should be interpreted with caution. That is, the framework proposed by Jorm et al. (1997) is a westernized concept, and given that beliefs about mental illness and service use may vary from one culture to another, MHL warrants further examination as it is studied in different cultures (Jorm, 2012) such as Lebanon.

For instance, mental illness is highly stigmatized in Lebanon (MoPH, 2015; Doumit, Farhoud, & Hamady, 2017; Karam et al., 2008). In turn, this cultural aspect may have several repercussions on young adults' attitudes towards mental health and mental health service use in Lebanon (Doumit et al., 2017). For example, in the Arab culture, it has been noted that family members make up an essential source of support in times of stress (Youssef & Deane,

2006). However, this may prove to be inefficient in issues pertaining to mental illness since usually, seeking formal help may be perceived as family dishonor (Youssef & Deane, 2006). Accordingly, mental illness is usually regarded as a private family matter that requires a familial effort to be resolved (Heath, Vogel, & Al-Darmaki, 2016), whereby seeking professional help may harm the family's reputation (Hamdan, 2009).

Furthermore, there exists a dearth of affordable community mental health services in the public sector in Lebanon (MoPH, 2015). This may demotivate young adults experiencing mental disorders from seeking help because of financial difficulties associated with service use from the private sector. Also, because of pervasive cultural beliefs such as the ones noted above, it has been reported that a significant portion of the Lebanese population resorts to informal sources of treatment such as religious healers and fortune-tellers (Karam et al., 2008), that which may exacerbate the impact of mental disorders. Still, data regarding public beliefs about mental health and mental health service use among young adults is scarce, and thus the importance of this study in contributing to this line of research.

To-date, only one study explored the mental health attitudes and beliefs of parents and teachers towards school children in the south of Lebanon through focus group interviews (Doumit et al., 2017). Their findings are very relevant for the context of this proposed research. For example, their qualitative results indicated (1) that mental illness is a stigmatized cultural taboo in Lebanon, (2) that there is an urgent need to have more services and awareness regarding mental health in Lebanon, and (3) that increasing MHL among young people plays a pivotal role in promoting awareness and acceptance of mental disorders in Lebanon. The authors recommended that MHL be studied in Lebanon among young people in order to optimize their mental health (Doumit et al., 2017). Ultimately, this proposed study builds on those findings.

**MHL and Associated Factors**

**MHL and Socio-Demographic Factors.** On average, it has been found that the socio-demographic factors of gender, age, socioeconomic status (SES), ethnicity, educational level, and enrolment in psychology courses are associated with MHL. For example, Reavley et al. (2012) found that women, more educated people, and older individuals have higher MHL than men, less educated people, and younger individuals.

Wong (2016) reported that woman usually have higher MHL because of the manner in which they are socialized to be more passive than men; the latter are encouraged to show more aggression and less emotionality as opposed to women. In turn, this may influence correct recognition of the disorder at hand because women may give more importance to it as opposed to men; this means that women might be more likely to learn about this information. Also, young men tend to feel less emotional competence to express their feelings, and may have a lower inclination to establish a trusted relationship with help providers, as opposed to young women (Rickwood et al., 2007). Consequently, woman tend to have more knowledge about mental disorders, be better informed about correct treatment recommendations, and be more inclined to take appropriate help-seeking action (Rickwood et al., 2007; Wong, 2016). Whereas men tend to seek help usually from informal sources and to be more reluctant to seek formal help (Wong, 2016).

Kim et al. (2015) found that white individuals have higher MHL than non-white individuals (e.g. Asians, Latinos, and others) in a sample of undergraduate students. This may be attributed to the fact that MHL is based on a western conceptualization of mental health, which might not necessarily align with conceptualizations of people representing diverse cultural backgrounds.

Furnham, Cook, Martin, & Batey (2011) found that enrolment in Psychology courses was positively associated with MHL. This may be due to the fact that university students receiving a formal education in Psychology are expected to have more knowledge about mental

illness than peers who are enrolled in unrelated majors. Ultimately, this will be reflected in their identification of mental disorders and their treatment recommendations. In addition to that, it has been found that previous experiences with formal mental health service use may result in higher MHL (Kim et al., 2015). Therefore, knowledge of and direct experiences with mental illness or service provision is a factor in having higher MHL.

Knesebeck et al. (2013) found that higher SES is associated with higher MHL. In that study, SES was measured through the indicators of (1) occupational position, (2) household income level, and (3) educational level. The authors found that participants from higher SES had more positive attitudes towards the use of medication and psychotherapy, and were less likely to attribute weak will or general life stress to account for the presented mental disorders (Knesebeck et al., 2013). This may be explained by the fact that people from higher SES may have increased access to better mental health resources such as information about mental disorders and easier access to service use.

Accordingly, and building on findings from previous research, this present study focuses on the aforementioned socio-demographic variables, in addition to the variable of religion; religiosity in this study is measured according to whether or not participants associate with a religion. Seeing that the target sample is university students, the proxy for SES is educational levels of their parents/guardians. This is because most of the participants are expected to have similar educational levels, and are not expected to have occupational positions given their enrollment in university.

**MHL and Symptoms of Depression and Anxiety.** Little research has focused on the relationship between MHL and psychological symptoms (Kim et al., 2015; Lam, 2014). So far, a positive relationship has been found between MHL and mental health status in China; lower MHL is associated with more severe symptoms of depression in young adolescents attending junior and high school (Lam, 2014). In this regard, the authors recommended enhancing MHL

for young people as a vital preventative measure against mental illness. It should be noted however, that in the aforementioned study the sample was relatively young; low recognition of depression may have been due to participants having little experience with mood disorders, and the decreased focus of depression in that context.

With regard to university students, the only study investigating the relationship between MHL and symptoms of depression and anxiety reported that people in U.S who scored high on symptoms of depression had a lower inclination to correctly recognize depression, and to recommend the correct form of treatment when compared to people who scored low on depression (Kim et al., 2015); this may be due to the cognitive deficits and stigma associated with depression, that which points towards the importance of increasing public knowledge about depression. However, in that study, Generalized Anxiety Disorder (GAD) recognition did not vary by psychological symptom severity; disregarding GAD symptoms severity, most participants had a relatively low recognition of GAD. The authors attributed this result to the fact that most participants who misrecognized GAD indicated that the person described was experiencing general life stress rather than a mental disorder. This difference between recognizing depression and GAD is accounted for by the fact that GAD usually receives less attention than depression in the public (Coles & Coleman, 2010). It is therefore important to educate the public about anxiety disorders, especially since symptoms may be exacerbated over time if untreated.

**MHL and Suicide.** From the existing research, findings point toward the relevance of MHL in suicide prevention, particularly among people who have major depression (Goldney et al., 2002). That is, increasing MHL can influence help-seeking behavior in people who have depression and suicidal tendencies (Gulliver, Griffith, Christensen, & Brewer, 2012), which may in turn allow for better management of the disorder. Similar findings have been reported from Oliffe et al. (2016), who found that increasing MHL may be effective to reduce rates of

depression and suicide, and who recommended the design of gender sensitive programs; men tend to have a higher need for such interventions than women, given the clear gender differences with regards to the MHL.

To date, only two studies investigated depression and suicide literacy in a sample of university students. However, their samples focused on those who are enrolled in majors relating to the healthcare profession, and did not examine the association of suicide literacy with psychological symptoms (Ram, Chandra, & Gowdappa, 2017; Chan, Batterham, Christensen, & Galletly, 2014). Ram et al. (2017) found that depression and suicide literacy are poor among students enrolled in healthcare professions in India. This may be due to the fact that suicide is a taboo subject that is highly stigmatized in India. The authors recommended increased integration of mental health education in university curriculums. Whereas Chan et al. (2014) found that medical students in Australia had high levels of MHL, especially those who had exposure to suicidal people through clinical experience.

# CHAPTER THREE

# METHODOLOGY

## Design

The present study follows a quantitative survey design, whereby all data was collected through self-reported measures. The self-reported surveys are important in allowing a large sample of participants to provide data while maintaining anonymity, and while using a cost-effective method. Also, self-reported surveys help in identifying specific patterns in order to better predict MHL among university students.

## Participants

The sample consisted of students recruited from three universities in the Beirut region. University students were chosen for this study because they represent a sample that is considered high-risk, given that mental disorders usually emerge during this development period. Inclusion criteria was enrollment in a private or public university. Given the limitations of time constraints and limited resources at hand, a convenience sample of (N=171) university students was recruited from 2 main private universities and 1 public university within the Beirut region. Based on sampling recommendation in Field (2009), a sample size of 170 participants should achieve a minimum effect when examining 11 predictors.

### Socio-demographic information

A total of 171 university students participated in present study ($M$ = 20.94, $SD$ = 3.06). Over half of the participants identified as women ($N$ = 112, 65.5%), had the Lebanese nationality ($N$ =116, 68.6%), associated with a religion ($N$ = 124, 74.3%), lived in an urban area ($N$ = 127, 78.9%), and were enrolled in a major of study not related to social-sciences ($N$ = 93, 54.4%). The sample reflected a group that is of higher socio-economic status, as more than half of the sample reported that their parents had completed at least a university degree (see Table 1 for more information about the sociodemographic characteristics of the present

sample). Almost half of the sample reported having ever enrolled in a psychology course (*N* = 76, 46.6 %), and less than half of the sample reported ever using mental health services (*N* = 51, 30%). Furthermore, a third of the sample reported wanting at some point to use mental health services but did not actually do it (*N* = 52, 31.1%), with the most common reasons being related to *personal* (55.1%) or *financial* (32.7%) issues. Finally, results indicated that participants primarily get information about mental health topics from personal research (42.6%), followed by university education (38.0%), social media (22.8%), and other people (9.9%). A small number of people (8.1%) reported not seeking information about mental health.

Table 1
*Socio-demographic Information of the Present Sample*

| | *N (%)* |
|---|---|
| Gender | |
| Men | 58 (33.9) |
| Women | 112 (65.5) |
| Other | 1 (0.6) |
| Age (Mean, SD) | *M* = 20.94, *SD* = 3.06 |
| Nationality | |
| Lebanese | 116 (68.6) |
| Non-Lebanese | 17 (10.1) |
| Dual Nationality | 36 (21.3) |
| Religion | |
| Christianity | 40 (24.0) |
| Druze | 13 (7.8) |
| Islam | 71 (42.5) |
| Atheist | 17 (10.2) |
| Agnostic | 17 (10.2) |
| Other | 9 (5.4) |
| Mothers' highest educational level | |
| Non-educated | 1 (0.6) |
| Primary school or less | 12 (7.2) |
| Secondary school or less | 58 (34.9) |
| BA/BS | 71 (42.8) |
| MA/MS | 17 (10.2) |
| PhD/MD | 7 (4.2) |
| Fathers' highest educational level | |

| | |
|---|---|
| Non-educated | 2 (1.2) |
| Primary school or less | 25 (14.9) |
| Secondary school or less | 36 (21.4) |
| BA/BS | 51 (30.4) |
| MA/MS | 33 (19.6) |
| PhD/MD | 21 (12.5) |
| Area of residence | |
| Urban area | 127 (78.9) |
| Rural area | 34 (21.1) |
| Average household income | |
| Less than 500$ | 4 (2.9) |
| 501$ - 1,000$ | 20 (14.3) |
| 1,001$ - 2,000$ | 30 (21.4) |
| 2,001$ - 3,000$ | 26 (18.6) |
| 3,001$ - 5,000$ | 22 (15.7) |
| More than 5,000$ | 38 (27.1) |
| Major of study | |
| Psychology | 44 (26.5) |
| Other Social Science Major | 25 (15.1) |
| Non-Social Science | 93 (54.4) |
| Undeclared major | 4 (2.4) |
| Ever enrollment in a psychology course | |
| Yes | 76 (46.6) |
| No | 87 (53.4) |
| Ever use of mental health services | |
| Yes | 51 (30.0) |
| No | 119 (70.0) |
| Ever wanted to use mental health services but did not actually do it | |
| Yes | 52 (31.1) |
| No | 115 (68.9) |
| Reasons | |
| Personal reasons | 27 (55.1) |
| Not knowing where/who | 2 (4.1) |
| Familial/community reasons | 4 (8.2) |
| Financial reasons | 16 (32.7) |
| Primary source for information about mental health | |
| Personal research | 73 (42.6) |
| Social media | 39 (22.8) |
| University education | 65 (38.0) |
| Other people | 17 (9.9) |

| | |
|---|---|
| Don't look up this information | 14 (8.1) |
| Other | 11 (6.4) |

**Instruments**

The main survey included (1) questions pertaining to socio-demographic information, and (2) measures of MHL, symptoms of depression, symptoms of anxiety, and suicidality. In order to avoid order effect, the order of the measures within the survey was counterbalanced using reverse counterbalancing procedure.

**Socio-demographic information.** As per the literature examining the socio-demographic factors associated with MHL, participants were asked about their gender, ever enrollment in any psychology course, parental education, and religion. Parental education was used as a proxy for SES. With regard to religion, participants were asked about the religion they were born into, and the religion they currently identify with; this separation may better clarify whether or not participants willingly associate with a religion as opposed to being born into it.

**Mental Health Literacy.** To assess the MHL of university students, the Questionnaire for Assessment of Literacy in Mental Health, as adapted from Jorm et al. (1997) was be used. This questionnaire is used instead of others (i.e. knowledge scales that address facts regarding literacy of depression) that examine MHL because the vignettes help in contextualizing the symptoms into real life experiences as opposed to theoretical statements. It is composed of several sections that inquire about different aspects of MHL, as per the framework proposed by Jorm et al. (1997). The questionnaire begins with a short vignette (see appendix II) depicting the case of a person while highlighting symptomatology pertaining to a certain disorder; for the purposes of this study, two vignettes were presented representing major depression disorder with suicidal thoughts and generalized anxiety disorder, each with its own set of questions (see appendix II). The latter were dichotomized according to an established coding schema used in

previous studies as a way in which to measure MHL (Kim et al., 2015; Coles & Coleman, 2010). Specifically, higher MHL was reflected by correct recognition of the disorder at hand, in addition to correct treatment recommendation. The remaining of the survey yielded descriptive data that assesses (1) knowledge of professional help and treatments available for the disorder, (2) knowledge of interventions for the disorder, (3) knowledge and skills to give first aid and support to others having this disorder, and (4) knowledge of how to prevent the disorder. Finally, participants were asked about the main source of their knowledge of mental health topics.

**MHL Scoring**. For the first section, and after the vignette was presented, participants were asked "*In your opinion, what is going on with Karim/Layla*?" Answers were presented in a table in multiple-choice format, in which participants were required to select one answer from the available options (e.g. depression, medical condition, personality disorder, generalized anxiety disorder, social phobia, schizophrenia, etc…). Answers for depression recognition were considered correct if they chose *"depression*" alone. Whereas answers for GAD recognition were considered correct if they chose "*generalized anxiety disorder*" alone. Next, participants were asked "*In your opinion, do you think Karim/Layla should seek professional help for what he/she is experiencing*?". Answers were considered correct if participants chose "yes", and incorrect if participants chose "no" or "undecided".

*Knowledge of professional help and treatments available.* Following the questions assessing recognition of the disorder, and using the same multiple-choice table format for answering, participants were asked "*There are different people and health professionals who can help Karim/Layla*". Answers were "*general practitioner*", "*teacher*", "*psychologist*", "*nurse*", "*social worker*", "*psychiatrist*", "*telephone helpline*", "*close family member*", and "*close friend*". For each of the above items, participants rated them based on "helpful", "harmful", "neither", or "do not know". With regards to treatments, participants were presented

with "*vitamins*", "*tea*", "*tranquilizers*", "*antidepressants*", "*antipsychotics*", and "*sleeping pills*", and were asked to assess them based on "helpful", harmful", "neither", or "do not know".

*Knowledge of interventions*. To assess knowledge of possible interventions, participants were presented with the following statement "*There are different activities that could help Karim/Layla. Point out for each of them your opinion*." Participants were required to rate the following statements "Becoming more physically active", "getting relaxation training", "practicing meditation", "getting acupuncture", "getting up early each morning and getting out in the sunlight", "receiving therapy with a specialized professional", "looking up a website giving information about her/his problem", "reading a self-help book on her problem", "joining a support group of people with similar problems", "going to a specialized mental health service", "using alcohol to relax", "smoking cigarettes to relax", based on "helpful", "harmful", "neither", or "don't know".

*Knowledge and skills to give first aid and support to others.* To assess knowledge and skills pertaining to first aid and support to others, participants were presented with answers such as "listen to her/his problems in an understanding way", "talk to her/his firmly about getting her/his act together", "suggest he/she seeks professional help", "make an appointment for her/him to see a general practitioner with her/his knowledge", "ash her/him whether he/she is feeling suicidal", "suggest she/he have a few drinks to forget her/his troubles", "rally friends to cheer him/her up", "not acknowledge her/his problem, ignoring her/him until she/he gets over it", "Keep her/him busy to keep his/her mind off problems", "encourage him/her to become more physically active. Responses were "helpful", "harmful", "neither", or "don't know".

*Knowledge of how to prevent mental disorders.* To assess knowledge of how to prevent mental disorders, participants were presented with the following items "Keep physically

active", "avoid situations that might be stressful", "keeping regular contact with friends", "keeping regular contact with family", "not using drugs", "never drinking alcohol", "making regular time for relaxing activities", "having a religious or spiritual belief". Response options were "helpful", "harmful", "neither" and "don't know".

The psychometric properties of the Questionnaire for Assessment of Mental Health Literacy have been tested, and results showed that it has acceptable levels of reliability, with a factor structure consistent with the MHL framework (Loureiro et al., 2015).

**Symptoms of depression.** The Patient Health Questionnaire – 9 (PHQ-9; see appendix II; Kroenke & Williams, 2001) was used to screen for symptoms of depression. The PHQ-9 is comprised of 9 self-reported items that correspond to the DSM-IV criteria used to diagnose an episode of major depression (APA, 2000). Answers are based on symptoms experienced over the last two weeks, are rated on a 4-point Likert scale, ranging from "Not at all" to "Nearly every day", and are given a score of 0 to 3 respectively. The final score is attained by summing up the scores; scores of *0 to 4, 5 to 9, 10 to 14, 15 to 19, and 20 to 27* indicate "no" symptoms of depression, "mild", "moderate", "moderately severe", and "severe" symptoms of depression respectively (Kroenke & Williams 2001). Although the scale was shown to have high internal consistency (Kroenke & Williams, 2001) and evidence for unidimensionality (Huang et al., 2006), evidence of a two-factor structure for the PHQ-9 exists (Sawaya, Atoui, Hamadeh, Zeinoun, & Nahas, 2016). In the present study, the scale showed good internal consistency of $\alpha = 0.88$.

**Symptoms of anxiety.** The Generalized Anxiety Disorder – 7 (GAD-7; see appendix II; Spitzer, Kroenke, Williams, & Lowe, 2006) was used to screen for symptoms of GAD. The GAD-7 is comprised of 7 self-reported items designed to measure symptoms of GAD, based on DSM-IV criteria (APA, 2000). Answers are based on symptoms experienced over the last two weeks, are rated on a 4-point Likert scale, ranging from "Not at all" to "Nearly every day",

and are given a score of 0 to 3 respectively. The final score is attained by summing up the scores; scores of *0 to 4, 5 to 9, 10 to 14, 15 to 21,* indicate "normal" symptoms of anxiety, "mild", "moderate", and "severe" symptoms of anxiety respectively (Choueiry, Salamoun, Jabbour, Osta, Hajj, & Khabbaz, 2016). The scale has been shown to have excellent internal consistency (Kertz et al., 2012), and evidence of unidimentionality (Sawaya et al., 2016). In the present study, the scale showed good internal consistency of $\alpha = 0.88$.

The HADS includes 14 items that examine 7 depressive symptoms and 7 GAD symptoms (appendix II). For the purposes of this study, only items relating to symptoms of anxiety were used, whereas items that target symptoms of depression were eliminated. Items on the HADS are rated on a 4-point Likert scale ranging 0 (not at all) to 3 (nearly every day), based on reports of symptom experience over the past 2 weeks. The HADS has been translated to Arabic by a team of Saudi Arabian researchers (Terkawi et al., 2017). The anxiety subscale of the Arabic version showed high internal consistency with Cronbach alpha coefficient of .83. The Arabic version of the HADS showed evidence of face validity, and construct validity (Terkawi et al., 2017). In the present study, the scale showed good internal consistency of $\alpha = 0.84$.

**Suicidal ideation and behavior.** The Suicidal Behaviors Questionnaire – Revised (SBQ-R; appendix II) was used to measure suicidal ideation and behavior. The SBQ-R is a self-report measure comprised of 4 items addressing different dimensions of suicidality, and is answered on a Likert scale whose range varies according to the item posed. As such, the first item tackles *lifetime suicide ideation and attempt*, the second assesses the *frequency of suicidal ideation over the past year*, the third taps into *suicidal behavior*, and the fourth evaluates *the risk and likelihood of suicidal behavior* (Osman, Bagge, Gutierrez, Konick, Kopper, & Barrios, 2001). The total SBQ-R score ranges from 3 to 18 and is calculated by summing up the scores of the four items, whereby each item has its own scoring criteria. The first item is scored on a

4-point likert scale with answers ranging from "*Never*" to "*I have attempted to kill myself, and really hoped to die*", and given a score of 1 to 4 respectively with a cutoff point of ≥2. The second item is scored on 5-point likert scale, with answers ranging from "*Never*" to "*Very Often*" and given a score of 1 to 5 respectively. The third item is scored on a 3-point likert scale, with answers ranging from "*No*" to "*Yes, more than once, and really wanted to do it*" and given a score of 1 to 3 respectively. Finally, the fourth item is scored on a 6-point likert scale with answers ranging from "*Never*" to "*Very likely*" and given a score of 0 to 6 respectively. The SBQ-R has shown acceptable internal consistency reliability in a sample of adolescents and adults, from clinical and non-clinical groups; specifically, items yielded an alpha coefficient of .76 in the sample of undergraduates (Osman et al., 2001). Criterion-related validity has also been well established for the SBQ-R (Osman et al., 2001). In the present study, the scale showed good internal consistency of $\alpha = 0.88$.

**Literacy of Suicide.** The short version for the Literacy of Suicide Scale (LOSS; see appendix II) was used in order to measure literacy of suicide. The adapted version of the LOSS (Oliffe et al., 2016; Ram et al., 2017) includes 8 items that address knowledge about suicide, with answers ranging from "true", "false", and "I don't know". Correct responses are coded as 1 and incorrect/don't know responses are coded as 0. Examples of the items in the LOSS include "*people talking about suicide always increases the risk of suicide*", and "*men are more likely to die by suicide than women*". The LOSS has been previously used on university samples, and Item Response Theory was used to establish its validity, seeing that it is a knowledge scale and not an attitudinal one (Calear et al., 2012). Accordingly, by calculating the sum of correct answers, the LOSS yields a total score, whereby higher scores indicate higher suicide literacy. Furthermore, because the LOSS is a knowledge rather than an attitudinal scale (answers are either correct or incorrect) internal consistency reliability is not reported.

## Analysis

Socio-demographic and MHL data are reported as frequencies, percentages, and cross tabulations. MHL data was coded using the scoring criteria proposed by Jorm et al. (1997); answers yield correct recognition of the disorder, and correct treatment recommendation, in binary (YES/NO) format, coded as 1 or 0 respectively. Three theoretical models, one for literacy of each disorder, were tested using Path Analysis. For two models, recognition of depression/GAD, and treatment recommendation for depression/GAD were the dependent variables, and psychological symptoms (GAD or Depression), gender, mothers' education, fathers' education, enrollment in psychology courses, and religion were the independent variables. For the suicide literacy model, the same independent variables were incorporated, however the dependent variable was the mean score on the LOSS. With regard to the coding of the independent variables, categorical variables were coded as 0s and 1s. For example, men were coded as 0 and women were coded as 1. With regard to missing data, we tested for whether they were Missing Completely at Random (MCAR) each scale separately. Results indicated that missing data for all scales were completely at random MCAR ($p > 0.05$ for all) except for the suicide literacy scale ($p < 0.05$). Therefore, Expectation Maximization (EM) technique was used to impute missing values for all scales except for suicide literacy.

All the data was entered, managed, and analyzed using the Statistical Package for the Social Sciences (SPSS) and the path analysis models were tested on the Analysis of a Moment Structures (AMOS).

## Procedures

**Self-reported survey.** The study was launched after receiving approval from the Social and Behavioral Sciences ethics committee at Haigazian University. The measures in the main survey were counterbalanced in order account for participation effects. Reverse counterbalancing was used, whereby two versions of the survey were created, type A and type

B. Type A version presented the vignettes first followed by the psychological symptoms scales, whereas type B version presented psychological symptoms scales followed by the vignettes. Participants were approached around the campuses of their universities, were greeted, were debriefed about the nature of the study, and were asked if they are interested to learn more about it and/or participate in it. Upon granting preliminary consent, participants were given an informed consent form delineating the nature of the study, their roles and rights, the potential benefits of participation, and relevant contact information. As such, they were required to sign the informed consent that indicates their approval to participate. Participants were allowed to inquire about any aspect of the study while completing the questionnaire, as the principle investigator was present with them during data collection. Following completion of the survey, participants were thanked for their efforts and were offered a pamphlet that included correct information about mental health.

**Timeline.** Data collection began during the month of June 2018 and ended during the month of October 2018. Data analysis and write up of the paper process took place during November 2018.

**Ethical considerations**

Participants were informed that the data is collected solely for research purposes and will not be used otherwise. Participants were also informed about the confidentiality and anonymity of their responses, their right to refuse participation, and their right to withdraw from the study at any time and for any reason. In order to account for any adverse effects that might be triggered due to completion of the survey, participants were given handouts that list correct facts concerning mental health/illness.

# CHAPTER FOUR

# RESULTS

## Psychological Symptoms

Results of the PHQ-9 (Table 2) indicated that only 38% of the participants showed "*no symptoms"* of depression, whereby most of the participants (56.4%) showed "*mild*" to "*moderately severe*" symptoms, and 5.5% showed "*severe*" symptoms of depression. Results of the GAD-7 (Table 2) indicated that participants had higher symptoms of anxiety, with only 26.1% showing "*normal*" symptoms of anxiety, 60.3% showing "*mild to moderate*" symptoms, and 13.7% showing "*severe*" symptoms of anxiety. Results of the HADS indicated that over half of the participants (55%) showed *borderline abnormal* to *abnormal* symptoms of anxiety.

Results of the SBQ-R (Table 3) indicated that almost half the participants (51.8%) had never thought about killing themselves, with the rest having either passively thought about it (24.1%), actively planned for it (15.6%), or actually committed it (8.4%) at one point in their lives. Most of the participants reported not having thought about killing themselves in the past year (63.9%), with the rest having "*rarely*" to "*very often*" thought about it (36.1%). Only a small number of participants (27.3%) reported ever telling someone that they were going to, or that they might commit suicide, with the rest not having done so (72.7%). Furthermore, 7.6% of the participants reported that they are "*likely"*, "*rather likely"*, or "*very likely"* to commit suicide someday. Finally, overall results of the SBQ-R indicated that most of the participants (75.3%) are at low risk of suicide, and the rest (24.7%) are at high risk.

## Literacy of Depression

**Knowledge about Depression**. In general, results showed that most of the participants were able to identify depression as presented through the vignette of Karim (Table 4). However, answers for 4 of those participants were considered missing because they had chosen another disorder in addition to depression. Therefore, a total of $N = 142$ (87.1%) participants

were considered to have correctly recognized depression, whereby only a few participants were not able to correctly identify it (*N* = 21, 12.9%). Most of the participants recommended for Karim to seek professional help (*N* = 152, 91.0%), as opposed to the rest (*N* = 16, 12.9%) who were either undecided (*N* = 7, 4.2%) or who did not think he should seek professional help (*N* = 8, 4.8%). Finally, correct recognition of depression and correct treatment recommendation for depression were significantly related $X^2$ (162) = 16.64, *p* = 0.000.

**Knowledge of available professionals and treatment options**. Participants (Table 5) most frequently endorsed *psychologists* (94.6%), *psychiatrists* (84.2%), *close friends* (83.7%), *close family members* (80.8%), and *telephone helpline* (61.1%) as being people/professionals who can help Karim. *Teachers* (51.8%), nurses (74.1%), and *social workers* (49.1%) were most frequently selected as "*neither*" or "*don't know*". *Religious healers/figures* were the most frequently selected to be "*harmful*" (15.0%) when compared to the rest of the options. In terms of medication and related products, surprisingly, only about half of the participants considered *antidepressants* to be *helpful* for his case (54.8%), with 21.7% considering them to be *harmful*. Less than half of the participants considered *tea* (24.2%), *vitamins* (32.1%), *sleeping pills* (25.6%), and *antipsychotics* (13.9%) to be "helpful", with *antipsychotics* being most frequently selected as "harmful" (41.8%).

**Knowledge of possible interventions**. Participants (Table 5) most commonly endorsed *receiving therapy with a specialized professional* (94.0%), *becoming more physically active* (92.8%), and *going to a specialized mental health services* (82.4%) as being *helpful* interventions for *Karim*. Only a small number of participants endorsed the use of *alcohol* (2.4%) or *cigarettes* (1.8%) to relax, with the majority considering them to be *harmful* (86.2% and 86.1% respectively).

**Knowledge of supporting others**. Participants (Table 5) most frequently endorsed *listening to his problem in an understanding way* (94.0%), *suggesting he seeks professional*

*help* (86.2%), and *rallying friends to cheer him up* (66.1%) as being *helpful* in his case. Surprisingly, only half of the participants considered *talking to him firmly about getting his act together* as being "*harmful*" (50.6%), with the rest considering it to be "*helpful*" (28.3%), "*neither*" (10.8%), or "*don't know*" (10.2%).

**Knowledge regarding prevention of mental disorders**. Participants (Table 5) most frequently endorsed *making regular time for relaxing activities* (95.2%), *keeping physically active* (92.2%), and *keeping regular contact with friends* (89.3%) and *family* (89.3%) as being *helpful* in preventing mental disorders.

**Beliefs about causal attribution**. *Mental illness* (41.5%) was the most endorsed option as the primary cause of *Karim*'s problem, followed by *stress* (28.0%), *environmental reasons* (13.4%), and *personal weakness* (11.1%) (Table 5). *Biological reasons* were the least endorsed as being the cause of *Karim*'s problem (9.3%).

**Hypothetical help-seeking**. When asked how they would deal with the problem if they were in *Karim*'s shoes (Table 5), participants most commonly reported that they would *talk to a friend* (63.2%), *to a psychologist* (60.2%), or *to a family member* (48.0%). Less than half of the participants reported that they would *deal with the problem by themselves* (45.0%), by *talking to a psychiatrist* (45.0%), or by *talking to a counselor* (34.5%). The least chosen options were talking to a family doctor (7.6%), a social worker (7.6%), or *any other healer* (7.0%).

**Literacy of Generalized Anxiety Disorder**

**Knowledge about GAD**. In general, results showed that only half of the participants were able to identify GAD as presented through the vignette of *Layla* (Table 6). However, answers for 4 of those participants were considered missing because they had chosen another disorder in addition to GAD. Therefore, a total of $N = 86$ (53.4%) participants were considered to have correctly recognized GAD, whereby almost half of the participants were not able to correctly identify it ($N = 75$, 46.6%). Interestingly, almost 30% of the participants believed that

Layla was experiencing general life stress as opposed to a mental disorder. In contrast to the above mentioned, more than half of the participants correctly recommended for Layla to seek professional help ($N$ = 120, 71.4%), as opposed to the rest ($N$ = 48, 28.6%) who were either undecided ($N$ = 29, 17.3%) or who did not think she should seek professional help ($N$ =19, 11.3%). Finally, correct recognition of GAD correct treatment recommendation for GAD were significantly related $X^2$ (159) = 29.416, $p$ = 0.000.

**Knowledge of available professionals and treatment options.** Participants (Table 7) most frequently endorsed psychologists (91.7%), close friends (82.2%), *close family members* (78.7%), *psychiatrists* (71.1%) and *social workers* (54.5%) as being people/professionals who can help *Layla*. Teachers (70.4%), nurses (77.4%), and *religious healers/figures* (61.5%) were most frequently selected as "*neither*" or "*don't know*". In terms of medication and related products, *tea* (36.9%), *vitamins* (36.5%), and *sleeping pills* (32.9%) were most frequently endorsed as *helpful* when compared to the rest of the options. With regard to antidepressants and antipsychotics, less than half of the participants considered them to be *helpful* (18.8% and 7.2% respectively), *harmful* (30.6% and 37.7% respectively), and almost half of the participants selected "*neither*" or "*don't know*" when endorsing these medications.

**Knowledge of possible interventions**. Participants (Table 7) most commonly endorsed *receiving therapy with a specialized professional* (87.1%), *becoming more physically active* (73.5%), and *joining a support group of people with similar problems* (71.8%) as being *helpful* interventions for *Layla*. Only a small number of participants endorsed the use of *alcohol* (4.1%) or *cigarettes* (5.4%) to relax, with the majority considering them to be *harmful* (82.9% and 85.6% respectively).

**Knowledge of supporting others.** Participants (Table 7) most commonly endorsed *listening to her problem in an understanding way* (92.9%), *suggesting she seeks professional help* (76.8%), and *rallying friends to cheer her up* (65.1%) as being *helpful*. Almost one third

of the participants (34.9%) considered *talking to her firmly about getting her act together* as being helpful, whereby 42.6% considered this approach to be *harmful*.

**Knowledge regarding prevention of mental disorders.** Participants (Table 7) most frequently endorsed *making regular time for relaxing activities* (97.6%), *keeping regular contact with friends* (87.1%), and *not using drugs* (85.8%) as the most *helpful* options for preventing mental disorders.

**Beliefs about causal attribution.** *Stress* was the main option chosen by the participants (56.1%) as the primary cause for what *Layla* is experiencing (Table 7), followed by *mental illness* (26.9%) and *personal weakness* (10.5%). The least endorsed options were *biological* (4.0%) and *environmental* (4.6%) reasons.

**Hypothetical help-seeking.** When asked how they would handle the problem if they were in *Layla*'s situation (Table 7), participants most commonly reported that they would *talk to a friend* (63.9%), followed by dealing with it by themselves (57.4%), by *talking to a psychologist* (57.4%), and by *talking to a family member* (51.5%). The least chosen options were *talking to a family doctor* (5.3%) and *talking to any other healer* (5.9%).

**Literacy of Suicide**

In general, scores on the literacy of suicide scale widely varied from one item to another (Table 8). For instance, almost all of the participants did not agree with the statement that "*people who have thoughts about suicide should not tell others about it*" (91.1%), and the majority disagreed with the statement that "*most people who commit suicide are psychotic*" (77.2%). However, only about half of the participants disagreed with the statement that "*people talking about suicide always increases the risk of suicide*" (56.5%). Finally, only about a third of the participants recognized that "*men are more likely to die by suicide than women*" (35.7%), that "*people who want to attempt suicide can change their mind quickly*" (30.9%), and that "*there is a strong relationship between people's alcoholism and suicide*" (42.4%). Overall,

participants scored low on literacy of suicide, as the proportion of total correct answers on the survey was only 56.4%.

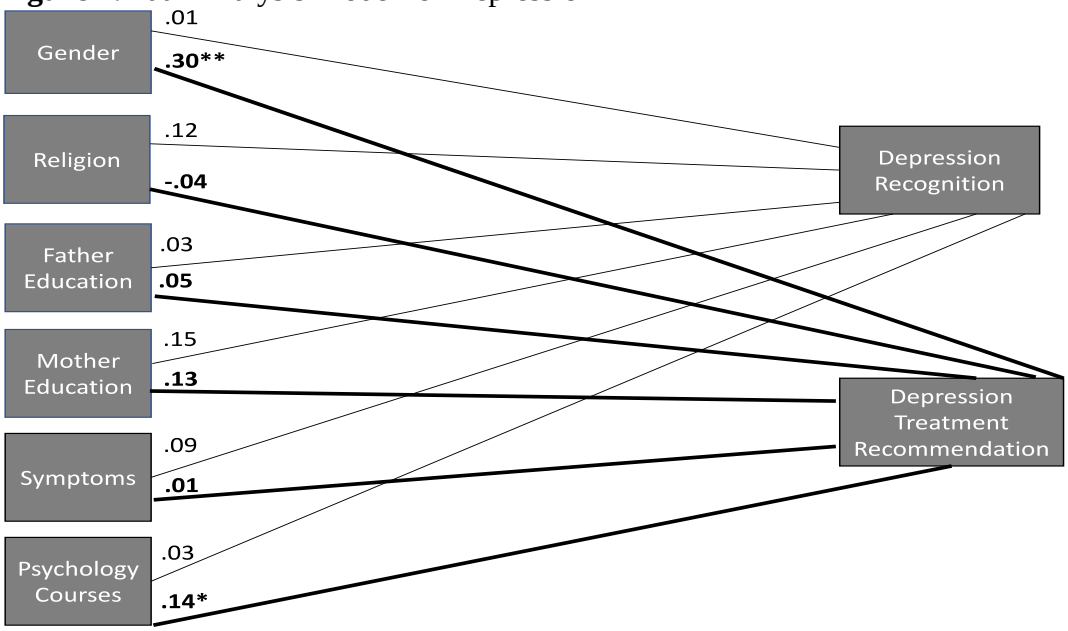
**Predictors of MHL**

Before proceeding with the analysis, we looked for multivariate outliers using mahalanobis distance for 8 degrees of freedom. Only one of the values was significant ($p$ = 0.0003), however none were influential as assessed by cook's distance. In order to examine the predictors of MHL, we tested three separate path analysis models on the AMOS software for each of the disorders at hand. Path analysis models are an extension of multiple regression analysis and allow for more complicated causal models to be tested (Streiner, 2005). In this study, because the depression and GAD models have two dependent variables for each, we used path analysis in order to reduce the number of statistical tests and to avoid inflating the error rate.

In order to examine whether or not the variables make a good fit for the model, we examined several indicators of fit, namely the GFI, CFI, and RMSEA. The Goodness of Fit (GFI) index is an indicator of the extent of variance and covariance in the data that is accounted for by the hypothesized model. The Comparative Fit Index (CFI) compares the model of interest with an alternative one, such as the null model. Usually, the values of GFI and CFI are accepted when they are greater than 0.9 (Hu & Bentler, 1999). In the present study, all three models had acceptable GFIs and CFIs values (0.97 and 0.99 respectively for depression literacy; 0.97 and 1.0 respectively for GAD literacy; 0.97 and 0.99 respectively for suicide literacy) which means that all three of them showed good fit. Finally, the Root Mean Square Error of Approximation (RMSEA) – which explains how the model would fit the populations covariance matrix – had an acceptable value for all three models (0.01 for depression literacy; 0.00 for GAD literacy; 0.01 for suicide literacy), indicating good model fit (Hu & Bentler, 1999).

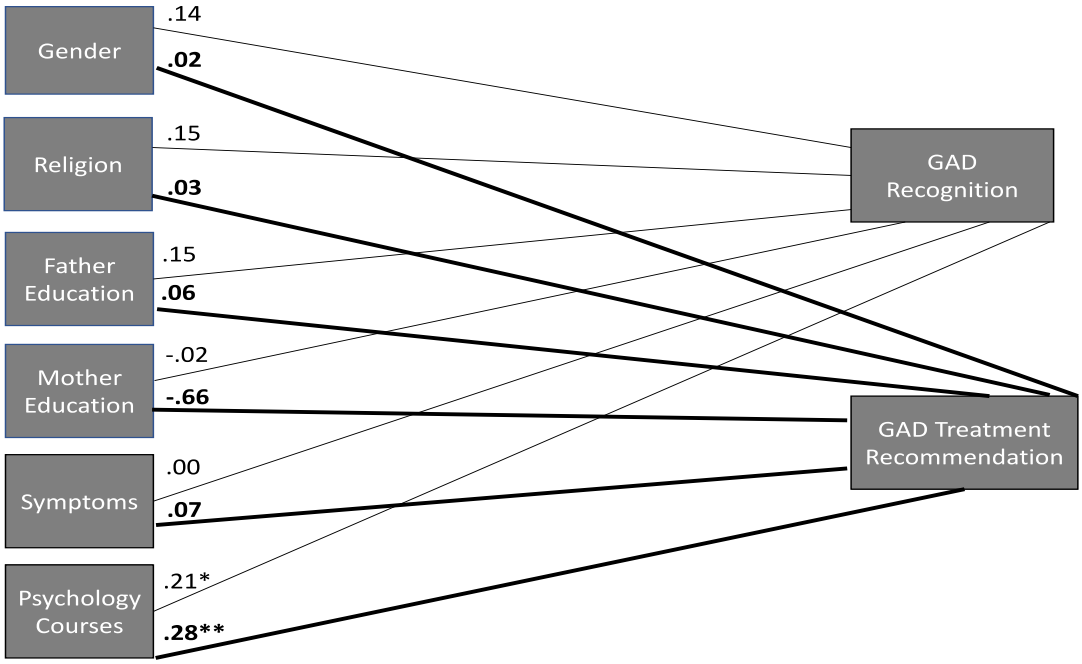
**Depression.** The depression model (Figure 1) was composed of 2 dependent variables (i.e. recognition of depression, and treatment recommendation for depression) and 6 independent variables (gender, mother's education, father's education, symptoms of depression, ever enrollment in psychology courses, and religion). Based on the model, only gender (β = 0.30, $p$ = 0.001) and enrollment in psychology courses (β = 0.14, $p$ = 0.036) significantly predicted correct treatment recommendation for depression (Table 9).

**Figure 1**. Path Analysis Model for Depression



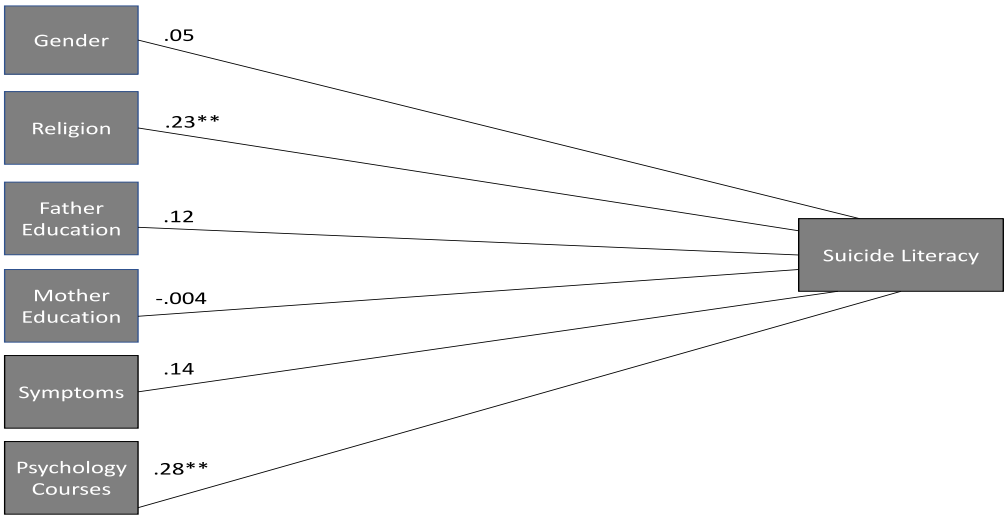

**Anxiety.** The GAD model (Figure 2) was composed of 2 dependent variables (i.e. recognition of GAD, and treatment recommendation for GAD) and 6 independent variables (gender, mother's education, father's education, symptoms of anxiety, ever enrollment in psychology courses, and religion). Only enrollment in psychology courses significantly predicted GAD recognition (β = 0.21, $p$ = 0.018) and GAD treatment recommendation (β = 0.282, $p$ = 0.001).

**Figure 2**. Path Analysis Model for GAD




**Suicide.** The suicide model (Figure 3) was composed of 1 dependent variable (i.e. literacy for suicide) and 6 independent variables (gender, mother's education, father's education, risk of suicidality, ever enrollment in psychology courses, and religion. Only religion ($\beta = 0.232$, $p = 0.002$) and enrollment in psychology courses ($\beta = 0.282$, $p = 0.002$) significantly predicted literacy of suicide.

**Figure 3**. Path Analysis Model for Suicide Literacy



# CHAPTER FIVE

# DISCUSSION

## Overall Aims

This study aimed to explore the construct of MHL in a sample of university students in Lebanon, by focusing on their literacy of depression, GAD, and suicide. In addition to that, this study aimed to investigate whether socio-demographic variables (i.e. gender, enrollment in psychology courses, religion, and parental education) and psychological symptoms (i.e. symptoms of depression, GAD, and suicidality, depending on the disorder under study) can predict MHL for each of three aforementioned disorders.

## Literacy of Depression and Anxiety

In general, our sample showed relatively higher levels of MHL for depression than for GAD. That is, participants in our sample were able to correctly recognize symptoms of depression as a mental illness, and were able to correctly recommend professional treatment for it. Whereas for GAD, participants commonly misrecognized its symptoms as representing general life stress, and only half the sample correctly identified GAD. Surprisingly, and despite the latter, more than half of the sample correctly recommended professional treatment for GAD. This may indicate that although GAD might not be commonly recognized as a disorder, the majority of participants still thought that symptoms may require professional help. Our findings complement previous studies in the literature suggesting that the public generally tends to better recognize depression as a mental illness as opposed to GAD (Kim et al., 2015; Paulus et al., 2015; Coles & Coleman, 2010). This may be accounted for by the increased visibility of depression in the media and other campaigns when compared to that of GAD. For example, previous studies have found that the label of depression may sometimes be over-used arbitrarily by the public (Reavley & Jorm, 2011), and this could explain the seemingly high rates of recognition. With regard to the low recognition of GAD, one possible explanation may

be that people in Lebanon underestimate the impact of symptoms of GAD, as they are less obvious than symptoms of other anxiety disorders such as PTSD, OCD, or panic disorders. Taken together, this may represent an issue regarding public awareness of GAD in Lebanon as opposed to depression because based on our findings, GAD may well go unnoticed without being properly attended to, which may exacerbate its symptoms (Thompson et al., 2008). This is especially relevant for our sample, because symptoms of anxiety seemed to be relatively high, seeing that most participants showed borderline abnormal to abnormal symptoms of anxiety. Ultimately, this means that GAD should be given more attention in public interventions, with a possible emphasis on the importance of considering daily functioning when assessing symptoms of GAD. Furthermore, and consistent with Jorm's (1997a) framework, our data shows that correct recognition of a disorder (i.e. depression and anxiety in the context of our study) and correct treatment recommendation are significantly related. This means that participants who correctly recognized depression were more likely to correctly recommend professional help for it, and the same is equally true for GAD.

Most participants generally recognized that psychologists and psychiatrists are helpful in the cases of depression and GAD, which points towards participants' belief in the primarily beneficial role of formal sources of help for these disorders. Although the most endorsed medication for depression were antidepressants, only half of the sample considered them to be helpful, with almost a quarter considering them to be harmful. In the case of GAD, the most endorsed medicinal products were vitamins and tea, whereby only a small number of participants endorsed antidepressants to be useful medicines. The apparent rejection or lack of awareness about the benefits of using psychiatric medication has been previously reported (Jorm, 2012) and may be explained by several factors. For example, previous studies have found that the use of psychiatric medications may be stigmatized, as their use might be associated with shame and social discomfort (Boyd et al., 2015). Because anti-depressants have

been shown to be helpful treatments for depression and GAD, our findings suggest the need to better educate the public regarding the efficacy of medications in the cases of both mentioned disorders. This is because rejection of psychiatric drugs may lead to a lack of adherence to prescribed treatments by healthcare professionals (Jorm, 2012), which may exacerbate treatment progress.

With regard to possible interventions that can be undertaken to help with the symptoms of both the GAD and depression vignette, the most endorsed option as helpful in both cases was receiving help from specialized professional. Reassuringly, the use of alcohol and cigarettes in both cases were mostly endorsed as harmful. Participants in general did not recognize that talking to someone firmly about getting their act together when they are experiencing psychological symptoms is harmful, and that inquiring about potential suicidal thoughts is helpful. While most of the sample recognized that listening to someone's problem in an understanding way is helpful, our results suggest that participants from our sample may benefit from increased education regarding communication skills to support others experiencing distress. For example, talking to someone firmly about getting their act together when they are experiencing psychological symptoms may be counterproductive, since it could convey a judgmental attitude that lacks validation of the recipient's experience (Jorm et al., 2008, Marom et al., 2002). This is of major importance because when asked how they would deal with the problem if they were in the position of the person portrayed in the vignette, participants mostly reported that they would primarily talk to a friend.

In terms of prevention, participants in our sample seemed to recognize the importance of social support, physical activity, making time for enjoyable activities, and not relying on drugs and alcohol to cope in both the depression and GAD cases. However, it appeared that the majority perceived avoiding stressful situations as helpful, that which may potentially be

problematic given that mental health professionals consider this to be a harmful technique to handle psychological symptoms (Loureiro et al., 2013).

**Literacy of Suicide**

Literacy of suicide was relatively low in our sample, given that nearly half of the total answers were correct. This is comparable to other findings in the literature (Oliffe et al., 2016; Ram et al., 2017), and similarly highlights the need for increased public interventions regarding addressing misconceptions and uncertainties pertaining to suicide. Specifically, although our results showed that most participants believed that people who have suicidal thoughts should tell others about them, only about half of the sample believed that this would not increase the risk of suicide. This means that while most participants endorsed talking about suicidal thoughts, nearly half of them did not know that this does not increase the risk of suicide. This may be a barrier to discussing suicidal thoughts for students who may have otherwise wanted to do so. Ultimately, this suggests the importance of reassuring university students that mental health professionals found that the benefits of discussing suicidality with others may outweigh the risks (Loureiro et al., 2013; Gould et al., 2005; Jorm et al., 2008). Given that the Lebanese organization Embrace recently launched a suicide hotline in Lebanon, this may provide a suitable platform to redirect students who may have suicidal thoughts, or who may know others who have suicidal thoughts. This is especially relevant to our student sample, seeing that almost a quarter was shown to be at high risk of committing suicide. Furthermore, participants showed difficulty in recognizing risk factors such as the relationship between alcoholism and suicidality, and the higher likelihood of men to die by suicide compared to women. Combined with the above-mentioned, these findings may have important implications for public interventions in order to decrease the stigma associated with suicide, and to better educate the public regarding suicidality.

The above-mentioned findings are aligned with previous research conducted in western (Oliffe et al., 2016; Batterham et al., 2013) and eastern (Ram et al., 2017) countries, although some differences can be noted. That is, although Oliffe et al. (2016) and Batterham et al. (2013) surveyed participants from the general population, their results still showed higher suicide literacy than in our, and Ram et al. (2017)'s studies in which we surveyed university students. Because university students are expected to have higher literacy than the general population, this may provide further support to the notion that in general, western countries tend to have higher literacy than non-western countries (Altweck et al., 2015). In this sense, stigma, availability of mental health services and information, and cultural factors, may have important influences over MHL (Altweck et al., 2015).

**Predictors of MHL**

Enrollment in psychology courses (i.e. psychology courses that address mental disorders) seemed to be the strongest predictor of MHL, as it significantly predicted correct recognition of GAD, correct treatment recommendation for GAD and depression, and literacy of suicide, as hypothesized. Thus, receiving direct education regarding mental health may supersede the influences of the other studied variables on MHL, and this is consistent with previous findings in the literature (Cook et al., 2011). Interestingly, enrollment in psychology courses did not predict recognition of depression. This could possibly be explained by the fact that the label of depression is widely used by the public, regardless of whether or not that label is correctly recognized as a mental disorder (Reavley & Jorm, 2011). Supporting this claim is the fact that enrollment in psychology courses predicted correct treatment recommendation for depression, which ultimately means that those with prior coursework in psychology recognized depression as a mental disorder that needs professional help. Furthermore, the fact that prior coursework in psychology significantly predicted both GAD recognition and treatment recommendation, highlights the strong influence of direct mental health education regarding

less obvious disorders such as GAD. This is especially relevant given that enrollment in psychology courses did not predict recognition of depression, whose symptoms are widely publicized, unlike GAD. Furthermore, it is not surprising that enrollment in psychology courses predicted suicide literacy, especially seeing that evaluation of suicide literacy in this study relied on recognition of facts pertaining to suicidality. As such, those with prior coursework in psychology are more likely to be exposed to scientific facts (e.g. alcohol being a risk factor for suicide, or men being more likely to die by suicide etc…) about suicide than those without coursework in psychology. As with the above-mentioned recommendations for literacy of GAD and depression, direct education in psychology is essential to increasing literacy of suicide.

Gender did not seem to be a strong predictor of MHL, as it only significantly predicted correct treatment recommendation for depression, disconfirming previous findings in the literature (Kim et al., 2015; Paulus et al., 2015), and disconfirming our hypothesis. This may indicate that knowledge and misconceptions regarding GAD and suicidality are similar across men and women in our sample; GAD may be less understood by the public in general, and facts about suicide may be less readily available to the public in general. This contradicts previous findings whereby despite the overall low literacy of GAD and suicide, women were still more likely to have higher literacy of GAD and suicide than men (Kim et al., 2015; Batterham et al., 2013; Oliffe et al., 2016). Because we had expected women to have higher literacy than men, our findings are surprising, and suggest that women may not be better informed about mental health issues than men in our student sample in Lebanon. However, seeing that depression was generally considered as a problem in our sample (as opposed to GAD), the fact that women were significantly more likely to recommend professional help confirms and adds to previous findings in the literature. Namely, this finding suggests that women may have more positive attitudes than men regarding professional help-seeking when

the symptoms portrayed are perceived as a problem. In accordance with previous findings, this may be explained by the manner in which women are socialized to express emotional troubles differently than men (Wong, 2016). As such, women may attribute more importance to seeking mental health services than men.

As hypothesized, religion seemed to play a role, although not consistently, in predicting MHL. For instance, it significantly predicted suicide literacy, whereby participants who did not associate with a religion were more likely to have increased knowledge about suicide compared to participants who associated with a religion. This may be explained by the fact that suicide is highly condemned across religions, which in turn causes it to be a taboo and stigmatized subject in Lebanon. Ultimately, this may account for the lower suicide literacy of participants associating with a religion, who may have not received correct information about suicide compared to their counterparts. On the other hand, religion seemed to have some influence over recognition of GAD and depression (but not on correct treatment recommendation for GAD and depression) although based on our models, it did not reach sufficient statistical significance. The lack of statistical significance in this case may be due to insufficient statistical power due to the small sample size resulting from missing data. Nevertheless, we noticed a trend in participants not associating with a religion correctly recognizing depression and GAD more than participants associating with a religion. This could be explained by the fact that religiosity in our student sample (which may be one of several cultural indicators) may play a role in conceptualizing whether or not symptoms are perceived as a mental disorder but may not influence whether professional treatment is recommended for them. Although previous research has highlighted cross-cultural differences in MHL between western and non-western countries (Altwick et al., 2015), to the best of our knowledge, this is the first investigation in which religion was examined as a predictor of MHL. Not surprisingly,

religiosity may warrant further examination as it relates to MHL, and specifically as it relates to the conceptualization of a mental disorder.

Current psychological symptoms did not seem to be associated with any aspects of MHL. Specifically, (1) symptoms of depression did not predict recognition of depression or correct treatment recommendation for depression, (2) symptoms of GAD did not predict recognition of GAD or correct treatment recommendation for GAD, and (3) being at risk of suicide did not predict literacy of suicide. This means that MHL does not vary according to symptom severity for GAD, depression, and suicidality. Ultimately, participants who were directly experiencing symptoms did not seem to know more about the disorders at hand, and thus, this suggests a lack of self-awareness regarding these symptoms. In turn, this suggests the need for better screening recommendations for university students. Ideally, a positive relationship between current psychological symptoms and MHL is recommended because this would potentially reflect a higher probability of treatment seeking among those who are experiencing psychological symptoms. Nevertheless, we had expected that due to cognitive deficits associated with symptoms of depression, we would find a negative relationship between symptoms of depression and literacy of depression. However, our findings contradict the results from Kim et al. (2015) where they have reported a negative association between current psychological symptoms and literacy of depression in a sample of university students. Namely, we found no relationship between symptoms of depression and literacy of depression. However, our findings confirm our hypothesis and align with Kim et al. (2015)'s finding that GAD symptoms are not related to literacy of GAD, in addition to Batterham et al. (2013)'s finding that suicide risk is not related to literacy of suicide. The fact that we did not find any relationship between literacy of depression and symptoms of depression may indicate that cognitive deficits (i.e. symptoms of depression) associated with the recognition of depression may not be as impactful in our context.

Finally, parental education did not seem to be associated with MHL. Although this is not a definitive indicator of SES, this means that students' knowledge about mental health is not influenced by the parents' level of education. A potential explanation could be the fact that this sample represented an educated group who may have access to mental health information regardless of whether or not the parents are well educated. This is inconsistent with previous findings in the literature (Knesebeck et al., 2013), and it disconfirms our hypothesis. We had expected that participants whose parents were more educated would show higher MHL. This is because higher parental education may reflect higher SES, which may indicate a higher possibility of students having better access to mental health services and information about mental health, which may ultimately result in higher MHL. Based on our results, this might not be the case with our university sample and may thus warrant further investigation among young adults who are not university students.

## LIMITATIONS

Results of this study should be viewed in light of several limitations. First, our sample size was relatively small, and this impedes the extent to which results may be generalizable to student samples in Lebanon. Second, our sample reflected a group whose parents are highly educated, considering that more than half of our participants had parents who completed a university degree; samples whose parents are less educated may yield different results with regard to this topic. Equally, our sample represented an educated group because all participants were recruited from universities; young adults who are not enrolled in universities would be expected to score lower on measures of MHL because they are not expected to be as exposed to information about mental health as young adults who are university students. Third, we could not properly account for the SES variable because of the challenges associated with measuring SES in Lebanon; nevertheless, we accounted for this problem by incorporating parental education instead, which is one of the commonly used indicators for SES. Fourth, the cross-

sectional nature of this study limits our ability to support the main theory behind this work, namely that increasing MHL may lead to a decrease in mental illness; although this is widely supported in the literature, it remains to be tested in Lebanon. Fifth, the instruments used in this study may be an important limiting factor. For instance, we relied on a rather simplistic measure for MHL of depression and GAD, as it was only limited to correct recognition and correct treatment recommendation for both disorders instead of yielding a total MHL score. Also, the measurement of religion relied on self-reported affiliation with a religion, and not on an actual religiosity scale; this may suggest the need for researchers to further examine the relationship between suicidality and religiosity using well established measures of religiosity. Finally, we relied on brief screening instruments to measure symptoms of depression, GAD, and suicide risk, without testing their convergent validity through clinician assessment; this speaks of the nature of this project, in that the methodology used was cost-effective and time-effective.

## IMPLICATIONS

Our findings have implications on the international literature and may have benefits locally. On an international level, and most significantly, our findings provide insight into the relevance of religion to be integrated into the discussion of MHL in contexts where religiosity may be an important cultural indicator, especially for the topic of suicide which may be a stigmatized subject. Furthermore, our findings highlight similarities with the international literature in that literacy of depression is higher than literacy of GAD across different cultural contexts. In turn, this may represent similar issues in public awareness of GAD, and specifically in assessing whether or not symptoms meet criteria for a mental disorder.

Results of this study may have significant implications locally, especially for educational public interventions in universities in Lebanon regarding mental health. Given that the strongest and most consistent predictor of MHL across the three disorders was enrollment

in psychology courses, this means that compared to the other studied variables, direct education about mental health seems to be the most effective. In this regard, and because not all university students enroll in psychology courses, interventions in universities in Lebanon can focus on disseminating information regarding the below themes.

First, it is crucial that GAD receives more attention because symptoms of GAD may very well be unnoticed and misinterpreted as general life stress, that which may exacerbate the severity of the disorder if unattended to. In this sense, public interventions can focus on the importance of considering the person's daily functioning when assessing whether symptoms meet criteria for a disorder or not. This may help students who are not exposed to information about psychology to better differentiate between general life stress and GAD.

Second, participants in our sample viewed mental health providers as helpful in the cases of depression and GAD, but did not equally endorse the use of psychiatric medication for the treatment of both disorders. In this regard, public campaigns may do well in tailoring messages to better explain how and why medications may complement the work that mental health providers provide in therapy. This may have important clinical implications in that it may influence acceptance of, and adherence to, psychiatric medications within the context of treatment.

Third, because participants reported that they would talk to a friend as the first line of help if they were to experience psychological symptoms, this means that educational interventions can focus on peer support and related communication skills. For example, university students can be encouraged to validate the experiences of others experiencing distress as opposed to criticizing or judging them. Because most of the sample recognized the importance of listening to others' problems, this may indicate a willingness to improve skills of attending to others.

Fourth, because our sample endorsed talking about suicide, but a large portion thought that this may increase the risk of suicide, university students may require some reassurance that the risks outweigh the benefits. Ultimately, this could contribute in decreasing stigma, and could encourage students to consider more open communication about suicide. Furthermore, university students may well benefit from learning about the risk factors of suicide, given that this may help in prevention and peer referrals.

Finally, because associating with a religion appeared to negatively influence literacy of suicide, this may suggest the need to tailor educational interventions regarding suicide in Lebanon. Specifically, religion represents an important cultural indicator in Lebanon, however religions usually condemn suicide. Thus, it may be essential to address suicidality in ways that do not threaten the religious beliefs of young adults, while still encouraging them to be open about discussing suicidality.

## CONCLUSION & RECOMMENDATIONS

The present study is the first, to the best of our knowledge, to quantitatively investigate the construct of MHL in a sample of university students in Lebanon. This study provides further support to the findings that GAD is much less recognized by university students than is depression, and suggests that direct education about mental health is the most effective in increasing MHL. We extend the literature on two levels. First, our results suggest that gender, SES, and psychological symptoms do not have significant influences on MHL in a sample of university students in Lebanon. This contradicts previous findings, and may shed light on cultural factors associated with MHL. Second, we add to the literature the finding that religion may play an important role in literacy of suicide.

Our findings are relevant for educational interventions in universities, that aim to increase awareness about mental health and to promote service use. Campaigns can use our

recommendations to tailor their strategies when addressing the topics mental health to university students.

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## APPENDIX I

Table 2
*Depression and Anxiety Severity*

| PHQ-9 Severity | N (%) | GAD-7 Severity | N (%) | HADS Severity | N (%) |
|---|---|---|---|---|---|
| No symptoms | 62 (38.0) | Normal | 42 (26.1) | Normal | 72 (45.3) |
| Mild | 55 (33.7) | Mild | 66 (41.0) | Borderline Abnormal | 38 (23.9) |
| Moderate | 23 (14.1) | Moderate | 31 (19.3) | Abnormal | 49 (30.8) |
| Moderately Severe | 14 (8.6) | Severe | 22 (13.7) | | |
| Severe | 9 (5.5) | | | | |

Table 3
*Suicidal Behavior Questionnaire – Revised*

| SBQ-R | N (%) |
|---|---|
| 1. Have you ever thought about or attempted to kill yourself? | |
| Never | 86 (51.8) |
| It was just a brief passing thought | 40 (24.1) |
| I have had a plan at least once to kill myself but did not try to do it | 13 (7.8) |
| I have had a plan at least once to kill myself and really wanted to die | 13 (7.8) |
| I have attempted to kill myself, but did not want to die | 8 (4.8) |
| I have attempted to kill myself, and really hoped to die | 6 (3.6) |
| 2. How often have you thought about killing yourself in the past year? | |
| Never | 106 (63.9) |
| Rarely (1 time) | 21 (12.7) |
| Sometimes (2 times) | 17 (10.2) |
| Often (3-4 times) | 9 (5.4) |
| Very often (5 times) | 13 (7.8) |
| 3. Have you ever told someone that you were going to commit suicide, or that you might, do it? | |
| No | 117 (72.7) |
| Yes, at one time, but did not really want to die | 18 (11.2) |
| Yes, at one time, and really wanted to die | 7 (4.3) |

| | |
|---|---|
| Yes, more than once, but did not want to do it | 10 (6.2) |
| Yes, more than once and really wanted to do it | 9 (5.6) |
| 4. How likely is it that you will attempt suicide someday? | |
| Never | 93 (58.5) |
| No chance at all | 24 (15.1) |
| Rather unlikely | 16 (10.1) |
| Unlikely | 14 (8.8) |
| Likely | 7 (4.4) |
| Rather likely | 2 (1.3) |
| Very likely | 3 (1.9) |
| SBQR Total Risk | |
| Low Risk | 119 (75.3) |
| High Risk | 39 (24.7) |

Table 4

*Knowledge about Depression (N=171): Recognition and Treatment Recommendations*

| *In your opinion, what is going on with Karim?* | N (%) |
|---|---|
| 1. There is nothing wrong with him | 1 (0.5) |
| 2. General life stress | 9 (5.2) |
| 3. Depression | 146 (85.3) |
| 4. Schizophrenia | 0 (0) |
| 5. Social phobia | 0 (0) |
| 6. Generalized anxiety disorder | 4 (2.3) |
| 7. Other anxiety disorder | 3 (1.7) |
| 8. Personality disorder | 5 (2.9) |
| 9. Medical problem | 1 (0.5) |
| 10. Other | 2 (1.1) |
| *Do you think that Karim should seek professional help for what he is experiencing?* | N (%) |
| Yes | 152 (91.0) |
| No | 8 (4.8) |
| Undecided | 7 (4.2) |
| *Recognition of Depression* | N (%) |
| Correct | 142 (87.1) |
| Incorrect | 21 (12.9) |
| *Recommendation for treatment of Depression* | N (%) |
| Correct | 152 (91.0) |
| Incorrect | 15 (9.0) |
| *Ever experienced something similar to Karim?* | N (%) |
| Yes | 95 (56.9%) |
| No | 72 (43.1%) |

Table 5
*Beliefs about various types of help for Depression (N=171)*

| *People who could possibly help* | Harmful N (%) | Helpful N (%) | Neither N (%) | Don't Know N (%) |
|---|---|---|---|---|
| 1. General Practitioner | 6 (3.7) | 73 (44.5) | 51 (31.1) | 34 (20.7) |
| 2. Teacher | 6 (3.6) | 74 (44.6) | 55 (33.1) | 31 (18.7) |
| 3. Psychologist | 1 (0.6) | 159 (94.6) | 2 (1.2) | 6 (3.6) |
| 4. Nurse | 5 (3.0) | 38 (22.9) | 85 (51.2) | 38 (22.9) |
| 5. Social Worker | 7 (4.2) | 77 (46.7) | 47 (28.5) | 34 (20.6) |
| 6. Psychiatrist | 2 (1.2) | 139 (84.2) | 11 (6.7) | 13 (7.9) |
| 7. Telephone Helpline | 12 (7.2) | 102 (61.1) | 33 (19.8) | 20 (12.0) |
| 8. Close Family Member | 5 (3.0) | 135 (80.8) | 17 (10.2) | 10 (6.0) |
| 9. Close Friend | 5 (3.0) | 139 (83.7) | 11 (6.6) | 11 (6.6) |
| 10. Religious Healer / Figure | 24 (15.0) | 53 (33.1) | 51 (31.9) | 32 (20.0) |
| *Possible Medicines* | | | | |
| 11. Tea | 6 (3.6) | 40 (24.2) | 76 (46.1) | 43 (26.1) |
| 12. Vitamins | 11 (6.7) | 53 (32.1) | 58 (35.2) | 43 (26.1) |
| 13. Antidepressants | 36 (21.7) | 91 (54.8) | 10 (6.0) | 28 (16.9) |
| 14. Antipsychotics | 69 (41.8) | 23 (13.9) | 25 (15.2) | 48 (29.1) |
| 15. Sleeping Pills | 67 (39.9) | 43 (25.6) | 26 (15.5) | 32 (19.0) |
| *Possible Interventions* | | | | |
| 1. Becoming more physically active | 3 (1.8) | 155 (92.8) | 5 (3.0) | 4 (2.4) |
| 2. Getting up early each morning and getting out in the sunlight | 0 (0) | 128 (76.6) | 17 (10.2) | 22 (13.2) |
| 3. Receiving therapy with a specialized professional | 1 (0.6) | 156 (94.0) | 6 (3.6) | 3 (1.8) |
| 4. Looking up a website giving information about the problem | 39 (23.4) | 60 (35.9) | 42 (25.1) | 26 (15.6) |
| 5. Reading a self-help book on his problem | 7 (4.2) | 101 (60.5) | 24 (14.4) | 35 (21.0) |
| 6. Joining a support group of people with similar problems | 9 (5.4) | 130 (78.3) | 10 (6.0) | 17 (10.2) |
| 7. Going to a specialized mental health service | 3 (1.8) | 136 (82.4) | 10 (6.1) | 16 (9.7) |

| | | | | |
|---|---|---|---|---|
| 8. Using alcohol to relax | 144 (86.2) | 4 (2.4) | 17 (10.2) | 2 (1.2) |
| 9. Smoking cigarettes to relax | 142 (86.1) | 3 (1.8) | 17 (10.3) | 3 (1.8) |
| *Knowledge and skills to support others* | | | | |
| 1. Listen to his problem in an understanding way | 2 (1.2) | 157 (94.0) | 5 (3.0) | 3 (1.8) |
| 2. Talk to him firmly about getting his act together | 84 (50.6) | 47 (28.3) | 18 (10.8) | 17 (10.2) |
| 3. Suggest she seeks professional help | 2 (1.2) | 144 (86.2) | 8 (4.8) | 13 (7.8) |
| 4. Make an appointment for him to see a general practitioner with his knowledge | 15 (9.0) | 98 (59.0) | 28 (16.9) | 25 (15.1) |
| 5. Ask him whether he is feeling suicidal | 31 (18.7) | 99 (59.6) | 8 (4.8) | 28 (16.9) |
| 6. Suggest he has a few drinks to forget his troubles | 146 (87.4) | 5 (3.0) | 13 (7.8) | 3 (1.8) |
| 7. Rally friends to cheer him up | 20 (12.1) | 109 (66.1) | 18 (10.9) | 18 (10.9) |
| 8. Not acknowledge his problem, ignore him until he gets over it | 148 (89.7) | 3 (1.8) | 10 (6.1) | 4 (2.4) |
| *Beliefs about prevention* | | | | |
| 1. Keep physically active | 1 (0.6) | 153 (92.2) | 9 (5.4) | 3 (1.8) |
| 2. Avoid situations that might be stressful | 9 (5.4) | 119 (71.7) | 24 (14.5) | 14 (8.4) |
| 3. Keep regular contact with friends | 3 (1.8) | 150 (89.3) | 3 (1.8) | 12 (7.1) |
| 4. Keep regular contact with family | 4 (2.4) | 150 (89.3) | 4 (2.4) | 10 (6.0) |
| 5. Not use drugs | 7 (4.2) | 146 (86.9) | 8 (4.8) | 7 (4.2) |
| 6. Never drink alcohol | 6 (3.6) | 127 (75.6) | 26 (15.5) | 9 (5.4) |
| 7. Make regular time for relaxing activities | 2 (1.2) | 160 (95.2) | 4 (2.4) | 2 (1.2) |
| 8. Have a religious or spiritual belief | 11 (6.6) | 88 (52.7) | 34 (20.4) | 34 (20.4) |
| *Belief About Causal Attribution* | | N (%) | | |
| 1. Stress | | 48 (28.0) | | |

| | |
|---|---|
| 2. Biological reasons | 16 (9.3) |
| 3. Environmental reasons | 23 (13.4) |
| 4. There is nothing wrong with him | 3 (1.7) |
| 5. Personal weakness | 19 (11.1) |
| 6. Mental illness | 71 (41.5) |
| 7. Other | 6 (3.5) |
| *Hypothetical Help Seeking* | |
| 1. Deal with it myself | 77 (45.0) |
| 2. Talk to a family member | 82 (48.0) |
| 3. Talk to a friend | 108 (63.2) |
| 4. Talk to a psychiatrist | 77 (45.0) |
| 5. Talk to a family doctor | 13 (7.6) |
| 6. Talk to another medical doctor | 14 (8.2) |
| 7. Talk to a psychologist | 103 (60.2) |
| 8. Talk to a social worker | 13 (7.6) |
| 9. Talk to a counselor | 59 (34.5) |
| 10. Talk to any other mental health provider | 33 (19.3) |
| 11. Talk to a religious or spiritual leader | 21 (12.3) |
| 12. Talk to any other healer | 12 (7.0) |
| 13. Other | 12 (7.0) |

Table 6

*Knowledge about GAD (N=171): Recognition and Treatment Recommendations*

| *In your opinion, what is going on with Layla?* | N (%) |
|---|---|
| 1. There is nothing wrong with her | 3 (1.7) |
| 2. General life stress | 51 (29.8) |
| 3. Depression | 5 (2.9) |
| 4. Schizophrenia | 2 (1.1) |
| 5. Social phobia | 4 (2.3) |
| 6. Generalized anxiety disorder | 90 (52.6) |
| 7. Other anxiety disorder | 6 (3.5) |
| 8. Personality disorder | 6 (3.5) |
| 9. Medical problem | 0 (0) |
| 10. Other | 5 (2.9) |
| *Do you think that Layla should seek professional help for what she is experiencing?* | N (%) |
| Yes | 120 (71.4) |
| No | 19 (11.3) |
| Undecided | 29 (17.3) |
| Recognition of GAD | N (%) |
| Correct | 86 (53.4) |
| Incorrect | 75 (46.6) |
| Recommendation for treatment of GAD | N (%) |
| Correct | 120 (71.4) |
| Incorrect | 48 (28.6) |
| Ever experienced something similar to Layla? | (N%) |
| Yes | 88 (51.5) |
| No | 81 (47.4) |

Table 7

*Beliefs about various types of help for GAD (N=171)*

| People who could possibly help | Harmful N (%) | Helpful N (%) | Neither N (%) | Don't Know N (%) |
|---|---|---|---|---|
| 1. General Practitioner | 9 (5.4) | 62 (36.9) | 41 (24.4) | 56 (33.3) |
| 2. Teacher | 8 (4.7) | 42 (24.9) | 86 (50.9) | 33 (19.5) |
| 3. Psychologist | 0 (0) | 155 (91.7) | 9 (5.3) | 5 (3.0) |
| 4. Nurse | 6 (3.6) | 32 (19.0) | 93 (55.4) | 37 (22.0) |
| 5. Social Worker | 6 (3.6) | 91 (54.5) | 45 (26.9) | 25 (15.0) |
| 6. Psychiatrist | 6 (3.6) | 118 (71.1) | 20 (12.0) | 22 (13.3) |
| 7. Telephone Helpline | 6 (3.6) | 78 (46.2) | 54 (32.0) | 31 (18.3) |
| 8. Close Family Member | 3 (1.8) | 133 (78.7) | 21 (12.4) | 12 (7.1) |
| 9. Close Friend | 1 (0.6) | 139 (82.2) | 15 (8.9) | 14 (8.3) |
| 10. Religious Healer / Figure | 18 (10.7) | 47 (27.8) | 58 (34.3) | 46 (27.2) |
| Possible medicines | | | | |
| 1. Tea | 5 (3.0) | 62 (36.9) | 64 (38.1) | 37 (22.0) |
| 2. Vitamins | 11 (6.5) | 62 (36.5) | 56 (32.9) | 41 (24.1) |
| 3. Antidepressants | 52 (30.6) | 32 (18.8) | 44 (25.9) | 42 (24.7) |
| 4. Antipsychotics | 63 (37.7) | 12 (7.2) | 41 (24.6) | 51 (30.5) |
| 5. Sleeping Pills | 57 (33.5) | 56 (32.9) | 26 (15.3) | 31 (18.2) |
| Possible interventions | | | | |
| 1. Becoming more physically active | 5 (2.9) | 125 (73.5) | 27 (15.9) | 13 (7.6) |
| 2. Getting up early each morning and getting out in the sunlight | 1 (0.6) | 119 (70.0) | 32 (18.8) | 18 (10.6) |
| 3. Receiving therapy with a specialized professional | 1 (0.6) | 148 (87.1) | 12 (7.1) | 9 (5.3) |
| 4. Looking up a website giving information about the problem | 30 (17.6) | 78 (45.9) | 37 (21.8) | 25 (14.7) |
| 5. Reading a self-help book on her problem | 5 (2.9) | 111 (65.3) | 30 (17.6) | 24 (14.1) |
| 6. Joining a support group of people with similar problems | 10 (5.9) | 122 (71.8) | 15 (8.8) | 23 (13.5) |

| | | | | |
|---|---|---|---|---|
| 7. Going to a specialized mental health service | 7 (4.1) | 116 (68.2) | 21 (12.4) | 26 (15.3) |
| 8. Using alcohol to relax | 141 (82.9) | 7 (4.1) | 17 (10.0) | 5 (2.9) |
| 9. Smoking cigarettes to relax | 143 (85.6) | 9 (5.4) | 11 (6.6) | 4 (2.4) |
| Knowledge and skills to support others | | | | |
| 1. Listen to her problem in an understanding way | 0 (0) | 157 (92.9) | 10 (5.9) | 2 (1.2) |
| 2. Talk to her firmly about getting her act together | 72 (42.6) | 59 (34.9) | 19 (11.2) | 19 (11.2) |
| 3. Suggest she seeks professional help | 7 (4.2) | 129 (76.8) | 19 (11.3) | 12 (7.1) |
| 4. Make an appointment for her to see a general practitioner with her knowledge | 15 (8.9) | 95 (56.5) | 33 (19.6) | 25 (14.9) |
| 5. Ask her whether she is feeling suicidal | 37 (21.9) | 78 (46.2) | 29 (17.2) | 25 (14.8) |
| 6. Suggest she has a few drinks to forget her troubles | 132 (78.6) | 11 (6.5) | 19 (11.3) | 6 (3.6) |
| 7. Rally friends to cheer her up | 12 (7.1) | 110 (65.1) | 23 (13.6) | 24 (14.2) |
| 8. Not acknowledge her problem, ignore her until she gets over it | 149 (88.2) | 7 (4.1) | 7 (4.1) | 6 (3.6) |
| Beliefs about prevention | | | | |
| 1. Keep physically active | 5 (2.9) | 145 (85.3) | 13 (7.6) | 7 (4.1) |
| 2. Avoid situations that might be stressful | 18 (10.7) | 107 (63.3) | 29 (17.2) | 15 (8.9) |
| 3. Keep regular contact with friends | 3 (1.8) | 148 (87.1) | 10 (5.9) | 9 (5.3) |
| 4. Keep regular contact with family | 2 (1.2) | 145 (85.3) | 12 (7.1) | 11 (6.5) |
| 5. Not use drugs | 2 (1.2) | 145 (85.8) | 10 (5.9) | 12 (7.1) |
| 6. Never drink alcohol | 6 (3.6) | 120 (71.4) | 33 (19.6) | 9 (5.4) |
| 7. Make regular time for relaxing activities | 1 (0.6) | 164 (97.6) | 3 (1.8) | 0 (0) |
| 8. Have a religious or | 10 (6.0) | 75 (44.6) | 39 (23.2) | 44 (26.2) |

spiritual belief

| Belief about causal attribution | N (%) |
|---|---|
| 1. Stress | 96 (56.1) |
| 2. Biological reasons | 7 (4.0) |
| 3. Environmental reasons | 8 (4.6) |
| 4. There is nothing wrong with her | 10 (5.8) |
| 5. Personal weakness | 18 (10.5) |
| 6. Mental illness | 46 (26.9) |
| 7. Other | 5 (2.9) |

| Hypothetical help-seeking | N (%) |
|---|---|
| 1. Deal with it myself | 97 (57.4) |
| 2. Talk to a family member | 87 (51.5) |
| 3. Talk to a friend | 108 (63.9) |
| 4. Talk to a psychiatrist | 47 (27.8) |
| 5. Talk to a family doctor | 9 (5.3) |
| 6. Talk to another medical doctor | 10 (5.9) |
| 7. Talk to a psychologist | 97 (57.4) |
| 8. Talk to a social worker | 20 (11.8) |
| 9. Talk to a counselor | 57 (33.7) |
| 10. Talk to any other mental health provider | 30 (17.8) |
| 11. Talk to a religious or spiritual leader | 20 (11.8) |
| 12. Talk to any other healer | 10 (5.9) |
| 13. Other | 10 (5.9) |

Table 8
Literacy of Suicide Scale

| | True N (%) | False N (%) | Don't Know N (%) | Total Correct N (%) |
|---|---|---|---|---|
| 1. People who have thoughts about suicide should not tell others about it | 8 (4.7) | 153 (90.5) | 8 (4.7) | 153 (90.5) |
| 2. Most people who commit suicide are psychotic | 20 (12.0) | 129 (77.2) | 18 (10.8) | 129 (77.2) |
| 3. People talking about suicide always increases the risk of suicide | 40 (23.8) | 95 (56.5) | 33 (19.6) | 95 (56.5) |
| 4. Not all people who attempt suicide plan their attempt in advance | 90 (53.6) | 33 (19.6) | 45 (26.8) | 90 (53.6) |
| 5. Very few people have thoughts about suicide | 17 (10.2) | 108 (64.7) | 42 (25.1) | 108 (64.7) |
| 6. Men are more likely to die by suicide than women | 60 (35.7) | 28 (16.7) | 80 (47.6) | 60 (35.7) |
| 7. People who want to attempt suicide can change their mind quickly | 51 (30.9) | 69 (41.8) | 45 (27.3) | 51 (30.9) |
| 8. There is a strong relationship between people's alcoholism and suicide | 70 (42.4) | 31 (18.8) | 64 (38.8) | 70 (42.4) |
| *Proportion of Total Correct Responses* | | | 56.4 % | |
| *Proportion of Total Incorrect Responses* | | | 18.5 % | |
| *Proportion of Total Don't Know Responses* | | | 25.1 % | |

Table 9
Path Analysis Results for Predictors of MHL

| | Suicide Literacy | | GAD Recognition | | GAD Treatment | | Depression Recognition | | Depression Treatment | |
|---|---|---|---|---|---|---|---|---|---|---|
| | β | *P* | β | *P* | β | *P* | β | *P* | β | *P* |
| Psychological Symptoms | .143 | 0.085 | .004 | 0.922 | .077 | 0.410 | .098 | 0.239 | .018 | 0.789 |
| Gender | .055 | 0.477 | .146 | 0.108 | .028 | 0.773 | .018 | 0.789 | .301 | 0.001** |
| Religion | .232 | 0.002** | .154 | 0.068 | .037 | 0.689 | .123 | 0.078 | -.045 | 0.478 |
| Psychology Courses | .282 | 0.002** | .215 | 0.018* | .282 | 0.001** | .030 | 0.725 | .142 | 0.036* |
| Father Education | .121 | 0.169 | .155 | 0.102 | .064 | 0.102 | .031 | 0.802 | .051 | 0.666 |
| Mother Education | -.004 | 0.960 | -.022 | 0.827 | -.66 | 0.414 | .157 | 0.125 | 0.138 | 0.197 |

* = p<0.05; ** = p<0.01; Psychological Symptoms = SBQR score for Suicide Literacy, HADS scores for GAD Literacy, and PHQ-9 scores for Depression Literacy.

## APPENDIX II

**Gender**: □ Male □ Female □ Other **Age**: _____

**Major**:

1. Psychology
2. Biology
3. Business
4. English Literature
5. Economics
6. Chemistry
7. Mathematics
8. Sociology
9. Philosophy
10. Education
11. Other:_____

**Minor (if any): _____**

**Overall GPA: _____**

**Did you ever enroll in a psychology course (abnormal or clinical psychology)**?

□ Yes □ No

**Which religion do you identify with today**?

□ Christianity □ Druze □ Islam □ Atheist □ Agnostic □ Other: _____

Please specify sect: _____

**Which religion were you born into**?

□ Christianity □ Druze □ Islam □ Atheist □ Agnostic □ Other: _____

Please specify sect: _____

**What is your nationality**?

□ Lebanese □ Non-Lebanese □ Dual nationality (Please specify: _____)

**To which ethnic group do you belong in Lebanon**?

□ Ethnic majority □ Ethnic minority

**What is your mothers' highest educational level**?

□ Non-educated □ Primary School □ Secondary School □ BA/BS □ MA/MS □ PhD/MD

**What is your fathers' highest educational level**?

□ Non-educated □ Primary School □ Secondary School □ BA/BS □ MA/MS □ PhD/MD

**What is your mothers' occupation**? _____

**What is your fathers' occupation**? _____

**What is your average household income**?

□ Less than 500$ □ 500$ - 1,000$ □ 1,001$ - 2,000$ □ 2,001$ - 3,000$ □ 3,001$ - 5,000$ □ More than 5,000$

**Where do you reside**:

□ Urban area □ Rural area

**What is your primary source for information about mental health**? (choose one)

□ Personal research □ Social media □ University education □ Other people □ Other:

**Have you ever used any mental health services?**

□ Yes □ No

**Did you ever want to seek mental health services but did not do it? If yes, please state why.**

□ Yes □ No

**Please state why: _____**

*John is a 21-year-old who has been feeling unusually sad and miserable for the last few weeks. He is tired all the time and has trouble sleeping at night. John doesn't feel like eating and has lost weight. He can't keep his mind on his studies and his marks have dropped. He puts off making any decisions and even day-to-day tasks seem too much for him. His parents and friends are very concerned about him. John feels he will never be happy again and believes his family would be better off without him. John has been so desperate, he has been thinking of ways to end his life.*

**1- In your opinion, what is going on with John? (Please select only one)**

| | | |
|---|---|---|
| 1. I don't know<br>2. There is nothing wrong with him<br>3. General life stress<br>4. Depression | 5. Schizophrenia<br>6. Social phobia<br>7. Generalized anxiety disorder<br>8. Other anxiety disorder | 9. Personality disorder<br>10. Medical problem<br>11. Other (please specify):<br>_____ |

**2- There are different people, health professionals, and treatments that can help John. Rate how helpful each one of the below is.**

0. General Practitioner
Harmful □ Helpful □ Neither □ Don't know □

2. Teacher
Harmful □ Helpful □ Neither □ Don't know □

3. Psychologist
Harmful □ Helpful □ Neither □ Don't know □

4. Nurse
Harmful □ Helpful □ Neither □ Don't know □

0. Social Worker
Harmful □ Helpful □ Neither □ Don't know □

0. Psychiatrist
Harmful □ Helpful □ Neither □ Don't know □

0. Telephone Helpline
Harmful □ Helpful □ Neither □ Don't know □

8. Close Family Member
Harmful □ Helpful □ Neither □ Don't know □

9. Close Friend
Harmful □ Helpful □ Neither □ Don't know □

0. Vitamins
Harmful □ Helpful □ Neither □ Don't know □

0. Tea
Harmful □ Helpful □ Neither □ Don't know □

0. Religious Healer / Religious Figure
Harmful □ Helpful □ Neither □ Don't know □

0. Antidepressants
Harmful □ Helpful □ Neither □ Don't know □

14. Antipsychotics
Harmful □ Helpful □ Neither □ Don't know □

0. Sleeping Pills
Harmful □ Helpful □ Neither □ Don't know □

**3- There are different activities that could help John, point out for each of them your opinion concerning their usefulness**.

0. Becoming more physically active
Harmful □ Helpful □ Neither □ Don't know □

2. Getting up early each morning and getting out in the sunlight
Harmful □ Helpful □ Neither □ Don't know □

3. Receiving therapy with a specialized professional
Harmful □ Helpful □ Neither □ Don't know □

4. Looking up a website giving information about the problem
Harmful □ Helpful □ Neither □ Don't know □

0. Reading a self-help book on his problem
Harmful □ Helpful □ Neither □ Don't know □

0. Joining a support group of people with similar problems
Harmful □ Helpful □ Neither □ Don't know □

0. Going to a specialized mental health service
Harmful □ Helpful □ Neither □ Don't know □

8. Using alcohol to relax
Harmful □ Helpful □ Neither □ Don't know □

9. Smoking cigarettes to relax
Harmful □ Helpful □ Neither □ Don't know □

**4- If you wanted to help John in this situation, rate how useful each of the below are.**

0. Listen to his problem in an understanding way
Harmful □ Helpful □ Neither □ Don't know □

2. Talk to him firmly about getting his act together
Harmful □ Helpful □ Neither □ Don't know □

3. Suggest he seeks professional help
Harmful □ Helpful □ Neither □ Don't know □

4. Make an appointment for him to see a general practitioner with his knowledge
Harmful □ Helpful □ Neither □ Don't know □

0. Ask him whether he is feeling suicidal
Harmful □ Helpful □ Neither □ Don't know □

0. Suggest he has a few drinks to forget his troubles
Harmful □ Helpful □ Neither □ Don't know □

0. Rally friends to cheer him up
Harmful □ Helpful □ Neither □ Don't know □

8. Not acknowledge his problem, ignore him until he gets over it
Harmful □ Helpful □ Neither □ Don't know □

**5- Rate each of the below on how useful they are.**

0. Keep physically active
Harmful □ Helpful □ Neither □ Don't know □

2. Avoid situations that might be stressful

Harmful □ Helpful □ Neither □ Don't know □

3. Keep regular contact with friends
Harmful □ Helpful □ Neither □ Don't know □

4. Keep regular contact with family
Harmful □ Helpful □ Neither □ Don't know □

0. Not use drugs
Harmful □ Helpful □ Neither □ Don't know □

0. Never drink alcohol
Harmful □ Helpful □ Neither □ Don't know □

0. Make regular time for relaxing activities
Harmful □ Helpful □ Neither □ Don't know □

8. Have a religious or spiritual belief
Harmful □ Helpful □ Neither □ Don't know □

**6- Do you think that John should seek professional help for what he is experiencing?**

Yes □ No □ Undecided □

**7- What do you think is the primary cause for what John is experiencing? (please select only one)**

□ Stress □ Environmental reasons □ Mental illness
□ Biological reasons □ Personal weakness □ Other: _____
□ There is nothing wrong with him

**8- Imagine yourself in John's shoes, even if you have never experienced something similar. How do you think you would deal with this experience? (Circle all that apply)**

1. Deal with it myself
2. Talk to a family member
3. Talk to a friend
4. Talk to a psychiatrist
5. Talk to a family doctor
6. Talk to another medical doctor
7. Talk to a psychologist
8. Talk to a social worker
9. Talk to a counselor
10. Talk to any other mental health provider
11. Talk to a religious or spiritual leader
12. Talk to any other healer

**Other (please specify): _____**

**9- Have you ever experienced something similar to that of John?**

Yes □ No □

**10- Have you ever used any mental health services for experiences similar or different than that of John?**

Yes □ No □

*Susan is 45 years old and she is often worried. She worries a great deal about her job performance, her children's wellbeing, and her relationships with men. In addition, she worries about a variety of minor matters such as getting appointments on time, keeping her house clean, and maintaining regular contact with family and friends. It takes Susan longer than necessary to accomplish tasks because she worries about making decisions. Susan has trouble sleeping at night and finds that she is exhausted during the day and irritable with her family.*

**11- In your opinion, what is going on with Susan? (Please select only one)**

| | | |
|---|---|---|
| 1. I don't know<br>2. There is nothing wrong with her<br>3. General life stress<br>4. Depression | 5. Schizophrenia<br>6. Social phobia<br>7. Generalized anxiety disorder<br>8. Other anxiety disorder | 9. Personality disorder<br>10. Medical problem<br>11. Other (please specify):<br>_____ |

**12- There are different people, health professionals, and treatments that can help Susan. Rate how helpful each one of the below is.**

0. General Practitioner
Harmful □ Helpful □ Neither □
Don't know □

0. Teacher
Harmful □ Helpful □ Neither □
Don't know □

0. Psychologist
Harmful □ Helpful □ Neither □
Don't know □

4. Nurse
Harmful □ Helpful □ Neither □
Don't know □

0. Social Worker
Harmful □ Helpful □ Neither □
Don't know □

0. Psychiatrist
Harmful □ Helpful □ Neither □
Don't know □

0. Telephone Helpline
Harmful □ Helpful □ Neither □
Don't know □

8. Close Family Member
Harmful □ Helpful □ Neither □
Don't know □

9. Close Friend
Harmful □ Helpful □ Neither □
Don't know □

0. Vitamins
Harmful □ Helpful □ Neither □
Don't know □

0. Tea
Harmful □ Helpful □ Neither □
Don't know □

0. Religious Healer / Religious Figure
Harmful □ Helpful □ Neither □
Don't know □

0. Antidepressants
Harmful □ Helpful □ Neither □
Don't know □

14. Antipsychotics
Harmful □ Helpful □ Neither □
Don't know □

0. Sleeping Pills
Harmful □ Helpful □ Neither □
Don't know □

**13- There are different activities that could help Susan, point out for each of them your opinion concerning their usefulness**.

0. Becoming more physically active

Harmful □ Helpful □ Neither □ Don't know □

0. Getting up early each morning and getting out in the sunlight

Harmful □ Helpful □ Neither □ Don't know □

0. Receiving therapy with a specialized professional

Harmful □ Helpful □ Neither □ Don't know □

4. Looking up a website giving information about the problem

Harmful □ Helpful □ Neither □ Don't know □

0. Reading a self-help book on his problem

Harmful □ Helpful □ Neither □ Don't know □

0. Joining a support group of people with similar problems

Harmful □ Helpful □ Neither □ Don't know □

0. Going to a specialized mental health service

Harmful □ Helpful □ Neither □ Don't know □

8. Using alcohol to relax

Harmful □ Helpful □ Neither □ Don't know □

9. Smoking cigarettes to relax

Harmful □ Helpful □ Neither □ Don't know □

**14- If you wanted to help Susan in this situation, rate how useful each of the below are.**

0. Listen to her problem in an understanding way

Harmful □ Helpful □ Neither □ Don't know □

0. Talk to her firmly about getting her act together

Harmful □ Helpful □ Neither □ Don't know □

0. Suggest she seeks professional help

Harmful □ Helpful □ Neither □ Don't know □

4. Make an appointment for her to see a general practitioner with her knowledge

Harmful □ Helpful □ Neither □ Don't know □

0. Ask her whether she is feeling suicidal

Harmful □ Helpful □ Neither □ Don't know □

0. Suggest she has a few drinks to forget her troubles

Harmful □ Helpful □ Neither □ Don't know □

0. Rally friends to cheer her up

Harmful □ Helpful □ Neither □ Don't know □

8. Not acknowledge her problem, ignore her until she gets over it

Harmful □ Helpful □ Neither □ Don't know □

**15- Rate each of the below on how useful they are**

0. Keep physically active

Harmful □ Helpful □ Neither □ Don't know □

0. Avoid situations that might be stressful

Harmful □ Helpful □ Neither □ Don't know □

0. Keep regular contact with friends

Harmful □ Helpful □ Neither □ Don't know □

4. Keep regular contact with family

Harmful □ Helpful □ Neither □ Don't know □

0. Not use drugs

Harmful □ Helpful □ Neither □ Don't know □

0. Never drink alcohol

Harmful □ Helpful □ Neither □ Don't know □

0. Make regular time for relaxing activities

Harmful □ Helpful □ Neither □ Don't know □

8. Have a religious or spiritual belief

Harmful □ Helpful □ Neither □ Don't know □

**16- Do you think that Susan should seek professional help for what she is experiencing?**

Yes □ No □ Undecided □

**17- What do you think is the primary cause what Susan is experiencing? (please select only one)**

□ Stress □ Environmental reasons □ Mental illness
□ Biological reasons □ Personal weakness □ Other: _____
□ There is nothing wrong with her

**18- Imagine yourself in Susan's shoes, even if you have never experienced something similar. How do you think you would deal with this experience? (Circle all that apply)**

1. Deal with it myself
2. Talk to a family member
3. Talk to a friend
4. Talk to a psychiatrist
5. Talk to a family doctor
6. Talk to another medical doctor
7. Talk to a psychologist
8. Talk to a social worker
9. Talk to a counselor
10. Talk to any other mental health provider
11. Talk to a religious or spiritual leader
12. Talk to any other healer

**Other (please specify): _____**

**19- Have you ever experienced something similar to that of Susan?**

Yes □ No □

**20- Have you ever used any mental health services for experiences similar or different than that of Susan?**

Yes □ No □

**21- Please select one option from the answers to the questions below:**

1. *People who have thoughts about suicide should not tell others about it.*

   False □ True □ Don't Know □

2. *Most people who commit suicide are psychotic.*

   False □ True □ Don't Know □

3. *People talking about suicide always increases the risk of suicide.*

   False □ True □ Don't Know □

4. *Not all people who attempt suicide plan their attempt in advance.*
   False ☐ True ☐ Don't Know ☐

5. *Very few people have thoughts about suicide.*
   False ☐ True ☐ Don't Know ☐

6. *Men are more likely to die by suicide than women.*
   False ☐ True ☐ Don't Know ☐

7. *People who want to attempt suicide can change their mind quickly.*
   False ☐ True ☐ Don't Know ☐

8. *There is a strong relationship between people's alcoholism and suicide.*
   False ☐ True ☐ Don't Know ☐

**22- Over the last 2 weeks, how often have you been bothered by any of the following problems? (please select one option for each question)**

*1-Feeling nervous, anxious, or on edge:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*2-Not being able to stop or control worrying:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*3-Worrying too much about different things:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*4-Trouble relaxing:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*5-Being so restless that it is hard to sit still:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*6-Becoming easily annoyed or irritable:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*7-Feeling afraid as if something awful might happen:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

**23- Over the last 2 weeks, how often have you been bothered by any of the following problems? (please select one option for each question)**

*1-Little interest or pleasure in doing things:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*2-Feeling down, depressed, or hopeless:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*3-Trouble falling or staying asleep, or sleeping too much:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*4-Feeling tired or having little energy:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*5-Poor appetite or overeating:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*6-Feeling bad about yourself – or that you are a failure or have let yourself or your family down:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*7-Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*8-Trouble concentrating on things, such as reading the newspaper or watching television:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

*9-Thoughts that you would be better off dead or of hurting yourself in some way:*
Not at all ☐ Several times ☐ More than half the days ☐ Nearly every day ☐

**24- Please circle the number beside the statement or phrase that best applies to you.**

*Have you ever thought about or attempted to kill yourself?*

1. Never.
2. It was just a brief passing thought.
3. I have had a plan at least once to kill myself but did not try to do it.
4. I have had a plan at least once to kill myself and really wanted to die.
5. I have attempted to kill myself, but did not want to die.
6. I have attempted to kill myself, and really hoped to die.

*b. How often have you thought about killing yourself in the past year?*

1. Never.
2. Rarely (1 time).
3. Sometimes (2 times).
4. Often (3-4 times).
5. Very often (5 times).

*c. Have you ever told someone that you were going to commit suicide, or that you might, do it?*

1. No.
2. Yes, at one time, but did not really want to die.
3. Yes, at one time, and really wanted to die.
4. Yes, more than once, but did not want to do it.
5. Yes, more than once, and really wanted to do it.

*d. How likely is it that you will attempt suicide someday?*

1. Never.
2. No chance at all.
3. Rather unlikely.
4. Unlikely.
5. Likely.
6. Rather likely.
7. Very likely.

**25- Please circle the number beside the option that best applies to you.**

*a. I feel tense or "wound up":*
3. Most of the time
2. A lot of the time
1. From time to time
0. Not at all

*b. I get a sort of frightened feeling as if something awful is about to happen:*
3. Very definitely and quite badly
2. Yes, but not too badly
1. A little, but it doesn't worry me
0. Not at all

*c. Worrying thoughts go through my mind:*
3. A great deal of the time
2. A lot of the time
1. From time to time, but not often
0. Only occasionally

*d. I can sit at ease and feel relaxed:*
0. Definitely
1. Usually
2. Not often
3. Not at all

*e. I get a sort of frightened feeling like "butterflies" in the stomach:*
0. Not at all
1. Occasionally
2. Quite often
3. Very often s

*f. I feel restless as I have to be on the move:*
3. Very much indeed
2. Quite a lot
1. Not very much
0. Not at all

*g. I get sudden feelings of panic:*
3. Very often indeed
2. Quite often
1. Not very often
0. Not at all

# Appendix III

Participant consent

**Predictors of Mental Health Literacy Among a Sample of University Students in Lebanon**

Please read the following statements and place a check mark in the boxes adjacent to them.

- ☐ I agree to participate in this research project conducted for purposes of study. My decision is voluntary and does not involve payment of any kind. I will receive a brochure that contains correct information about mental health.
- ☐ I know that I can choose to withdraw from participation anytime without any penalties or consequences whatsoever. I also hold the right to decline to respond to any question(s) that I may feel uncomfortable with.
- ☐ My participation involves answering a questionnaire for approximately 15-20 minutes.
- ☐ I have been assured that the researcher will maintain my identity confidential.
- ☐ I have been assured that the information from this survey will be used for the purpose of academic study only.
- ☐ I have received the assurance that this research study has been duly reviewed and approved by the Haigazian University ethics committee.
- ☐ I agree that the data gathered be kept in a secure location under the care of the study investigators for a period of 10 years.
- ☐ I have been assured that I can access my data (if identified) at any time.
- ☐ I have read, listened, and fully understand the explanation given to me. All my questions have been satisfactorily answered.
- ☐ I, therefore, choose to voluntarily participate in this research study.
- ☐ I have received a copy of this consent form co-signed by the researcher.
- ☐ I agree to sign up for a follow-up focus group in which I will be asked open-ended questions regarding mental health and mental health and mental health service use. Also, I agree to provide my contact information (email and/or phone number) to be contacted again regarding the focus group.

| Participant consent | | Investigator | |
|---|---|---|---|
| Date: | _____ | Date: | _____ |
| Name: | _____ | Name: | _____ |
| Signature: | _____ | Signature: | _____ |