

## CHAPTER ONE

### **The Frequency and Correlates of Mental Health Problems among *Khaliji* Students in post-secondary education**

Samir Al-Adawi, Nasser Al-Sibani, Lara Al-Harhi, Maithili Shetty, Joe Valentina, Muna Al Sadoon

#### **ABSTRACT**

The Arabian economic and political bloc known as the Gulf Cooperation Council (GCC) comprises six countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). *Khaliji* is an informal collective term used to describe this region's native population. A large proportion of the population of GCC is made up of adolescents and young adults, which has required an explosive growth in tertiary education facilities to accommodate. However, research on the culture and well-being of the *Khaliji* student population is still scarce, and existing studies often lack the rigour to be included in a critical literature review. With this limitation in mind, the present narrative review examines the prevalence and frequency of mental health problems (MHPs) among *Khaliji* students in tertiary education in GCC nations. The review includes studies on sleep problems, perceived stress/burnout, exposure to maltreatment, anxiety, depressive symptoms, body dissatisfaction and disordered eating, substance misuse, and suicidal ideation. The prevalence rates of MHPs among the *Khaliji* students are observed to be on par with or exceeding international rates—with the exception of substance misuse, for which they have a lower rate. The factors most strongly associated with MHPs in this group are poor coping skills and being female. Other correlates include being in the first or last year of school, preoccupation with body image and tendency towards disordered eating, poor academic performance, and sleep problems. The studies used established international instruments; however, these were not adapted to the psychometric properties of *Khaliji* students. The way forward will require culturally defining the MHP taxonomy and recalibrating study instruments accordingly, exploring the most functional and culturally acceptable pathways to care, finding mechanisms to reduce social stigma toward MHPs, identifying the needs of the most vulnerable *Khaliji* students, preparing senior high school students for life in college, and laying the groundwork for evidence-based intervention.

**Keywords:** Mental Health Problems, Psychiatric Disorders, Narrative Review, Gulf Cooperation Council (GCC), *Khaliji*, Post-secondary Education, Tertiary Education.

## INTRODUCTION

The Cooperation Council for the Arab States of the Gulf, popularly known as the Gulf Cooperation Council (GCC), comprises six countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). The native population of the GCC, colloquially known as *Khaliji* and currently 54 million-strong, are passing through a second stage of ‘demographic transition’ characterized by a preponderance of youth in the population (Al Makadma, 2017). The GCC region is currently “home to one of the youngest populations in the world” (GCC Education Ecosystems (2020). The majority of the Khaliji population are under 25 years of age (Al-Saadoon et al., 2021).

Along with rapid economic growth in the last half-century triggered by the discovery of vast petroleum resources, international trade, industrialization, and tourism, this region has witnessed horizontal growth in primary and secondary education, and concurrent vertical growth of tertiary education. The overall literacy rate currently exceeds 90% (Schnitzler & Heise, 2021) and the 2020 UNDP’s human development index (HDI) classifies all the five GCC countries at the “very high HDI” category (United Nations Development Programme, 2020).

The budgets allocated for education testify to all of these factors. As of 2021-2022, 16.43% and 19.37% of the annual budgets were allocated to education in Saudi Arabia and UAE, respectively, while Oman spent approximately 17% of its total GNP on education (UAE-Ministry of Foreign Affairs 2021; Oman-Ministry of Finance, 2021; Arab New, 2022). Such a trend is congruent with the prevailing view in the GCC that education is an important catalyst for socio-economic development as the region is rapidly growing and diversifying its economy (Dakhli & El-Zohairy, 2013; Mohamed, 2019). For example, Saudi Arabia—the most populous country and the first to develop tertiary education in the GCC—has approximately 154 post-

secondary institutions ( Al-Farsi et al., 2021).

## **Recent History**

This narrative review concerns the rising rates of mental health problems among Khaliji tertiary students. But before that can be fully explored, the region’s recent history will be briefly overviewed for essential context.

For most of the Khaliji culture’s history, everyone “knew their place” in the society—the rules to follow, the right way to interact, the importance of community, the value of family and tribal honor—and tended to place lower value on visible wealth. Until the late 20<sup>th</sup> century, poverty and scarcity had been ever-present, and sharing of resources had been the norm (Melikian, 1988). The extremely rapid economic growth in the region that catalyzed the formation of the GCC began with the worldwide commodity boom of the 1980s (Soto, 2021). Modern medical facilities sharply reduced maternal and child mortality rates, resulting in a baby boom that has moderated only recently (Al-Saadoon et al., 2021).

Subsequent globalization of the world economy caused another major cultural disruption. These new infrastructures and facilities were increasingly manned by foreign contract workers, ranging from professors and scientists to construction workers. The additional major conflict between tradition and modernity arose from the Internet boom around the turn of the century. The domino-like fallout of these disruptions has weakened thousands of years of tradition that have anchored previous generations of Khaliji youth and guided their path to adulthood (Al-Adawi, 2006).

In terms of education, the region has seen immense growth in literacy, starting from extremely low literacy rates among the masses to 91% at present (Schnitzler & Heise, 2021). To encourage literacy with minimal cultural impact, school level education adopted the traditional top-down approach (Al-Adawi, 2006). However, tertiary education adopted a

Westernized model that involved critical thinking and self-directed learning, which seems to have made the school-to-college transition a source of stress due to cultural dissonance between these approaches. The narrative review that follows should be understood in the context of this history.

### **Mental Health Problems in Tertiary Students**

Studies suggest that mental health problems (MHPs) tend to peak at the age range typical of college and university students, and nearly three-quarters (Cuijpers et al., 2019) of adult MHPs are first expressed before the age of 25 (Kessler et al., 2007). Indeed, data from around the world suggest a “silent epidemic” of MHPs among tertiary school students (Wynaden et al., 2014). About 35% of the nearly 14 thousand full-time students across five continents who participated in the WHO World Mental Health International College Student Project (Auerbach et al., 2018) reported having at least one common mental health disorder in their lifetime. In reference to depressive illness, a systematic review of Ibrahim et al. (2013), it was concluded that the prevalence of depression was 30.6%. This was deemed to “a higher rate than the 9% found in the general population rates of the US (range 6–12%)” (p 394). But there is also dissenting view (Blanco et al., 2008).

Studies on the mental health of post-secondary students have been done in various regions around the world. In Brazil, a systematic review and meta-analysis of 59 studies of medical students in Brazil identified a 30.6% prevalence of depressive symptoms, with burnout at 13.1%, harmful alcohol consumption at 32.9%, stress at 49.9%, subjective sleep problems at 51.5%, and other MHPs at 31.5% (Pacheco et al., 2017). These were associated with poor motivation, perceived academic overload, and lack of support. In the United States, Duffy and colleagues (2019) longitudinally compared rates of MHPs between students 12 years apart.

Using data from the 2005 National College Health Assessment ( $n = 610,543$ ) and the 2017 Healthy Minds Study ( $n = 177,692$ ), They found that the rates of mood symptoms and self-harm behaviours had doubled in the intervening 12 years.

In Asian countries, fewer studies on student MHP have been conducted, but the available data suggests a lower prevalence than in Western countries. A systematic review of 14 studies with medical students in Asia found prevalence rates of about 7% for anxiety and 11% for depressive symptoms (Cuttilan et al., 2016). Associated factors included the place of residence with those living at home at higher risk of depressive symptoms. In a meta-analysis of 10 cross-sectional studies of Chinese medical students ( $n = 30,817$ ), Zeng et al. (2019) had a 29% rate of depression, with anxiety at 21%, suicidal ideation at 11%, and eating disorders at 2%. More studies from these regions might give a more comprehensive picture of their students' MHP prevalence.

Some studies suggest that a student's choice of major or field of study (e.g., medicine versus art, science versus humanities) may also be predictive for MHPs. An overview of systematic reviews by Tam et al. (2019) found medical students to be at higher risk of developing depressive symptoms than those in other fields.

Regarding the GCC region, Elyamani et al. (2021) conducted a systematic review of 27 qualifying studies on mental health literacy. What could be synthesized from this review was a persistent finding of suboptimal awareness of MHPs among both healthcare professionals and the public in GCC countries. This is concerning, particularly given the strong social stigma and negative attitudes towards mental illness in this population.

### **The Current Review**

While various studies have explored MHPs among students, scant attention has been

given to their prevailing magnitudes and correlates (Sweileh, 2021). The present narrative review, therefore, aims to highlight the magnitude and correlates of the types of MHPs that have been reported by Khaliji students in higher education in the GCC region, and recapitulate these findings within the context of the literature reflecting global trends. Synthesis of these findings will lay the groundwork for contemplating preventive and mitigative measures for MHPs among this population in the GCC.

## METHODS

As a narrative review of the epidemiology and correlates of MHPs in tertiary students in the GCC, the present review included articles up to 2021. Studies that collected data in 2020 and 2021, and therefore might have been skewed by the COVID-19 pandemic, were avoided.

The articles were searched using keywords as detailed by Sweileh (2021), which reflect the culture and perceptions of college or university-going populations and their mental health-related matters. The keywords for specifying higher education were: “tertiary education” OR “post-secondary education” OR “university” OR “college” OR “higher education” OR “undergrad\* student” OR “grad\* student” OR “master’s student” OR “doctoral student” OR “Ph.D. student” AND “student” [in the title]. The keywords for mental health problems were: (“psychological distress” OR “psychopathology” OR “mental disorder/ illness/ distress”) or all psychiatric disorders featured in the Diagnostic and Statistical Manual of Mental Disorders (DSM) and International Classification of Diseases (ICD). Other newly labeled distresses such as “burnout syndrome”, “academic stress”, “smartphone addiction”, “sexual harassment”, “abuse” (academic, emotional, physical, and sexual), and “weight management” were also included. Articles were obtained from academic databases such as PsychINFO, Scopus, Google Scholar, PubMed/Medline, and ProQuest.

The keywords used for English articles were divided into four levels as follows, each level needing to be matched in the search: [Level 1] mental disorders OR psychiatric disorders OR mental illnesses OR (other specific individual mental disorders such as depression, MDD, anxiety disorders, eating disorders, PTSD, etc.) AND [Level 2] epidemiology OR prevalence OR survey AND [Level 3] college students OR university OR postsecondary OR tertiary OR students OR students in higher education AND educational stream AND [Level 4] Oman OR Saudi Arabia OR Qatar, OR UAE OR Kuwait OR Bahrain.

The search methodology was not limited to a certain timeframe. Related published papers were also reviewed, but only if relevant to the region of interest. The accrued papers were scrutinized for covariates, predictors, correlates, or associated factors of the MHPs prevalent in students in Oman, Saudi Arabia, Qatar, the UAE, Kuwait, and Bahrain. These were then tallied into percentages in terms of different types of MHPs as shown in the Tables and Figures. As shown in Figure 1, various constructs were described by the various authors to encapsulate variables that were statistically associated with the mental health problems among Khaliji students. First, various terms were used to describe maladjustments, including “social failure,” “emotional failure,” “poor coping in living conditions” (Al-Dabal et al., 2010; Ibrahim et al., 2013; Alharbi et al., 2018; Mahroon et al., 2018). Since these variables were also used in relation to their academic and social incompetency, they were conveniently grouped and labeled as “poor coping skills”. Second, if gender would appear to be a factor associated with MHP among the accrued articles, therefore be considered as a standalone variable. Therefore, gender was featured in the analysis. Third, consistent with extant international trends (Auerbach et al., 2016), the year of study (first years, second years, etc., or freshman, sophomore, etc.) appeared to be significant factors in the development of MPHs, so the convenient term “academic year”/ “years in college” was employed. Four, several studies from

the GCC have examined restrictive food intake, dieting, and preoccupation with body weight, so the concepts that were used to capture these were incorporated under the “body image”/ “disordered eating” label. Five, in the reviewed studies, some reported academic performance to reflect one’s grade point average (GPA) and course difficulty. These parallel but contrasting variables were therefore labeled as “GPA” or “course difficulty” depending on each were labeled in the defined literature. Six, the associated factors used in the context of disturbance of the sleep-wake cycles quality, shift work, and quantity of sleep were covered under the term “sleep problems”. Seven, indulgence in digital culture was reported as “screen time” which implies time spent in front of the television, computer, video game console, or smartphone. Eight, traditionally, both tobacco smoking and its rejuvenated method (waterpipe/*shisha*) are generally condoned in the region, with a few exceptions of some parts of Oman (Al-Adawi, 2017). Nine, in the present review, these associated factors were labeled with the generic concept of “substance misuse.” Some studies have reported maltreatment in varying forms (e.g., academic, emotional, physical, sexual) as factors associated with MHPs. These were represented by the encompassing term “exposure to maltreatment.” Finally, one study examined whether religious commitment bears on MHPs (Thomas et al., 2018), so the factor “religiosity” was employed.

## RESULTS

The literature search yielded 49 articles that covered the frequency and correlates of MHPs among tertiary students in the six GCC countries, published between 2006 and 2021. Saudi Arabia yielded the most relevant articles ( $n = 15$ ), followed by Oman ( $n = 9$ ) and the UAE ( $n = 9$ ), Kuwait ( $n = 6$ ), Qatar ( $n = 5$ ), and Bahrain ( $n = 4$ ) (Table 1).

### **Epidemiology of MHPs**



In terms of epidemiology, the most commonly reported MHP was impaired sleep, which was prevalent in 99.8% of the sample of tertiary students in Oman (Al Salmani et al., 2020), and between 63.2% to 86.3% among Saudi students (AlSaif, 2019; Al-Khani et al., 2019) (See Table 1).

The second most common was stress and burnout syndrome, which ranged from 31% to 96.3% in all countries, except for one study in Oman which found only 7.4% (Al-Alawi et al., 2019).

The third most common was exposure to maltreatment (academic, physical, emotional, or sexual), reported by between 12.7% and 87.9% of students in Oman and Kuwait.

Depressive symptoms were the fourth most prevalent MHP, reported by between 11.4% and 83.4% of students in studies across the six nations.

Anxiety symptoms ranked fifth in prevalence, ranging between 9.7% and 84.7% of students. The specific anxiety disorder of social phobia was reported to afflict 54% of the sample in one study of Omani students (Al-Hinai et al., 2006).

Emotional and psychological distress, as assessed using Kessler Psychological Distress Scale (K10) and the General Health Questionnaire (GHQ-28), were reported by 51% of the sample of Qatari students (Ashour et al., 2020) and 40% of Saudi students (Abdulghani, 2008).

Body dissatisfaction and disordered eating were also common among Khaliji youth, with the highest prevalence in Kuwait (32.8% to 46.2%), followed by Qatar (18% to 31.2%) and the UAE (20% to 33%).

The problematic use of mobile phones was documented only among students in Qatar (59.8%; Ashour et al., 2020) and Saudi Arabia (27.2%; Alosaimi et al., 2016).

There were two studies in this review regarding suicidal ideation, one from Oman where 33.4% of the student sample reported this problem (El-Sayed et al., 2020), and one from

Saudi Arabia where 42.2% of students reported it (Madadin et al., 2020).

### **Correlates of MHPs**

For brevity, the factors associated with the development of MHPs among Khaliji students were lumped together into meaningful categories. As shown in Figure 1, various forms of poor coping were most strongly related to the development of MHPs, followed by gender—being female, specifically. The next most strongly associated factor to the development of MHPs was academic year, wherein first and final year students had increased stress. There were also relationships between MHPs and factors such as body image/disordered eating, academic performance (GPA), the integrity of sleep, academic difficulties, and screen time (see Figure 1).

## **DISCUSSION**

This narrative review examined the prevalence and associated factors of mental health problems (MHPs) among tertiary school students in the GCC countries of Oman, Saudi Arabia, Kuwait, the UAE, Qatar, and Bahrain. To date, there are no studies that have synthesized the prevailing trend of MHP from such a geographical location. In their 2019 meta-analysis, Quek et al. reported the rates of MHPs among medical students in the Middle East and North Africa to exceed those of their counterparts in the rest of the world. However, they focused only on medical students because of the stringent inclusion criteria, and thus overlooked many studies on higher education students more broadly. The present narrative review explored MHPs among Khaliji students undergoing tertiary education in all disciplines. The review accrued studies on sleep problems, perceived stress/burnout, exposure to maltreatment, anxiety, depression, body dissatisfaction and disordered eating, addiction and substance misuse, and suicidal ideation. However, it must be reiterated that because the literature on MHPs among

Khaliji students is scarce, the selection criteria could not be too stringent, therefore the collated data must be taken with some caution.

### *Impaired Sleep*

Impaired sleep was reported by 99.8 % of the Omani students in one study (Al Salmani et al., 2020). This figure is likely to be spurious a view consistent with the literature on sleep where it has been noted that self-reported measures are less reliable compared to polysomnography (Matthews et al., 2018). In comparable international studies, for example, Lund et al.(2010) reported 60% of tertiary education students complained of impaired sleep. However, when the quality and quantity of sleep were quantified using gold-standard measures, Schlarb et al. (2012) have reported 10% to fulfill the criteria for clinically impaired sleep. While subthreshold impaired sleep-wake cycles and full-fledged insomnia have also been documented in the general population in the GCC region (Al-Abri et al., 2018; Khaled et al., 2021), but scant attention has been paid to it for students in tertiary education in particular.

Khaliji college students have a high risk of impaired sleep due to several factors. Manifestation of higher indices of perceived stress and symptoms of MHPs—which can impact sleep-wake cycles and vice versa in a feedback loop—were found to be persistent in this population (Al-Abri, Al Lawati, Zadjali and Ganguly, (2020). Lack of sleep leads to reduced cognition and poor concentration during classroom hours, which is detrimental to knowledge acquisition (Brownlow et al., 2020). The use of mobile phones and other electronic screens well into the night can cause excessive daytime sleepiness, and catching up with lost sleep, leading to absenteeism (de Freitas, et al., 2017).

Students in this predicament could be driven to self-medication with stimulants to stay awake. Consumption of energy drinks to stay alert was reported by 97% of a sample of tertiary students in Oman (Khan, 2019), despite their potential side effects such as breathing problems,

abnormal heartbeat, irritability, and sleeplessness. Prescription drugs and hard drugs that impact the sleep cycle have also been reportedly abused in the GCC region (Al-Adawi, 2017; Al Wahaibi et al. 2019).

Chronically suboptimal academic performance naturally raises the risk of dropping out of college. A study from Oman indicated the dropout rate among first-year students was 41%, then fell sharply during subsequent years, only to peak once again in the final year (Thumiki, 2019). Certain psychological interventions have been empirically shown to prevent and mitigate sleep problems and their associated mental and medical conditions. As these are also considered to be specifically effective for college-age youth (Saruhanjan et al., 2021), there is a compelling case for future studies to assess their effectiveness among Khaliji students.

### ***Stress and Burnout***

Stress/burnout was the second-most reported problem among Khaliji tertiary students in this review, and this reflects the trend worldwide. A Canadian Campus Survey conducted in 1998 (Adlaf et al., 2001) reported 30% prevalence of stress among post-secondary students. In other studies from South and Southeast Asia, perceived stress was reported by 37.7% in Malaysia (Jia & Loo, 2018), 42.5% in India (Brahmbhatt et al., 2013), and 58.9% in Pakistan (Yasmin et al., 2013). In the present review among Khaliji students, perceived stress and burnout were reported 47% to 92.5% of Bahraini students, 31% to 96.3% of Saudi students, and 89.2% of one sample of Qatari students. The highest rate (96.3%) was found in a sample of medical students in Riyadh, Saudi Arabia by Al-Dabal et al. (2010).

### ***Exposure to Maltreatment***

Three studies—one from Oman and two from Kuwait—examined exposure to maltreatment (i.e., academic, physical, emotional, or sexual abuse), and found rates varying from 12.7% to 35.6% in Kuwait, and 22.4% to 87.9% in Oman. In some cases, these originated

from their younger formative years before higher education, as a study from Kuwait suggested (Almazeedi et al., 2020). However, the study from Oman specifically examined the maltreatment that occurred during the students' years in tertiary education (Al-Shafae et al., 2013) and reported that approximately 96% of the participant acknowledged that the mistreatment exists during their study. The verbal and academic abuses were endorsed by approximately 88 % of the sample while sexual harassment and physical abuse were endorsed by approximately 24% and 22% respectively of the participant. Regardless of when it occurs and types, it has been widely established that all forms of maltreatment are debilitating both in acute and chronic forms (Al-Saadoon et al., 2021).

### ***Anxiety and Depression***

A recent meta-analysis found anxiety to be most prevalent among medical students from the Middle East and North Africa (Quek et al., 2019). Most of the studies reviewed in this paper tapped into sub-thresholds for anxiety, depressive symptoms, general psychological symptoms, as well as clinical social phobia. The rate of anxiety symptoms ranged from a low of 9.7% among Bahraini students (Sanad, 2019) to an extremely high 84.7% reported among Saudi Arabian students (Abdel-Salam and Khalek, 2017) —through such a vast range calls for more cautious interpretation of the findings, especially when these diverge from mean global levels. Internationally, anxiety-related disorders (e.g., social phobia, panic disorder, generalized anxiety disorders) have been reported to affect 33.8% of tertiary students (Quek et al., 2019).

Depressive symptoms were the second common mental health problem in this review, with rates from 11.4% to 83.4%. Another study found it to affect 28% of the medical student population globally (Puthran et al., 2016). And in a recent meta-analysis and systematic review of 37 studies of tertiary students in 20 low-and middle-income countries, 24.4% of students

reported depressive symptoms (Akhtar et al., 2020). The presence of anxiety and depressive symptoms tends to damage students' coping skills, further diminishing capacity to handle the typical challenges encountered on college campuses (Chen et al., 2019). Some core symptoms of anxiety and depression, such as poor motivation, catastrophic thoughts, and avoidance behaviour, further deteriorate the lifestyle that is essential to mitigate its severity and promote care-seeking (Palmer, 2013). There are also likely to be subtle but debilitating impairments of cognitive functioning triggered by mood symptoms have the potential to weaken effective study habits among college students, though this line of research has received scant attention (Tran et al., 2021).

### ***Suicidal Ideation***

A recent meta-analysis of studies from around the world (Mortier et al., 2018) found that 22.3% of college students had experienced suicidal ideation, while 6.1% had made suicide plans and 3.2% had reportedly attempted suicide. Suicidal thoughts and behaviours have frequently been found to be associated with mood disorders, poor impulse control, and substance use (Farabaugh et al., 2012; Dougherty et al., 2009; Rujescu & Giegling, 2012; Cash & Bridge, 2009).

Suicidal ideation among Khaliji students was investigated in two studies in this review, one each from Oman and Saudi Arabia. The prevalence rate was 33.4% of the Omani sample (El-Sayed et al., 2020) and 42.2% of the Saudi sample (Madadin et al., 2020). The Global School-Based Student Health Survey (GSHS) found suicidal ideation to be reported among 10.2% of Omani adolescent school students (Kwangu et al., 2017). From an international perspective, Eskin et al. (2016) surveyed students for the presence of suicidal ideation, suicide attempts across 12 countries ( $n = 5,572$ ) and found that 29% had contemplated suicide and 7% had attempted it. A meta-analysis and systematic review of 24 cross-sectional studies ( $n =$

21,002) from around the world by Rotenstein et al. (2016) found an 11.1% pooled prevalence of suicidal ideation.

This suggests that the observed suicidal ideation rate of 33.4%–42.2% among Khaliji students found in this review may exceed international levels. This would be surprising, as the prevailing understanding is that suicide is more uncommon in Islamic countries (Arafat et al., 2021). However, with increased urbanization and the accompanying disintegration of social cohesion, suicidal thinking appears to be on the rise, contrary to Islamic teaching and other protective cultural factors. Studies are therefore needed to shed more light on the reasons for this unexpected surge in self-harm ideation. Effective measures to address and mitigate this issue among Khaliji students are also called for, as the collectivist and Islamic values of GCC countries that have traditionally protected against self-harming behaviour may be eroding, as some recent data indicates (Amini et al., 2021).

### ***Body Dissatisfaction and Disordered Eating***

Body image dissatisfaction and disordered eating—which sometimes culminate as anorexia nervosa, bulimia, and binge eating—were initially postulated to be culture-bound syndromes limited to mainly Euro-American cultures, where food security is largely achieved with cheap processed foods laden with fats and sugars, leading their youth to be preoccupied with dieting and ideals of thinness (Keel & Klump, 2003). However, eating disorders seem to have transcended cultural barriers to become globally prevalent (Melisse et al., 2020).

A recent systematic review and meta-analysis by Harrer et al. (2020) placed the global rate of disordered eating at 90% among females and 30% among males. In the current review of the GCC region, the prevalence of eating disorders ranged from 32.8% to 46.2% in Kuwait, 20% to 33% in the UAE, and 18% to 31.2 % in Qatar. There are strong indications that prodromal disordered eating has the potential to develop into full-blown eating disorders

(Eisenberg et al., 2011; Gómez Del Barrio et al., 2021), a risk insufficiently researched in GCC countries. This calls for studies that focus on the emerging body dissatisfaction and prodromal disordered eating among adolescents and young adults of this region.

### ***Screen Time***

Eisenberg (2019) has suggested that a possible reason for the rise in MHPs among youth may be what he calls the “dramatic rise of digital media use.” Overindulgence in digital media late into the night reduces sleep quality and sometimes leads to poorer quality of life and low self-esteem (Stiglic and Viner, 2019). Hrafnkelsdottir et al. (2018) reported that increased screen time and sedentary lifestyle (which screen time results in) strongly predict MHPs among Icelandic adolescents. However, a recently published longitudinal study among nationally representative samples of adolescents from the vastly larger nations of Britain and the United States found “little evidence for increases in the associations between adolescents’ technology engagement and mental health” (Vuorre et al., 2021).

Among Khaliji young people, studies indicate a high rate of digital media use facilitated by high broadband internet penetration (Masters, 2015). Internet penetration in the Middle East was 67.2% in 2019, higher than the global average of 56.5% (Richter & Kozman, 2021). Even before broadband connections were widely available in the GCC region, Khaliji youth had been considered the third most sedentary population in the world, with all the consequences this entailed (Musaiger, 2004; Lee et al., 2012). The region’s desert climate, dress codes, cultural restrictions on females for outside activities, and economic prosperity all may have contributed to this, only to be exacerbated more recently by the internet.

Smartphones and internet access have become mainstream only recently, and no empirical studies have yet associated the rising internet use with the increasing sedentariness among Khaliji college students. Indeed, there is a dearth of studies on digital media use and its



behavioural impact among college students in the GCC in general. However, the internet and smartphone penetration is extremely high in the region population, with internet penetration rates estimated to exceed 90% in every GCC country (Bensaid & Brahim, 2021). This brings up the question of smartphone and internet addiction, and whether those with an “addictive personality” are more vulnerable to it. This digitalized culture has also brought of the increasing problem of cyberbullying (Nuaimi, 2021). In the current review, a study in Oman on the prevalence of substance use disorders among the college population found that 41.3% of the sample had a propensity towards addiction (Al-Hinaai et al., 2021), but how this might relate to the internet or smartphone addiction is unclear. More studies with robust methodology are required to disentangle any specific addiction risks to the Khaliji population resulting from these technologies.

### ***Summary (Epidemiology)***

To summarize, MHPs are common among Khaliji tertiary students, even considering the caution that the observed rates of MHPs tend to be influenced by cultural factors, suitability of the assessment tools used, and case ascertainment approach. The studies accrued for the present review appear to have been designed to quantify the presence of subthreshold disorders, with a few exceptions. The present review did not find studies that reported severe types MHPs such as psychosis, bipolar affective disorder, or other intransigent and disabling mental illnesses. The present narrative review is consistent with the previous meta-analysis where MHPs are more common among medical students in the Middle East and North Africa than in other regions of the world (Quek et al., 2019).

### **Associated Factors**

#### ***Poor Coping Skills***

Students in tertiary education are likely to confront various challenges in as they adjust to life with more freedom and more responsibilities. Such challenges are generally overcome, provided the individual has adequate coping skills to deal with them. The present review has identified the factor most strongly associated with the development of MHPs to be poor coping skills (Figure 1). Among many and varied factors associated with MHPs, the present review suggest that poor coping skills appeared to have a temporal relationship with the development of MHP. Since the majority of these studies utilized cross-section approach, other research methodologies are needed to tease out such the ‘cause and effect’. The meta-analysis and systematic review by Quek et al. (2019) suggested that student populations from societies in transition in Asia and North Africa may be less prepared to cope with the choices and pressures inherent in tertiary education. Using the dichotomy of collective versus individualistic societies as defined by Markus and Kitayama (1991), we speculate that collectivistic cultural patterning may impede Khaliji students from embracing campus life. Using Markus and Kitayama’s model, traditional Khaliji society appears to meet all the hallmarks of “group-orientated collectivism” where roles are clearly defined. Thus, among the four parenting styles outlined by Baumrind (1978)—authoritarian/disciplinarian, permissive/indulgent, uninvolved, and authoritative—the traditional parental style in the GCC can be described as authoritarian/disciplinarian with some authoritative features (Dwairy et al., 2006).

According to Erikson's stages of psychosocial development (Maree, 2021), individuals who are making the transition to adulthood are required to consolidate their identity. Otherwise, role confusion would emerge. It appears that such psychosocial development is more common in societies where the process of life is to establish self-identity. In collective societies, the crisis of identity vs role confusion is less visible in societies with paternalistic and hierarchical organization, where group identity subsumes individualistic self-identity

(Markus & Kitayama, 1991). Within such sociocultural patterning, Khaliji boys and girls have not been reported to commonly exhibit pronounced “adolescent turmoil” or “middle school malaise,” unlike their counterparts elsewhere (Al-Adawi, 2006). Most modern universities in the GCC region are based on the Western ethos that expects the students to have the skills for self-determination or self-governance. Conflicted between their traditional collective identity, which seeks obedience to clear rules, and modern tertiary education that expects students to be capable of making unsupervised decisions, some Khaliji students may experience cognitive dissonance leading to poor coping skills. A similar conflict of culture was suggested to underlie an erstwhile culture-bound syndrome known as “Brain fog syndrome” (not to be confused with “brain fog”) that was reported in the 1950s by students in sub-Saharan Africa (Prince, 1960; Ayonrinde et al., 2015).

### ***Gender***

Females tertiary students appear to be more marked with MHP. An important, yet-unanswered question that arises here is whether there are factors specific to the GCC region that contribute to the higher risk of females for developing MHPs more than in any other region. First of all, severe and persistent mental illnesses (Zumstein and Riese, 2020) have been documented to be common among males but generally many common MHP such as those examined in Khaliji students are common in females (Eloul et al., 2009). This has been attributed to biological factors (Franceschini and Fattore, 2021). In addition to biological factors, there are likely to be socio-cultural constraints that may play part in the female's preponderance is some of the MPH among Khaliji in tertiary education. The growth of access to education in GCC countries has drastically increased the rates of literacy and rapid growth of higher education institutions, which women and girls have drawn enormous benefits from. There is also increasing feminization of the workforce in GCC countries (Dildar, 2021). The

high preponderance of females with MHPs may merely reflect the observed global phenomenon of females being more prone to common mental health disorders in general (Eloul et al., 2009). Females' empowerment in traditional society such as those in the GCC has opened the door for them to access education. But in doing so, they are likely to juggle between the expected traditional role of being women and the newly acquired status of being educated (Dinh et al., 2021).

### **Explaining the High Rate of MHPs**

It is essential here to speculate about the factors that might be contributing to the increasing rates of MHPs among Khaliji college students.

#### ***Increased Awareness of MHPs***

A few decades ago, tertiary education facilities were rare in the GCC region (Quamar, 2021), but that has changed very rapidly since then. In addition to increased access to tertiary education and professional services, there have been government initiatives via the media and health professionals to spread mental health awareness, as well as the instant information available on the internet. Globally, MHPs are increasingly becoming a frequent conversation topic, and ubiquitous in social media (Berry et al., 2017). There is evidence to suggest that Khaliji attitudes and awareness towards certain types of mental illnesses are improving compared to the previous generation (Lipson et al., 2019).

Taken together, these factors have all contributed to improving awareness and gradually de-stigmatizing MHPs—and this could potentially explain some of the spikes in reported MHPs in recent years. However, some studies have dissented from such a view. Twenge et al. (2010) argued that the high prevalence of MHPs among young people cannot be directly attributed to changes in social norms or how young people respond to the study assessments.

Further studies on this are therefore warranted.

### ***Rapid Economic Development***

The extremely rapid economic development the GCC region has enjoyed in recent decades has pulled its populace into the high end of world rankings in human development (United Nations Development Programme, 2020). The globalization of the world economy has also accelerated the acculturation and urbanization process that has brought traditional collectivist values in conflict with Western individualistic spirit, which may have eroded traditional support systems. In the 1980s, Melikian (1988, as cited in Al-Salmi, 1997) observed that the “exploitation of hydrocarbon has brought in its wake a disruption of interpersonal relationships; tribal identification gave way to a class system based on wealth, emerged individualism, the value of education replaced the value of the family, whilst the father lost his traditional role of dominance and guidance. Frugality gave way to luxury, affluence, and consumerism; egalitarianism to formalism; simplicity to complexity; all of which are disruptive to the security system of the individual and necessitate the need for a new lifestyle” (pp. 32–33).

There is mounting evidence in the social science literature that rapid and chaotic changes can be detrimental to social systems. As a result of these changes, the society loses its internal structure, sense of security, and the beliefs that protect its people, leading to symptoms of MHPs. The relationship between rapid modernization and MHPs should therefore be given further empirical attention in the context of the GCC region.

### ***Somatopsychic Stress***

Relevant to the discourse on culture and modernity, some studies of the population in the GCC region have suggested that due to social-cultural patterning, stress and distress are

likely to be presented in somatopsychic rather than psychological forms (Eloul et al., 2009). Somatopsychic symptoms are not likely to be detected through international nomenclatures such as the DSM and ICD. It is not clear whether the preponderance of presenting distress in the somatic idioms of distress might cause spurious results in the studies with tertiary Khaliji students. It is also possible that such locally specific idioms of distress may lead to the under-recognition of MHPs as per the DSM / ICD nosology. The global adoption of DSM / ICD has led to the wholesale application of Euro-American conceptions of MHPs while ignoring traditional idioms of distress (Kleiman & Good, 1985). A culturally sensitive approach is therefore warranted.

### ***Neurobiological Factors***

Finally, there are also likely to be neurobiological factors that render some individuals vulnerable to developing MHPs during adolescence and early adulthood. Gray (1987) suggested that human temperaments can be shaped by two opposing biological systems: the Behavioural Activation System (BAS), characterized by impulsiveness and sensation-seeking behaviour, and the Behavioural Inhibition System (BIS), characterized by inhibition or avoidance. The interplay between the two leads to sensitivity to reward and punishment or approach and avoidance motivation (e.g., high constraint, constriction of affect, emotional expressiveness, anhedonia, sensation-seeking or lack of it, perfectionism, obsessiveness)—characteristics that are common among the college-going population (Franken, & Muris, 2006).

Individuals with a BIS temperament can be more vulnerable to anxiety and related disorders (Malanchini et al., 2019). Conversely, those predisposed to BAS have a for impulsivity, which in turn encourages reckless behaviour including suicidality (Schumacher, 2011). There is some indication that certain neurotransmissions and brain regions in cortical and subcortical structures are critically involved in such behaviour, widely known as executive

functions (Constantinidis & Luna, 2019; Al-Adawi & Powell, 1997). Emerging evidence suggests that pathological expression of BIS/BAS may be related to underdeveloped executive functions (Blum et al. 2015). More studies on these temperaments with respect to Khaliiji students are therefore much needed.

### **Limitations**

These types of narrative reviews are likely to be blighted by various methodological inadequacies. Four significant limitations are outlined below:

First, the GCC region has been identified as having high numbers of authors publishing in predatory journals (Shehata and Elgllab, 2018). Because determining what constitutes a predatory journal is marred with difficulties, the present narrative review did not undertake quality control of the articles. The dearth of research from the GCC region on MHPs among tertiary students also reduced choices. This review purposely did not include papers based on data collected during the COVID-19 pandemic of 2020–21 because of the possibility that student MHPs may be associated with the specific stressor of the pandemic during this time, rather than the direct influence of college life stressors or other factors discussed herein.

Second, although the target population was Khaliiji students, the majority of papers did not specify whether the participants were citizens or expatriate residents. In recent years the GCC has witnessed the establishment of campuses of international universities that have attracted many international students, including the children of contract workers residing in the GCC region (Lee, 2021). Thus, the present review could not disentangle citizens and residents.

Third, studies on the mental health problems of students in higher education institutions in the GCC have been variously quantified. Some have relied on author-developed outcome measures, and while such undertaking has the potential to identify specific local factors, it may

hamper the ability for international comparison.

Fourth, while some studies in the GCC have employed self-reported questionnaires that are derived from DSM or ICD, it has been well established that such questionnaires tend to give spurious results among Khalijis, compared to semi-structured interviews (Al-Adawi et al., 2002; Polanczyk et al., 2015). In the reported frequency of MHPs, there was no indication that the psychometric properties of the instrument used to solicit the presence of MHPs had been subjected to local specific psychometric properties.

### **The Way Forward**

The number and sizes of higher education institutions are likely to continue to increase rapidly in the GCC for the foreseeable future. This region is in the midst of the second phase of a demographic transition characterized by a ‘youth bulge’, high birth rates, and plasticity of lifespan. Ongoing policies towards indigenization of the GCC workforce, currently dominated by contract workers from abroad, will act as a catalyst for the growth of tertiary education—including advanced technical training which the local youth are currently lacking. Based on the high prevalence of MHPs and their associated factors among the Khaliji students in tertiary education, several recommendations that should be seriously considered are detailed further in tandem below including defining taxonomy relevant for MHPs, revisiting the existing pathway to care, reducing stigma toward MHPs, identifying and assisting those prone to poor coping, and laying the groundwork for evidence-based and culture-sensitive intervention.

### ***Taxonomies for Quantification of Mental Health Problems***

The studies selected for the present review used various international instruments, including outcome measures derived from the international diagnostic criteria from the DSM and ICD. While these well-tested formats of quantification have strong positive aspects,



international nosology tends to overlook culturally specific idioms of distress. For example, previous studies among young people in the GCC region have suggested that deliberate food restriction is rife, but the content of eating disorders or presenting symptoms did not have the feature of fatphobia. Rather, somatic distress such as gastroenteritis symptoms and bloating were highly reported (Al-Adawi et al., 2011). In both international psychiatric nomenclatures (ICD and DSM), fatphobia is *sine qua non* of anorexia nervosa. As a result, the presentation of disordered eating in the GCC could only be diagnosed as ‘Not Otherwise Specified (NOS)’ or ‘Not Elsewhere Classified (NEC).’ Dependence on ill-fitting Western idioms of distress is primarily due to the sparse research on MHPs among the Khaliji population. As all distresses are experienced in a sociocultural context, studies are needed to examine how relevant MHP indicators reported from Euro-American populations are in cross-cultural populations. Within such a background, the need for evolving culture-sensitive taxonomies for screening and diagnosing MHPs should be a vital ingredient in the quest to safeguard the wellbeing of Khalijis in tertiary education.

### ***Explore Services Utilization***

Little has been examined on care-seeking behaviour and service utilization among students in tertiary education in the GCC. In a previous study on secondary school students aged 14 to 16 in Oman (Al Riyami et al., 2009), only 5.2% of those with anxiety, and 13.2% of those with a mood disorder sought professional help—despite debilitating DSM-defined psychiatric symptoms.

All GCC citizens enjoy universal free healthcare provided by their governments, unlike in many countries of the world where health care costs may deter college students from seeking help (James et al., 2020). The real problem in the region is the persistent low mental health literacy rates, and the social stigma attached to MHPs among both professionals and potential

service users, despite significant advances in both of these parameters (Al Omari et al., 2020; Elyamani et al., 2021). In North America, upward trends in mental health service utilization have been documented and attributed to the spike in mental health issues and the concurrently diminished stigma among students (Lipson et al., 2019). Studies are required to explore and highlight the type of services that are available to students, and more concerted efforts are needed to improve mental health literacy.

### ***Institute Quality Control of the Types of Services and Caregivers***

Most higher institutions of learning in the GCC, as per their accreditation criteria, maintain facilities to assist students with mental health problems (Al-Darmaki, 2014). However, little data has been published regarding the quality control, breadth, and depth of such services. According to Al-Darmaki and Yaaqeib (2015), there is evidence to suggest that emerging western-based psychotherapy are practiced by qualified professional. Related to this, it is a common observation that an undergraduate of humanities is employed to work as a ‘clinical psychologist’ (Lambert et al., 2021). Pharmacotherapies are likely to be widely employed by these services, and while clearly beneficial and effective when appropriate, some unscrupulous service providers are accused of ‘peddling drugs,’ which can entail negative consequences (Al-Adawi, 2017). There is evidence to suggest most substance use disorders have their beginning in the abuse of prescriptive drugs (Alblooshi et al., 2016). This would suggest quality control is essential for those who have given licenses or are employed to dispense mental health interventions to students in tertiary education.

### ***Reduce Stigma***

Despite the increased dissemination of awareness regarding MHPs, the GCC region still suffers from low mental health literacy and high levels of stigma (Elyamani et al., 2021).

Consequently, there is under-utilization of mental health services among the Khaliji population (Al Riyami et al., 2009) who seem to view care-seeking for MHPs as undesirable (Al-Krenawi et al., 2004; Al-Darmaki, 2014).

In general, the socially acceptable pathway to care for anything that resembles mental problems is via traditional healing systems (Al-Krenawi et al., 2009). One key barrier to coming to grips with a mental health problem is the mismatch between the modern conception of mental illness and the traditional ones. Modern psychology, with its individualistic model of the human mind, tends to understand mental illnesses primarily as intrapsychic conflicts within the individual. In non-Western, collective traditions, manifestations of psychiatric distresses are perceived as originating in interpersonal relationships or loss of religious faith. Traditional treatments thus focus on bringing the individual back into the mainstream by focusing on neutralizing the external forces preventing them from reintegrating with the collective. Such traditional understandings and treatment methodologies are likely to be incompatible with modern Western understanding and interventions.

Regarding pharmacotherapy, it is often associated with addiction and custodial care, and therefore compliance is poor, in particular for those with milder types of MHPs (Al-Adawi, 2017). Factors that foster such a mindset should be further explored, and this could be a basis for countering the stigma associated with MHPs.

### ***Accommodate Factors Contributing to Poor Coping***

It is hypothesized here that poor coping skills are one of the key factors contributing to the development of MHPs. As alluded to above, it appears that cultural patterning is likely to shape how one orients their adjustment to college life. Dwairy and Van Sickle (1996) have suggested due to acculturation and globalization, Khaliji students' social behaviours are likely to fall into two subtypes. On one hand, some students possess bicultural and well-integrated

identities and are thereby capable of maintaining the balance between traditional-collective and modern-individualistic roles in their personal lives. Those who possess such flexibility are likely to thrive in college life. On the other hand, some have a bicultural but *unintegrated* identity—what may be characterized by a cultural identity crisis. To improve coping skills in college life, it is paramount that such differences are acknowledged without stigma, through encapsulating culturally sensitive introductory courses.

### ***Institute Evidence-Based Intervention***

Based on international data, Huang et al. (2018) conducted a systematic review and meta-analysis of 51 randomized controlled trials (RCTs) of common MHPs among students in higher institutions. The psychotherapeutic techniques employed included cognitive behavioural therapy, various types of mindfulness-based interventions, art therapy, exercise, and peer support. This critical appraisal suggested that, apart from the moderate effects on depression and anxiety disorders, the employed interventions did not affect other MHPs (e.g., OCD or PTSD). In a meta-analysis on the effects of broad ‘new age’ techniques that fall under meditation/yoga or autogenic techniques, Breedvelt et al. (2019) found that they had a moderate beneficial effect on depression, anxiety, and perceived stress.

There is a dearth of similar intervention studies in the GCC region. Formal clinical trials using robust methodologies are needed to examine the most effective interventions for MHPs in Khaliji college students. Globally, the conceptual origin of these type of interventions is derived from Western psychology into which pared down forms of traditional Eastern methods such as yoga and mindfulness meditation have also been incorporated (Ramasubramanian, 2017). Psychological interventions are also increasingly tinged with autogenic ‘new age’ techniques.

The other typical approach is based in a biomedical view and employs

pharmacotherapy. Little has been reported on the efficacy of any of these interventions in cross-culture populations as those in the GCC. Indeed, there is a missing link in the existing literature on culturally sensitive interventions, and further scrutiny of this issue is therefore warranted.

## CONCLUSION

That there is a significant and unprecedented number of Khaliji youths in tertiary education today, and their numbers are expected yet to *quadruple* in the future, due to the pyramid population structure of GCC countries as postulated by the theory of demographic transition (Islam, 2020; Buyukkececi and Engelhardt, 2021). In addition, there is high demand for the indigenous workforce to replace the contract workers. This calls for imparting sophisticated technical training to Khaliji youth, for which much higher-level technical and managerial teaching institutions will be opened. Safeguarding and enhancing the psychological resilience of young Khalijis is therefore paramount and only more pressing into the future.

Vast empirical data attest that younger age groups tend to be more vulnerable to MHPs. The present review indicated high prevalence of MHPs among college-going Khaliji students, but it is not clear whether the figures of such prevalence were gathered via culture-sensitive measures. Various factors were identified as associated with the development of MHPs among college students. Pending further scrutiny, such associated factors could be used to contemplate preventive measures. To effectively address the mental health problems of Khalijis in tertiary education, concerted efforts are needed to reduce stigma, explore help-seeking behaviour and service utilization, and develop regional taxonomies for the quantification of mental health problems. Last—but urgent and easily implementable—quality control of mental health services dispensed by higher education institutions should be monitored and externally audited, in furtherance of the norm of evidence-based intervention.

## REFERENCES

- Abdelaziz, A., Alotaibi, K. T., Alhurayyis, J. H., Alqahtani, T. A., Alghamlas, A. M., Alqahtani, H. M., & Jahrami, H. A. (2017). The association between physical symptoms and depression among medical students in Bahrain. *International Journal of Medical Education*, 8, 423–427. <https://doi.org/10.5116/ijme.5a2d.16a3>
- Abdel-Salam, D. M., & Khalek, E. M. A. (2017). Correlates of depression, anxiety and stress among female students at Al-Jouf University, Saudi Arabia. *Egyptian Journal of Community Medicine*, 35(2), 57-71. <https://dx.doi.org/10.21608/ejcm.2017.3569>
- Abdulghani, H. M. (2008). Stress and depression among medical students: A cross sectional study at a medical college in Saudi Arabia. *Pakistan Journal of Medical Sciences*, 24(1), 12-17. <https://www.pjms.com.pk/issues/janmar08/article/article2.html>
- Aboalshamat, K., Hou, X. Y., & Strodl, E. (2015). Psychological well-being status among medical and dental students in Makkah, Saudi Arabia: a cross-sectional study. *Medical Teacher*, 37(Suppl 1), S75–S81. <https://doi.org/10.3109/0142159X.2015.1006612>.
- Adlaf, E. M., Gliksman, L., Demers, A., & Newton-Taylor, B. (2001). The prevalence of elevated psychological distress among Canadian undergraduates: Findings from the 1998 Canadian Campus Survey. *Journal of American College Health*, 50(2), 67-72. <https://doi.org/10.1080/07448480109596009>
- Ahmed, F., Al-Radhwan, L., Al-Azmi, G. Z. S., & Al-Beajan, M. (2014). Association between stress and dietary behaviours among undergraduate students in Kuwait: gender differences. *Journal of Nutrition and Health Sciences*, 1(1), 14-16.
- Ahmed, I., Banu, H., Al-Fageer, R., & Al-Suwaidi, R. (2009). Cognitive emotions: depression and anxiety in medical students and staff. *Journal of Critical Care*, 24(3), e1-e7. <https://doi.org/10.1016/j.jcrc.2009.06.003>
- Akhtar, P., Ma, L., Waqas, A., Naveed, S., Li, Y., Rahman, A., & Wang, Y. (2020). Prevalence of depression among university students in low and middle income countries (LMICs): a systematic review and meta-analysis. *Journal of Affective Disorders*, 274, 911–919. <https://doi.org/10.1016/j.jad.2020.03.183>.
- Al Makadma A. S. (2017). Adolescent health and health care in the Arab Gulf countries: Today's needs and tomorrow's challenges. *International Journal of Pediatrics & Adolescent Medicine*, 4(1), 1–8. <https://doi.org/10.1016/j.ijpam.2016.12.006>
- Al Omari, O., Wynaden, D., Alkhawaldeh, A., Al-Delaimy, W., Heslop, K., Al Dameery, K., & Bani Salameh, A. (2020). Knowledge and attitudes of young people toward mental illness: A cross sectional study. *Comprehensive Child and Adolescent Nursing*, 43(4), 301–313. <https://doi.org/10.1080/24694193.2019.1670752>
- Al Rasheed, F., Naqvi, A. A., Ahmad, R., & Ahmad, N. (2017). Academic stress and prevalence of stress-related self-medication among undergraduate female students of health and non-health cluster colleges of a public sector university in Dammam, Saudi Arabia. *Journal of Pharmacy & Bioallied Sciences*, 9(4), 251–258. [https://doi.org/10.4103/jpbs.JPBS\\_189\\_17](https://doi.org/10.4103/jpbs.JPBS_189_17).
- Al Riyami, A. A., Al Adawi, S. H., Al Kharusi, H. A., Morsi, M. M., & Jaju, S. S. (2009). Health services utilization by school going Omani adolescents and youths with DSM IV mental disorders and barriers to service use. *International Journal of Mental Health Systems*, 3(1), 22. <https://doi.org/10.1186/1752-4458-3-22>

- Al Salmani, A. A., Al Shidhani, A., Al Qassabi, S. S., Al Yaaribi, S. A., & Al Musharfi, A. M. (2020). Prevalence of sleep disorders among university students and its impact on academic performance. *International Journal of Adolescence and Youth*, 25(1), 974-981
- Al Ubaidi, B. A., Jassim, G., & Salem, A. (2018). Burnout Syndrome in medical students in the Kingdom of Bahrain. *Global Journal of Health Science*, 10(11), 86. <https://doi.org/10.5539/gjhs.v10n11p86>
- Al Wahaibi, N., Al Lawati, A., Al Ruqeishy, F., Al Khatiri, A., Al-Farsi, Y., Juma, T. M. & Al-Adawi, S. (2019). The characteristics and patterns of utilization of healthcare services among Omanis with substance use disorders attending therapy for cessation. *PloS One*, 14(1), e0210532. <https://doi.org/10.1371/journal.pone.0210532>
- Al-Abri, M. A., Al Lawati, I., Zadjali, F., & Ganguly, S. (2020). Sleep Patterns and Quality in Omani Adults. *Nature and science of sleep*, 12, 231–237. <https://doi.org/10.2147/NSS.S233912>
- Al-Abri, M. A., Al-Adawi, S., Al-Abri, I., Al-Abri, F., Dorvlo, A., Wesonga, R., & Jaju, S. (2018). Daytime sleepiness among young adult Omani car drivers. *Sultan Qaboos University Medical Journal*, 18(2), e143–e148. <https://doi.org/10.18295/squmj.2018.18.02.004>
- Al-Adawi, S. (2006). Adolescence in Oman. In Jeffrey Jensen Arnett (Ed.), *International Encyclopedia of Adolescence: A Historical and Cultural Survey of Young People around the World (2 Volume Set)* (pp. 713–728). Routledge.
- Al-Adawi, S. (2017). Substance abuse in the Gulf Cooperation Council States. In Ravinder Mamtani & A. B. Lowenfels (Eds.), *Critical Issues in Healthcare Policy and Politics in the Gulf Cooperation Council States* (pp. 113-136). Georgetown University Press.
- Al-Adawi, S., & Powell, J. (1997). The influence of smoking on reward responsiveness and cognitive functions: a natural experiment. *Addiction (Abingdon, England)*, 92(12), 1773–1782.
- Al-Adawi, S., Dorvlo, A. S., Burke, D. T., Moosa, S., & Al-Bahlani, S. (2002). A survey of anorexia nervosa using the Arabic version of the EAT-26 and "gold standard" interviews among Omani adolescents. *Eating and Weight Disorders*, 7(4), 304–311. <https://doi.org/10.1007/BF03324977>.
- Al-Adawi, S., Jaju, S., Al-Zakwani, I., & Dorvlo, A. S. (2011). Culture to culture: Fat-phobia and somatization. In *Handbook of behavior, food and nutrition* (pp. 1457-1473). Springer.
- Al-Alawi, M., Al-Sinawi, H., Al-Qubtan, A., Al-Lawati, J., Al-Habsi, A., Al-Shuraiqi, M., Al-Adawi, S., & Panchatcharam, S. M. (2019). Prevalence and determinants of burnout syndrome and depression among medical students at Sultan Qaboos University: a cross-sectional analytical study from Oman. *Archives of Environmental & Occupational Health*, 74(3), 130-139. <https://doi.org/10.1080/19338244.2017.1400941>
- Alblooshi, H., Hulse, G. K., El Kashef, A., Al Hashmi, H., Shawky, M., Al Ghaferi, H. & Tay, G. K. (2016). The pattern of substance use disorder in the United Arab Emirates in 2015: Results of a National Rehabilitation Centre cohort study. *Substance Abuse Treatment, Prevention, and Policy*, 11(1), 1-11. <https://doi.org/10.1186/s13011-016-0062-5>

- Al-Busaidi, Z., Bhargava, K., Al-Ismaily, A., Al-Lawati, H., Al-Kindi, R., Al-Shafae, M., & Al-Maniri, A. (2011). Prevalence of depressive symptoms among university students in Oman. *Oman Medical Journal*, 26(4), 235-239.  
<https://doi.org/10.5001/omj.2011.58>.
- Al-Dabal, B. K., Koura, M. R., Rasheed, P., Al-Sowielem, L., & Makki, S. M. (2010). A Comparative Study of Perceived Stress among Female Medical and Non-Medical University Students in Dammam, Saudi Arabia. *Sultan Qaboos University Medical Journal*, 10(2), 231–240.
- Al-Darmaki, F. R. (2014). Predictors of counseling center use among college students in the United Arab Emirates. *International Perspectives in Psychology*, 3(1), 48-61.
- Al-Darmaki, F. R., & Yaaqeib, S. I. (2015). Psychology and mental health services in the United Arab Emirates. *Psychology International*, June 2015.  
<https://www.apa.org/international/pi/2015/06/psychology-arab>
- AlFaris, E., Irfan, F., Qureshi, R., Naeem, N., Alshomrani, A., Ponnampuruma, G., Al Yousufi, N., Al Maflehi, N., Al Naami, M., Jamal, A., & van der Vleuten, C. (2016). Health professions' students have an alarming prevalence of depressive symptoms: exploration of the associated factors. *BMC Medical Education*, 16(1), 1-8.  
<https://doi.org/10.1186/s12909-016-0794-y>
- Al-Farsi, Y. M., Albali, N. H., Alsaqabi, M. K., Sayed, M., Al-Mawali, A. H., & Al-Adawi, S. (2021). Period-prevalence and Publication Rate of Health Research Productivity in Seven Arabian Gulf Countries: Bibliometric Analysis from 1996 to 2018. *Oman Medical Journal*, 36(6), e316. <https://doi.org/10.5001/omj.2021.100>
- Al-Ghafri, G., Al-Sinawi, H., Al-Muniri, A., Dorvlo, A. S., Al-Farsi, Y. M., Armstrong, K., & Al-Adawi, S. (2014). Prevalence of depressive symptoms as elicited by Patient Health Questionnaire (PHQ-9) among medical trainees in Oman. *Asian Journal of Psychiatry*, 8, 59-62. <https://doi.org/10.1016/j.ajp.2013.10.014>
- Alharbi, H., Almalki, A., Alabdan, F., & Haddad, B. (2018). Depression among medical students in Saudi medical colleges: a cross-sectional study. *Advances in Medical Education and Practice*, 9, 887–891. <https://doi.org/10.2147/AMEP.S182960>
- Alharbi, H., Almalki, A., Alabdan, F., & Haddad, B. (2018). Depression among medical students in Saudi medical colleges: a cross-sectional study. *Advances in Medical Education and Practice*, 9, 887–891. <https://doi.org/10.2147/AMEP.S182960>.
- Al-Hinaai, H., Al-Busaidi, I., Al Farsi, B., & Al Saidi, Y. (2021). The prevalence of substance misuse and its effects among Omani college students: a cross-sectional study. *Oman Medical Journal*, 36(1), e224. <https://doi.org/10.5001/omj.2021.04>
- Al-Hinai, S. S., Al-Saidy O., Dorvlo, A. S. (2006) Culture and prevalence of social phobia in a college population in Oman. In M. Landow (Ed.), *College Students: Mental Health and Coping Strategies* (pp. 115–132). Nova Science Publishers.
- Al-Khani, A. M., Sarhandi, M. I., Zaghoul, M. S., Ewid, M., & Saquib, N. (2019). A cross-sectional survey on sleep quality, mental health, and academic performance among medical students in Saudi Arabia. *BMC Research Notes*, 12(1), 1-5.  
<https://doi.org/10.1186/s13104-019-4713-2>
- Al-Krenawi, A., Graham, J. R., Al-Bedah, E. A., Kadri, H. M., & Sehwal, M. A. (2009). Cross-national comparison of Middle Eastern university students: help-seeking behaviors, attitudes toward helping professionals, and cultural beliefs about mental health problems. *Community Mental Health Journal*, 45(1), 26-36.  
<https://doi.org/10.1007/s10597-008-9175-2>



- Al-Krenawi, A., Graham, J. R., Dean, Y. Z., Eltaiba, N. (2004). Cross-national study of attitudes towards seeking professional help: Jordan, United Arab Emirates (UAE) and Arabs in Israel. *International Journal of Social Psychiatry*, 50(2), 102-114. <https://doi.org/10.1177/0020764004040957>
- Al-Maashani, M., Al-Balushi, N., Al-Alawi, M., Mirza, H., Al-Huseini, S., Al-Balushi, M., Obeid, Y., Jose, S., Al-Sibani, N., & Al-Adawi, S. (2020). Prevalence and correlates of depressive symptoms among medical students: A cross-sectional single-centre study. *East Asian Archives of Psychiatry*, 30(1), 28-31. <https://doi.org/10.12809/eaap1882>
- Almazeedi, H., Alkandari, S., Alrazzuqi, H., Ohaeri, J., & Alfayez, G. (2020). Prevalence of child abuse and its association with depression among first year students of Kuwait University: a cross-sectional study. *Eastern Mediterranean Health Journal*, 26(8), 948-956. doi: 10.26719/emhj.20.049.
- Alosaimi, F. D., Alyahya, H., Alshahwan, H., Al Mahyijari, N., & Shaik, S. A. (2016). Smartphone addiction among university students in Riyadh, Saudi Arabia. *Saudi Medical Journal*, 37(6), 675-685. <https://doi.org/10.15537/smj.2016.6.14430>
- Al-Saadoon, M., Al-Adawi, M., & Al-Adawi, S. (2021). Socio-cultural constraints in protecting child rights in a society in transition: a review and synthesis from Oman. *Child Indicators Research*, 14(1), 239-267. <https://doi.org/10.1007/s12187-020-09759-z>
- AlSaif, H. I. (2019). Prevalence of and risk factors for poor sleep quality among residents in training in KSA. *Journal of Taibah University Medical Sciences*, 14(1), 52-59.
- Al-Salmi, A. (1997). *Mental health care in Oman: future directions* [unpublished MSc dissertation]. University of Wales.
- Al-Shafae, M., Al-Kaabi, Y., Al-Farsi, Y., White, G., Al-Maniri, A., Al-Sinawi, H., & Al-Adawi, S. (2013). Pilot study on the prevalence of abuse and mistreatment during clinical internship: a cross-sectional study among first year residents in Oman. *BMJ Open*, 3(2), e002076. <https://doi.org/10.1136/bmjopen-2012-002076>
- Al-Thani, M. A., & Khaled, S. M. (2018). "Toxic pleasures": A study of eating out behavior in Arab female university students and its associations with psychological distress and disordered eating. *Eating Behaviors*, 31, 125-130. <https://doi.org/10.1016/j.eatbeh.2018.08.008>
- Al-Turkait, F. A., & Ohaeri, J. U. (2010). Dimensional and hierarchical models of depression using the Beck Depression Inventory-II in an Arab college student sample. *BMC Psychiatry*, 10(1), 1-14. <https://doi.org/10.1186/1471-244X-10-60>
- Amini, S., Bagheri, P., Moradinazar, M., Basiri, M., Alimehr, M., & Ramazani, Y. (2021). Epidemiological status of suicide in the Middle East and North Africa countries (MENA) from 1990 to 2017. *Clinical Epidemiology and Global Health*, 9, 299-303. <https://doi.org/10.1016/j.cegh.2020.10.002>
- Arab News (2022). Saudi Budget 2022: Education takes biggest chunk of Saudi public spending in 2022. Accessed on January 29, 2022. <https://www.arabnews.com/node/1986011/business-economy>
- Arafat, S., Khan, M. M., Menon, V., Ali, S. A., Rezaeian, M., & Shoib, S. (2021). Psychological autopsy study and risk factors for suicide in Muslim countries. *Health Science Reports*, 4(4), e414. <https://doi.org/10.1002/hsr2.414>
- Ashour, R., Elashie, S., Alkeilani, B., & Shraim, M. (2020). *Smartphone addiction among Qatar University students: a cross-sectional study*. Qatar University. <https://quspace.qu.edu.qa/bitstream/handle/10576/16786/Smartphone%20addiction%20among%20Qatar%20University%20students%20a%20cross-sectional%20study.pdf>

- Auerbach, R. P., Alonso, J., Axinn, W. G., Cuijpers, P., Ebert, D. D., Green, J. G., & Bruffaerts, R. (2016). Mental disorders among college students in the World Health Organization world mental health surveys. *Psychological Medicine*, 46(14), 2955-2970. <https://doi.org/10.1017/S0033291716001665>
- Auerbach, R. P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., Ebert, D. D., Green, J. G., Hasking, P., Murray, E., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Stein, D. J., Vilagut, G., Zaslavsky, A. M., Kessler, R. C., & WHO WMH-ICS Collaborators (2018). WHO World Mental Health Surveys International College Student Project: Prevalence and distribution of mental disorders. *Journal of Abnormal Psychology*, 127(7), 623–638. <https://doi.org/10.1037/abn0000362>
- Awadalla, S., Davies, E. B., & Glazebrook, C. (2020). A longitudinal cohort study to explore the relationship between depression, anxiety and academic performance among Emirati university students. *BMC Psychiatry*, 20(1), 1-10. <https://doi.org/10.1186/s12888-020-02854-z>
- Ayonrinde, O. A., Obuaya, C., & Adeyemi, S. O. (2015). Brain fog syndrome: a culture-bound syndrome that may be approaching extinction. *BJPsych Bulletin*, 39(4), 156–161. <https://doi.org/10.1192/pb.bp.114.049049>
- Badr, H. E., Naser, J., Al-Zaabi, A., Al-Saeedi, A., Al-Munefi, K., Al-Houli, S., & Al-Rashidi, D. (2018). Childhood maltreatment: A predictor of mental health problems among adolescents and young adults. *Child Abuse & Neglect*, 80, 161-171. <https://doi.org/10.1016/j.chiabu.2018.03.011>
- Bahhawi, T. A., Albasheer, O. B., Makeen, A. M., Arishi, A. M., Hakami, O. M., Maashi, S. M., Al-Khairat, H. K., Alganmy, O. M., Sahal, Y. A., Sharif, A. A., & Mahfouz, M. S. (2018). Depression, anxiety, and stress and their association with khat use: a cross-sectional study among Jazan University students, Saudi Arabia. *Neuropsychiatric Disease and Treatment*, 14, 2755–2761. <https://doi.org/10.2147/NDT.S182744>
- Baumrind, D. (1978). Parental disciplinary patterns and social competence in children. *Youth and Society*, 9, 239-276. <https://doi.org/10.1177/0044118X7800900302>
- Bensaid, B., & Brahimi, T. (2021). Coping with COVID-19: higher education in the GCC countries. In *Research and Innovation Forum 2020: Disruptive Technologies in Times of Change* (pp. 137-153). Springer International Publishing.
- Benson, K., Flory, K., Humphreys, K. L., & Lee, S. S. (2015). Misuse of stimulant medication among college students: a comprehensive review and meta-analysis. *Clinical Child and Family Psychology Review*, 18(1), 50-76. <https://doi.org/10.1007/s10567-014-0177-z>
- Berry, N., Lobban, F., Belousov, M., Emsley, R., Nenadic, G., & Bucci, S. (2017). #WhyWeTweetMH: Understanding why people use Twitter to discuss mental health problems. *Journal of Medical Internet Research*, 19(4), e107. <https://doi.org/10.2196/jmir.6173>
- Blanco, C., Okuda, M., Wright, C., Hasin, D. S., Grant, B. F., Liu, S. M., & Olfson, M. (2008). Mental health of college students and their non-college-attending peers: results from the National Epidemiologic Study on Alcohol and Related Conditions. *Archives of General Psychiatry*, 65(12), 1429–1437. <https://doi.org/10.1001/archpsyc.65.12.1429>

- Blum, K., Febo, M., Smith, D. E., Roy, A. K., 3rd, Demetrovics, Z., Cronjé, F. J., Femino, J., Agan, G., Fratantonio, J. L., Pandey, S. C., Badgaiyan, R. D., & Gold, M. S. (2015). Neurogenetic and epigenetic correlates of adolescent predisposition to and risk for addictive behaviors as a function of prefrontal cortex dysregulation. *Journal of Child and Adolescent Psychopharmacology*, 25(4), 286–292. <https://doi.org/10.1089/cap.2014.0146>
- Brahmbhatt, K. R., Nadeera, V. P., Prasanna, K. S., & Jayram, S. (2013). Perceived stress and sources of stress among medical undergraduates in a private medical college in Mangalore, India. *International Journal of Biomedical and Advance Research*, 4(2), 133-135.
- Breedvelt, J. J., Amanvermez, Y., Harrer, M., Karyotaki, E., Gilbody, S., Bockting, C. L., Cuijpers, P., & Ebert, D. D. (2019). The effects of meditation, yoga, and mindfulness on depression, anxiety, and stress in tertiary education students: A meta-analysis. *Frontiers in Psychiatry* 10, 193. <https://doi.10.3389/fpsyt.2019.00193>
- Brownlow, J. A., Miller, K. E., & Gehrman, P. R. (2020). Insomnia and cognitive performance. *Sleep Medicine Clinics*, 15(1), 71-76. <https://doi.org/10.1016/j.jsmc.2019.10.002>
- Buyukkececi, Z., & Engelhardt, H. (2021). On the Relationship between Fertility, Development and Gender Equality: A Comparison of Western and MENA Countries. *Comparative Population Studies*, 46. DOI: <https://doi.org/10.12765/CPoS-2021-09>
- Cash, S. J., & Bridge, J. A. (2009). Epidemiology of youth suicide and suicidal behavior. *Current Opinion in Pediatrics*, 21(5), 613–619. <https://doi.org/10.1097/MOP.0b013e32833063e1>
- Chen, J. A., Stevens, C., Wong, S., & Liu, C. H. (2019). Psychiatric symptoms and diagnoses among U.S. college students: A comparison by race and ethnicity. *Psychiatric Services*, 70(6), 442–449. <https://doi.org/10.1176/appi.ps.201800388>
- Constantinidis, C., & Luna, B. (2019). Neural substrates of inhibitory control maturation in adolescence. *Trends in Neurosciences*, 42(9), 604–616. <https://doi.org/10.1016/j.tins.2019.07.004>
- Cuijpers, P., Auerbach, R. P., Benjet, C., Bruffaerts, R., Ebert, D., Karyotaki, E., & Kessler, R. C. (2019). The world health organization world mental health international college student initiative: an overview. *International Journal of Methods in Psychiatric Research*, 28(2), e1761. <https://doi.org/10.1002/mpr.1761>
- Cuttilan, A. N., Sayampanathan, A. A., & Ho, R. C. (2016). Mental health issues amongst medical students in Asia: a systematic review [2000-2015]. *Annals of Translational Medicine*, 4(4), 72. <https://doi.org/10.3978/j.issn.2305-5839.2016.02.07>
- Dakhli, M., El-Zohairy D. (2013) Emerging trends in higher education in the GCC: A critical assessment. In I. Alon, V. Jones, & J. R. McIntyre (Eds.), *Innovation in Business Education in Emerging Markets*. Palgrave Macmillan. [https://doi.org/10.1057/9781137292964\\_4](https://doi.org/10.1057/9781137292964_4)
- de Freitas, C. C. , Gozzoli, A. L. , Konno, J. N., & Fuess, V. L. (2017). Correlation between mobile phone use before sleep, sleep quality and daytime sleepiness/Relacao entre uso do telefone celular antes de dormir, qualidade do sono e sonolencia diurna. *Revista de Medicina*, 96(1), 14-21.
- Dildar, Y. (2021). Gendered patterns of industrialization in MENA. *Middle East Development Journal*, 1-22. <https://doi.org/10.1080/17938120.2021.1898188>

- Dinh, H., Martin, A., Leach, L., Strazdins, L., Nicholson, J., Allen, T., & Cooklin, A. (2021). Is self-employment a good option? Gender, parents and the work-family interface. *Sex Roles*, 84(11), 731-746. <https://doi.org/10.1007/s11199-020-01195-1>
- Dougherty, D. M., Mathias, C. W., Marsh-Richard, D. M., Prevetie, K. N., Dawes, M. A., Hatzis, E. S., Palmes, G., & Nouvion, S. O. (2009). Impulsivity and clinical symptoms among adolescents with non-suicidal self-injury with or without attempted suicide. *Psychiatry Research*, 169(1), 22-27. <https://doi.org/10.1016/j.psychres.2008.06.011>
- Duffy, M. E., Twenge, J. M., & Joiner, T. E. (2019). Trends in mood and anxiety symptoms and suicide-related outcomes among U.S. undergraduates, 2007-2018: Evidence from two national surveys. *The Journal of Adolescent Health*, 65(5), 590-598. <https://doi.org/10.1016/j.jadohealth.2019.04.033>
- DuPaul, G. J., Weyandt, L. L., O'Dell, S. M., & Varejao, M. (2009). College students with ADHD: current status and future directions. *Journal of Attention Disorders*, 13(3), 234-250. <https://doi.org/10.1177/1087054709340650>
- Dwairy, M., & Van Sickle, T. D. (1996). Western psychotherapy in traditional Arabic societies. *Clinical Psychology Review* 1996, 16, 231-249. [https://doi.org/10.1016/S0272-7358\(96\)00011-6](https://doi.org/10.1016/S0272-7358(96)00011-6)
- Dwairy, M., Achoui, M., Abouserie, R., Farah, A., Sakhleh, A. A., Fayad, M., & Khan, H. K. (2006). Parenting styles in Arab societies: A first cross-regional research study. *Journal of Cross-Cultural Psychology*, 37(3), 230-247. <https://doi.org/10.1177/0022022106286922>
- Ebrahim, M., Alkazemi, D., Zafar, T.A., & Kublow, S. (2019). Disordered eating attitudes correlate with body dissatisfaction among Kuwaiti male college students. *Journal of Eating Disorders*, 7, 37 (2019). <https://doi.org/10.1186/s40337-019-0265-z>
- Eisenberg D. (2019). Countering the troubling increase in mental health symptoms among U.S. college students. *The Journal of Adolescent Health*, 65(5), 573-574. <https://doi.org/10.1016/j.jadohealth.2019.08.003>
- Eisenberg, D., Nicklett, E. J., Roeder, K., & Kirz, N. E. (2011). Eating disorder symptoms among college students: prevalence, persistence, correlates, and treatment-seeking. *Journal of American College Health*, 59(8), 700-707. doi: 10.1080/07448481.2010.546461.
- Eloul, L., Ambusaidi, A., & Al-Adawi, S. (2009). Silent epidemic of depression in women in the Middle East and North Africa region: Emerging tribulation or fallacy? *Sultan Qaboos University Medical Journal*, 9(1), 5-15.
- El-Sayed, M., Simon, M. A., Al-Khabouri, Z., Al-Mandhari, N., & El Shamy, A. M. (2020). Prevalence and determinants of suicidality among medical students in Oman. *Egyptian Journal of Psychiatry*, 41(2), 103-110. [http://dx.doi.org/10.4103/ejpsy.ejpsy\\_1\\_20](http://dx.doi.org/10.4103/ejpsy.ejpsy_1_20)
- Elyamani, R., Naja, S., Al-Dahshan, A., Hamoud, H., Bougmiza, M. I., Alkubaisi, N. (2021). Mental health literacy in Arab states of the Gulf Cooperation Council: A systematic review. *PLoS One*. 16(1), e0245156. <https://doi.org/10.1371/journal.pone.0245156>

- Eskin, M., Sun, J. M., Abuidhail, J., Yoshimasu, K., Kujan, O., Janghorbani, M., Flood, C., Carta, M. G., Tran, U. S., Mechri, A., Hamdan, M., Poyrazli, S., Aidoudi, K., Bakhshi, S., Harlak, H., Moro, M. F., Nawafleh, H., Phillips, L., Shaheen, A., Taifour, S., ... Voracek, M. (2016). Suicidal behavior and psychological distress in university students: A 12-nation study. *Archives of Suicide Research, 20*(3), 369–388. <https://doi.org/10.1080/13811118.2015.1054055>
- Fadhel, S. B., & Adawi, T. R. T. (2020). Perceived stress and coping strategies among university students. *European Journal of Research in Medical Sciences, 8*(1), 19-25.
- Farabaugh, A., Bitran, S., Nyer, M., Holt, D. J., Pedrelli, P., Shyu, I., Hollon, S. D., Zisook, S., Baer, L., Busse, W., Petersen, T. J., Pender, M., Tucker, D. D., & Fava, M. (2012). Depression and suicidal ideation in college students. *Psychopathology, 45*(4), 228–234. <https://doi.org/10.1159/000331598>
- Franceschini, A., & Fattore, L. (2021). Gender-specific approach in psychiatric diseases: Because sex matters. *European Journal Of Pharmacology, 896*, 173895. <https://doi.org/10.1016/j.ejphar.2021.173895>

- Franken, I. H., & Muris, P. (2006). BIS/BAS personality characteristics and college students' substance use. *Personality and Individual Differences, 40*(7), 1497-1503.  
<https://doi.org/10.1016/j.paid.2005.12.005>
- Fuermaier, A., Tucha, O., Koerts, J., Tucha, L., Thome, J., & Faltraco, F. (2021). Feigning ADHD and stimulant misuse among Dutch university students. *Journal of Neural Transmission (Vienna, Austria: 1996)*128(7), 1079-1084.  
<https://doi.org/10.1007/s00702-020-02296-7>
- GCC Education Ecosystems. (2020). *A brief overview*. GCC Education Guide 2020. Businessliveme.com. <https://www.businessliveme.com/gcc-education-guide-2020-2/>
- Gómez Del Barrio, A., Ruiz Guerrero, F., Benito Gonzalez, P., Perez Fernandez, M., Sanchez Blanco, L., Losa Mugica, E., Calcedo Giraldo, G., & González Gómez, J. (2021). A retrospective investigation of the prodromal stages of eating disorders and use of health services in young patients the year prior to the diagnosis. *Early Intervention in Psychiatry*. Advance online publication. <https://doi.org/10.1111/eip.13142>
- Gray, J. A. (1987). *The psychology of fear and stress*. Cambridge University Press, Cambridge.
- Harrer, M., Adam, S. H., Messner, E. M., Baumeister, H., Cuijpers, P., Bruffaerts, R., Auerbach, R. P., Kessler, R. C., Jacobi, C., Taylor, C. B., & Ebert, D. D. (2020). Prevention of eating disorders at universities: A systematic review and meta-analysis. *International Journal of Eating Disorders, 53*(6), 813–833.  
<https://doi.org/10.1002/eat.23224>
- Hrafnkelsdottir, S. M., Brychta, R. J., Rognvaldsdottir, V., Gestsdottir, S., Chen, K. Y., Johannsson, E., & Arngrimsson, S. A. (2018). Less screen time and more frequent vigorous physical activity is associated with lower risk of reporting negative mental health symptoms among Icelandic adolescents. *PloS One, 13*(4), e0196286.  
<https://doi.org/10.1371/journal.pone.0196286>
- Huang, J., Nigatu, Y. T., Smail-Crevier, R., Zhang, X., & Wang, J. (2018). Interventions for common mental health problems among university and college students: A systematic review and meta-analysis of randomized controlled trials. *Journal of Psychiatric Research, 107*, 1–10. <https://doi.org/10.1016/j.jpsychires.2018.09.018>
- Ibrahim, A. K., Kelly, S. J., Adams, C. E., & Glazebrook, C. (2013). A systematic review of studies of depression prevalence in university students. *Journal of Psychiatric Research, 47*(3), 391–400. <https://doi.org/10.1016/j.jpsychires.2012.11.015>
- Ibrahim, N., Al-Kharboush, D., El-Khatib, L., Al-Habib, A., & Asali, D. (2013). Prevalence and predictors of anxiety and depression among female medical students in King Abdulaziz University, Jeddah, Saudi Arabia. *Iranian Journal of Public Health, 42*(7), 726–736.
- Islam, M. M. (2020). Demographic transition in Sultanate of Oman: Emerging demographic dividend and challenges. *Middle East Fertility Society Journal, 25*(1), 1-14.
- James, T. G., Sullivan, M. K., Dumeny, L., Lindsey, K., Cheong, J., & Nicolette, G. (2020). Health insurance literacy and health service utilization among college students. *Journal of American College Health, 68*(2), 200–206.  
<https://doi.org/10.1080/07448481.2018.1538151>
- Jia, Y. F., & Loo, Y. T. (2018). Prevalence and determinants of perceived stress among undergraduate students in a Malaysian University. *Journal of Health and Translational Medicine, 21*(1).  
<http://ijie.um.edu.my/index.php/jummec/article/view/11016/7823>

- Keel, P. K., & Klump, K. L. (2003). Are eating disorders culture-bound syndromes? Implications for conceptualizing their etiology. *Psychological Bulletin*, *129*(5), 747–769. <https://doi.org/10.1037/0033-2909.129.5.747>
- Kessler, R. C., Amminger, G. P., Aguilar-Gaxiola, S., Alonso, J., Lee, S., & Ustün, T. B. (2007). Age of onset of mental disorders: a review of recent literature. *Current Opinion in Psychiatry*, *20*(4), 359–364. <https://doi.org/10.1097/YCO.0b013e32816ebc8c>
- Khaled, S. M., Petcu, C., Al-Thani, M. A., Al-Hamadi, A., Daher-Nashif, S., Zolezzi, M., & Woodruff, P. (2021). Prevalence and associated factors of DSM-5 insomnia disorder in the general population of Qatar. *BMC Psychiatry*, *21*(1), 84. <https://doi.org/10.1186/s12888-020-03035-8>
- Khan, N. (2019). Caffeinated beverages and energy drink: pattern, awareness and health side effects among Omani university students. *Biomedical Research*. <https://doi.org/10.35841/biomedicalresearch.30-19-014>
- Khosshaim, H. B., Al-Sukayt, A., Chinna, K., Nurunnabi, M., Sundarasan, S., Kamaludin, K., Baloch, G. M., & Hossain, S. F. (2020). Anxiety level of university students during COVID-19 in Saudi Arabia. *Frontiers in Psychiatry*, *11*, 1397. <https://doi.org/10.3389/fpsy.2020.579750>
- Kleiman, A. & Good, B. (1985). *Culture and Depression*. University of California Press, Los Angeles, CA.
- Koura, M. R., Al-Dossary, A. F., & Bahnassy, A. A. (2011). Smoking pattern among female college students in Dammam, Saudi Arabia. *Journal of Family and Community Medicine*, *18*(2), 63-68. <https://doi.org/10.4103/2230-8229.83370>
- Kronfol, Z., Khalifa, B., Houry, B., Omar, O., Daouk, S., deWitt, J. P., & Eisenberg, D. (2018). Selected psychiatric problems among college students in two Arab countries: comparison with the USA. *BMC Psychiatry*, *18*(1), 1-9. <https://doi.org/10.1186/s12888-018-1718-7>
- Kwangu, M., Njunju, E. M., Mulenga, D., Mazaba, M. L., & Siziya, S. (2017). Prevalence and correlates of suicidal ideation among school-going adolescents in Oman. *International Public Health Journal*, *9*(4), 379-393.
- Lee, I. M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., Katzmarzyk, P. T., & Lancet Physical Activity Series Working Group (2012). Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet*, *380*(9838), 219–229. [https://doi.org/10.1016/S0140-6736\(12\)61031-9](https://doi.org/10.1016/S0140-6736(12)61031-9)
- Lee, S. S. (2021). A Precarious Balancing Act: Globalization, Political Legitimacy, and Higher Education Expansion in Qatar and the UAE. *Contemporary Arab Affairs*, *14*(1), 113-133. <https://doi.org/10.1525/caa.2021.14.1.113>
- Lipson, S. K., Lattie, E. G., & Eisenberg, D. (2019). Increased rates of mental health service utilization by U.S. college students: 10-year population-level trends (2007-2017). *Psychiatric Services (Washington, D.C.)*, *70*(1), 60–63. <https://doi.org/10.1176/appi.ps.201800332>
- Lund, H. G., Reider, B. D., Whiting, A. B., & Prichard, J. R. (2010). Sleep patterns and predictors of disturbed sleep in a large population of college students. *The Journal of Adolescent Health*, *46*(2), 124–132. <https://doi.org/10.1016/j.jadohealth.2009.06.016>

- Madadin, M., Menezes, R. G., Alassaf, M. A., Almulhim, A. M., Abumadini, M. S., Alnemer, F. A., Alrasheed, F. R., & Alramadhan, A. K. (2020). Suicidal ideation among medical students in Dammam, Saudi Arabia. *Crisis, 42*(4), 278-2831-6. Advance online publication. <https://doi.org/10.1027/0227-5910/a000720>.
- Mahfouz, M. S., Ali, S. A., Alqahtani, H. A., Kubaisi, A. A., Ashiri, N. M., Daghri, E. H., Alzahrani, S. A., Sowaidi, A. A., Maashi, A. M., & Alhazmi, D. A. (2020). Burnout and its associated factors among medical students of Jazan University, Jazan, Saudi Arabia. *Mental Illness, 12*(2), 35-42. <https://doi.org/10.1108/MIJ-06-2020-0011>.
- Mahroon, Z. A., Borgan, S. M., Kamel, C., Maddison, W., Royston, M., & Donnellan, C. (2018). Factors associated with depression and anxiety symptoms among medical students in Bahrain. *Academic Psychiatry, 42*(1), 31-40. <https://doi.org/10.1007/s40596-017-0733-1>
- Malanchini, M., Engelhardt, L. E., Grotzinger, A. D., Harden, K. P., & Tucker-Drob, E. M. (2019). "Same but different": Associations between multiple aspects of self-regulation, cognition, and academic abilities. *Journal of Personality and Social Psychology, 117*(6), 1164-1188. <https://doi.org/10.1037/pspp0000224>.
- Maree, J. G. (2021). The psychosocial development theory of Erik Erikson: critical overview. *Early Child Development and Care, 191*(7-8), 1107-1121. <https://doi.org/10.1080/03004430.2020.1845163>
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98* (2),: 224-253. <https://doi.org/10.1037/0033-295X.98.2.224>
- Masters K. (2015). Social Networking Addiction among Health Sciences Students in Oman. *Sultan Qaboos University Medical Journal, 15*(3), e357-e363. <https://doi.org/10.18295/squmj.2015.15.03.009>.
- Matthews, K. A., Patel, S. R., Pantescio, E. J., Buysse, D. J., Kamarck, T. W., Lee, L., & Hall, M. H. (2018). Similarities and differences in estimates of sleep duration by polysomnography, actigraphy, diary, and self-reported habitual sleep in a community sample. *Sleep Health, 4*(1), 96-103. <https://doi.org/10.1016/j.sleh.2017.10.011>
- Melikian, L. (1988). Arab Socio-political impact on Gulf Life-styles. In B.R. Pridham (ed.), *The Arab Gulf and the Arab World*. Croomhelm: London.
- Melisse, B., de Beurs, E., & van Furth, E. F. (2020). Eating disorders in the Arab world: a literature review. *Journal of Eating Disorders, 8*(1), 1-19. <https://doi.org/10.1186/s40337-020-00336-x>
- Mohamed, M. (2019). *Buying and selling education policies: Educational reform in the Gulf* [(Doctoral dissertation), UCL (University College London)].
- Mortier, P., Cuijpers, P., Kiekens, G., Auerbach, R. P., Demyttenaere, K., Green, J. G., Kessler, R. C., Nock, M. K., & Bruffaerts, R. (2018). The prevalence of suicidal thoughts and behaviours among college students: a meta-analysis. *Psychological Medicine, 48*(4), 554-565. <https://doi.org/10.1017/S0033291717002215>
- Musaiger, A. O. (2004). Overweight and obesity in the Eastern Mediterranean Region: can we control it?. *Eastern Mediterranean Health Journal, 10*(6), 789-793.
- Musaiger, A. O., Al-Kandari, F. I., Al-Mannai, M., Al-Faraj, A. M., Bouriki, F. A., Shehab, F. S., Al-Dabous, L. A., Al-Qalaf, W. B. (2016). Disordered eating attitudes among university students in Kuwait: The role of gender and obesity. *International Journal of Preventive Medicine, 2016 Apr 14*; 7, :67. <https://doi.org/10.4103/2008-7802.180413>.



- Nasrallah, C., Kimmel, L., & Khaled, S. M. (2020). Associations between weight loss difficulty, disordered eating behaviors and poor weight loss outcomes in Arab female university students. *Eating Behaviors*, *36*, 101363. <https://doi.org/10.1016/j.eatbeh.2020.101363>
- Nuaimi, A. A. (2021). Effectiveness of cyberbullying prevention strategies in the UAE. In *ICT Analysis and Applications* (pp. 731-739). Springer.
- O'Hara, L., Tahboub-Schulte, S., & Thomas, J. (2016). Weight-related teasing and internalized weight stigma predict abnormal eating attitudes and behaviours in Emirati female university students. *Appetite*, *102*, 44-50. <https://doi.org/10.1016/j.appet.2016.01.019>
- Oman- Ministry of Finance (2021). A Guide to State's General Budget for Fiscal Year 2021: Cornerstone Budget. Accessed on January 21, 2022, from [https://mof.gov.om/Portals/1/documents/Financial-reports/The-state-budget/2021/2021\(Eng\).pdf](https://mof.gov.om/Portals/1/documents/Financial-reports/The-state-budget/2021/2021(Eng).pdf)
- Pacheco, J. P., Giacomini, H. T., Tam, W. W., Ribeiro, T. B., Arab, C., Bezerra, I. M., & Pinasco, G. C. (2017). Mental health problems among medical students in Brazil: a systematic review and meta-analysis. *Revista Brasileira de Psiquiatria (Sao Paulo, Brazil: 1999)*, *39*(4), 369–378. <https://doi.org/10.1590/1516-4446-2017-2223>
- Palmer, L. (2013). The relationship between stress, fatigue, and cognitive functioning. *College Student Journal*, *47*(2), 312-325.
- Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual Research Review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry*, *56*(3), 345-365. <https://doi.org/10.1111/jcpp.12381>
- Prince, R. (1960). The "brain fag" syndrome in Nigerian students. *The Journal of Mental Science*, *106*, 559–570. <https://doi.org/10.1192/bjp.106.443.559>
- Puthran, R., Zhang, M. W., Tam, W. W., & Ho, R. C. (2016). Prevalence of depression amongst medical students: a meta-analysis. *Medical Education*, *50*(4), 456–468. <https://doi.org/10.1111/medu.12962>
- Quamar, M. M. (2021). A flourishing higher education. In *Education System in Saudi Arabia*. Palgrave Macmillan. [https://doi.org/10.1007/978-981-15-9173-0\\_7](https://doi.org/10.1007/978-981-15-9173-0_7)
- Quek, T. T., Tam, W. W., Tran, B. X., Zhang, M., Zhang, Z., Ho, C. S., & Ho, R. C. (2019). The global prevalence of anxiety among medical students: A meta-analysis. *International Journal of Environmental Research and Public Health*, *16*(15), 2735. <https://doi.org/10.3390/ijerph16152735>
- Radwan, H., Hasan, H. A., Najm, L., Zaurub, S., Jami, F., Javadi, F., Deeb, L. A., & Iskandarani, A. (2018). Eating disorders and body image concerns as influenced by family and media among university students in Sharjah, UAE. *Asia Pacific Journal of Clinical Nutrition*, *27*(3), 695–700. <https://doi.org/10.6133/apjcn.062017.10>
- Ramasubramanian, S. (2017). Mindfulness, stress coping and everyday resilience among emerging youth in a university setting: a mixed methods approach. *International Journal of Adolescence and Youth*, *22*(3), 308-321. <https://doi.org/10.1080/02673843.2016.1175361>
- Richter, C. & Kozman, C. (Eds.). (2021) *Arab media systems*. Open Book Publishers. <https://doi.org/10.11647/OBP.0238>

- Rotenstein, L. S., Ramos, M. A., Torre, M., Segal, J. B., Peluso, M. J., Guille, C., Sen, S., & Mata, D. A. (2016). Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: A systematic review and meta-analysis. *JAMA*, *316*(21), 2214–2236. <https://doi.org/10.1001/jama.2016.17324>.
- Rujescu, D., & Giegling, I. (2012). Intermediate phenotypes in suicidal behavior focus on personality. In Y. Dwivedi (Ed.), *The Neurobiological Basis of Suicide*. CRC Press/Taylor & Francis.
- Sanad, H. M. (2019). Stress and anxiety among junior nursing students during the initial clinical Training: a descriptive study at college of health sciences. *American Journal of Nursing Research*, *7*(6), 995-999. <https://doi.org/10.12691/AJNR-7-6-13>
- Saruhanjan, K., Zarski, A. C., Bauer, T., Baumeister, H., Cuijpers, P., Spiegelhalter, K., Auerbach, R. P., Kessler, R. C., Bruffaerts, R., Karyotaki, E., Berking, M., & Ebert, D. D. (2021). Psychological interventions to improve sleep in college students: A meta-analysis of randomized controlled trials. *Journal of Sleep Research*, *30*(1), e13097. <https://doi.org/10.1111/jsr.13097>
- Schlarb, A. A., Kulesa, D., & Gulewitsch, M. D. (2012). Sleep characteristics, sleep problems, and associations of self-efficacy among German university students. *Nature and Science of Sleep*, *4*, 1–7. <https://doi.org/10.2147/NSS.S27971>
- Schnitzler, T. J., & Heise, C. L. (2021). Educational challenges in Jordan and Oman. *International Journal of Teaching and Case Studies*, *12*(1), 63-74.
- Schulte, S. J., & Thomas, J. (2013). Relationship between eating pathology, body dissatisfaction and depressive symptoms among male and female adolescents in the United Arab Emirates. *Eating Behaviors*, *14*(2), 157-160. <https://doi.org/10.1016/j.eatbeh.2013.01.015>
- Schumacher, M. R. (2011). *Agitated affective states and suicidality: The role of BAS and BIS in depressive-suicidal states* [Doctoral dissertation]. Northern Illinois University.
- Shehata, A. M. K., & Elgllab, M. F. M. (2018). Where Arab social science and humanities scholars choose to publish: Falling in the predatory journals trap. *Learned Publishing*, *31*(3), 222–229. <https://doi.org/10.1002/leap.1167>.
- Soto, R. (2021). Can the GCC economies escape the oil curse? In *The Routledge Handbook on the Middle East Economy* (pp. 111-128). Routledge.
- Statista. (2020). *Internet penetration rate in the Middle East compared to the global internet penetration rate from 2009 to 2019*. <https://www.statista.com/statistics/265171/comparison-of-global-and-middle-eastern-internet-penetration-rate/>
- Stiglic, N., & Viner, R. M. (2019). Effects of screentime on the health and well-being of children and adolescents: a systematic review of reviews. *BMJ Open*, *9*(1), e023191. <https://doi.org/10.1136/bmjopen-2018-023191>
- Sweileh, W. M. (2021). Contribution of researchers in the Arab region to peer-reviewed literature on mental health and well-being of university students. *International Journal of Mental Health Systems*, *15*(1), 50. <https://doi.org/10.1186/s13033-021-00477-9>
- Tam, W., Lo, K., & Pacheco, J. (2019). Prevalence of depressive symptoms among medical students: overview of systematic reviews. *Medical Education*, *53*(4), 345–354. <https://doi.org/10.1111/medu.13770>

- Thomas, J., Khan, S., & Abdulrahman, A. A. (2010). Eating attitudes and body image concerns among female university students in the United Arab Emirates. *Appetite*, 54(3), 595-598. <https://doi.org/10.1016/j.appet.2010.02.008>
- Thomas, J., O'Hara, L., Quadflieg, S., & Weissgerber, S. C. (2018). Acculturation, out-group positivity and eating disorders symptoms among Emirati women. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, 23(2), 241-246. <https://doi.org/10.1007/s40519-016-0358-5>
- Thomas, J., O'Hara, L., Tahboub-Schulte, S., Grey, I., & Chowdhury, N. (2018). Holy anorexia: eating disorders symptomatology and religiosity among Muslim women in the United Arab Emirates. *Psychiatry Research*, 260, 495-499. <https://doi.org/10.1016/j.psychres.2017.11.082>
- Thumiki, V. R. (2019). Student dropout from foundation program at modern college of business & science, Sultanate of Oman. *International Journal of Higher Education*, 8(5), 118-133. URL: <https://doi.org/10.5430/ijhe.v8n5p118>
- Tran, T., Milanovic, M., Holshausen, K., & Bowie, C. R. (2021). What is normal cognition in depression? Prevalence and functional correlates of normative versus idiographic cognitive impairment. *Neuropsychology*, 35(1), 33-41. <https://doi.org/10.1037/neu0000717>
- Twenge, J. M., Gentile, B., DeWall, C. N., Ma, D., Laceyfield, K., & Schurtz, D. R. (2010). Birth cohort increases in psychopathology among young Americans, 1938-2007: A cross-temporal meta-analysis of the MMPI. *Clinical Psychology Review*, 30(2), 145-154. <https://doi.org/10.1016/j.cpr.2009.10.005>
- UAE Ministry of Foreign Affairs (2021). Federal Budget 2021. <https://www.mof.gov.ae/en/resourcesAndBudget/federalBudget/Pages/budget2021.aspx>
- United Nations Development Programme. (2020). Human development index (HDI) ranking. <http://hdr.undp.org/en/content/latest-human-development-index-ranking>
- Vuorre, M., Orben, A., & Przybylski, A. K. (2021). There is no evidence that associations between adolescents' digital technology engagement and mental health problems have increased. *Clinical Psychological Science*, 9(11). <https://doi.org/10.1177/2167702621994549>
- Wynaden, D., McAllister, M., Tohotoa, J., Al Omari, O., Heslop, K., Duggan, R., Murray, S., Happell, B., & Byrne, L. (2014). The silence of mental health issues within university environments: a quantitative study. *Archives of Psychiatric Nursing*, 28(5), 339-344. <https://doi.org/10.1016/j.apnu.2014.08.003>
- Yasmin, R., Asim, S. S., Ali, H., Quds, T., & Zafar, F. (2013). Prevalence of perceived stress among pharmacy students in Pakistan. *International Journal of Pharmaceutical Sciences Review and Research*, 23(2), 343-347.
- Zeng, W., Chen, R., Wang, X., Zhang, Q., & Deng, W. (2019). Prevalence of mental health problems among medical students in China: A meta-analysis. *Medicine*, 98(18), e15337. <https://doi.org/10.1097/MD.00000000000015337>
- Zumstein, N., & Riese, F. (2020). Defining Severe and Persistent Mental Illness-A Pragmatic Utility Concept Analysis. *Frontiers in Psychiatry*, 11, 648. <https://doi.org/10.3389/fpsy.2020.00648>

**Table 1**

*The type and frequency of mental health problems among Khaliji Students in post-secondary education*

Mental health problem	Assessment tools	Country	Study Authors (sample size)	Students affected
Depression	<ul style="list-style-type: none"> <li>• <i>Depression subscale of Hospital and Depression Scale (HADS)</i></li> <li>• <i>Patient Health Questionnaire (PHQ-9)</i></li> <li>• <i>Becks Depression Inventory (BDI-II)</i></li> </ul>	Oman	Al-Busaidi et al., 2011 ( <i>n</i> = 481)	27.7%
			Al-Ghafri et al., 2014 ( <i>n</i> = 132)	11.4%
			Al-Alawi et al., 2019 ( <i>n</i> = 662)	24.5%
			Al-Maashani et al., 2020 ( <i>n</i> = 189)	41.3%
		Saudi Arabia	Ibrahim et al., 2013 ( <i>n</i> = 450)	14.7%
			Aboalshamat et al., 2015 ( <i>n</i> = 422)	69.9%
			AlFaris et al., 2016 ( <i>n</i> = 1186)	47%
			Abdel-Salam & Khalek, 2017 ( <i>n</i> = 340)	75.3%
			Alharbi et al., 2018 ( <i>n</i> = 2562)	83.4%
			Bahhawi et al., 2018 ( <i>n</i> = 642)	53.6%
		Al-Khani et al., 2019 ( <i>n</i> = 95)	42%	
Bahrain	Abdelaziz et al., 2017 ( <i>n</i> = 160)	19%		

			Mahroon et al., 2018 ( $n = 350$ )	40%
		Qatar	Kronfol et al., 2018 ( $n = 434$ )	32%
		Kuwait	Al-Turkait & Ohaeri, 2010 ( $n = 624$ )	26.1%
			Badr et al., 2018 ( $n = 1270$ )	49.6%
			Almazeedi et al., 2020 ( $n = 2508$ )	76.6%
		UAE	Ahmed et al., 2009 ( $n = 165$ )	28.6%
			Schulte & Thomas, 2013 ( $n = 361$ )	32%
			Awadalla et al., 2020 ( $n = 404$ )	34.2%
Stress & Burnout Syndrome	<ul style="list-style-type: none"> <li>• <i>Influence of Studying on Student Health (ISSH)</i></li> <li>• <i>Perceived Stress Scale (PSS)</i></li> <li>• <i>Stress subscale of Depression Anxiety Stress Scales (DASS-21)</i></li> <li>• <i>Copenhagen Burnout Inventory</i></li> <li>• <i>Cohen's Perceived Stress Scale</i></li> <li>• <i>Common Stressor Inventory</i></li> <li>• <i>Maslach Burnout Inventory</i></li> </ul>	Oman	Al-Alawi et al., 2019 ( $n = 662$ )	7.4%
		Saudi Arabia	Al-Dabal et al. 2010 ( $n = 616$ )	96.3%
			Aboalshamat et al., 2015 ( $n = 422$ )	70.9%
			Al Rasheed et al. 2017 ( $n = 386$ )	64%
			Abdel-Salam & Khalek, 2017 ( $n = 340$ )	48.1%
			Bahhawi et al., 2018 ( $n = 642$ )	34.3%
			Al-Khani et al., 2019 ( $n = 95$ )	31%
			Mahfouz et al., 2020 ( $n = 440$ )	60.2%

	<ul style="list-style-type: none"> <li>• <i>Maslach Burnout Inventory (Student-Survey)</i></li> </ul>	Bahrain	Al Ubaidi et al., 2018 ( <i>n</i> = 347)	47%
			Sanad, 2019 ( <i>n</i> = 93)	92.5%
		Qatar	Adawi & Fadhel, 2020 ( <i>n</i> = 223)	89.2%
		Kuwait	Ahmed et al., 2014 ( <i>n</i> = 407)	43%
			Badr et al., 2018 ( <i>n</i> = 1270)	43.8%
Body Dissatisfaction & Disordered Eating	<ul style="list-style-type: none"> <li>• <i>The SCOFF Questionnaire</i></li> <li>• <i>Eating Attitudes Test (EAT-26)</i></li> <li>• <i>Perceived Weight Loss Difficulties (PWLD)</i></li> <li>• <i>Bodybuilder Image Grid (BIG)</i></li> <li>• <i>Body Shape Questionnaire (BSQ)</i></li> <li>• <i>The Figure Rating Scale (FRS)</i></li> </ul>	Qatar	Kronfol et al., 2018 ( <i>n</i> = 434)	21.4%
			Al-Thani & Khaled, 2018 ( <i>n</i> = 1615)	18%
			Nasrallah et al., 2020 ( <i>n</i> = 937)	31.2%
		Kuwait	Musaiger et al., 2016 ( <i>n</i> = 530)	32.8%
			Ebrahim et al., 2019 ( <i>n</i> = 400)	46.2%
		UAE	Thomas et al., 2010 ( <i>n</i> = 228)	24%
			Schulte & Thomas, 2013 ( <i>n</i> = 369)	Disordered Eating – 20% Body Dissatisfaction - 73%
			O'Hara et al., 2016 ( <i>n</i> = 420)	30%
			Hasan et al, 2018 ( <i>n</i> = 662)	33%
			Thomas et al., 2018 ( <i>n</i> = 1069)	30.5%
		Thomas et al., 2018 ( <i>n</i> = 209)	30.2%	

			Radwan et al., 2018 ( <i>n</i> = 662)	Disordered Eating – 33.2% Body Shape Concerns – 45%
Anxiety	<ul style="list-style-type: none"> <li>• <i>Anxiety subscale of Hospital and Depression Scale (HADS)</i></li> <li>• <i>Anxiety subscale of Depression Anxiety Stress Scales (DASS-21)</i></li> <li>• <i>Zung Self-Rating Anxiety Scale</i></li> <li>• <i>Becks Anxiety Inventory (BAI)</i></li> <li>• <i>General Anxiety Disorder (GAD-7)</i></li> </ul>	Saudi Arabia	Ibrahim et al., 2013 ( <i>n</i> = 450)	34.9%
			Aboalshamat et al., 2015 ( <i>n</i> = 422)	66.4%
			Abdel-Salam & Khalek, 2017 ( <i>n</i> = 340)	84.7%
			Bahhawi et al., 2018 ( <i>n</i> = 642)	65.7%
			Al-Khani et al., 2019 ( <i>n</i> = 95)	53%
			Khoshaim et al., 2020 ( <i>n</i> = 400)	35%
		Bahrain	Mahroon et al., 2018 ( <i>n</i> = 350)	51%
			Sanad, 2019, ( <i>n</i> = 93)	9.7%
		Qatar	Kronfol et al., 2018 ( <i>n</i> = 434)	34.2%
		Kuwait	Badr et al., 2018 ( <i>n</i> = 1270)	63%
UAE	Ahmed et al., 2009 ( <i>n</i> = 165)	28.7%		
	Awadalla et al., 2020 ( <i>n</i> = 103)	22.3%		
Exposure To Maltreatment*	<ul style="list-style-type: none"> <li>• <i>Authors own Questionnaire Based on Adverse Experiences (OMAN)</i></li> </ul>	Oman	Al-Shafae et al., 2013 ( <i>n</i> = 58)	Verbal & Academic Abuse - 87.9% Sexual Harassment - 24.1% Physical Abuse – 22.4%
		Kuwait	Badr et al., 2018 ( <i>n</i> = 1270)	12.7%

	<ul style="list-style-type: none"> <li>• <i>ISPCAN Child Abuse Screening Tools</i></li> <li>• <i>Authors own questionnaire on the exposure to maltreatment (Kuwait)</i></li> </ul>		Almazeedi et al., 2020 ( <i>n</i> = 2508)	Physical Abuse - 35.6% Emotional Abuse - 53.5% Sexual Abuse - 19.8%
Impaired sleep	<ul style="list-style-type: none"> <li>• <i>Pittsburgh Sleep Quality Index (PSQI)</i></li> <li>• <i>Sleep-50 Questionnaire</i></li> </ul>	Oman	Al Salmani et al., 2020 ( <i>n</i> = 637)	99.8%
		Saudi Arabia	AlSaif, 2019 ( <i>n</i> = 1205)	86.3%
			Al-Khani et al., 2019 ( <i>n</i> = 95)	63.2%
Emotional & Psychological Distress	<ul style="list-style-type: none"> <li>• <i>General Health Questionnaire (GHQ-28)</i></li> <li>• <i>Kessler10 Psychological Distress (K10)</i></li> </ul>	Saudi Arabia	Abdulghani, 2020 ( <i>n</i> = 243)	40%
		Qatar	Ashour et al., 2020 ( <i>n</i> = 383)	51%
Problematic Smartphone Use	<ul style="list-style-type: none"> <li>• <i>Problematic Use of Mobile Phones (PUMP)</i></li> <li>• <i>Smartphone Addiction Scale (SAS)</i></li> </ul>	Saudi Arabia	Alosaimi et al., 2016 ( <i>n</i> = 2367)	27.2%
		Qatar	Ashour et al., 2020 ( <i>n</i> = 383)	59.8%
Substance Misuse	<ul style="list-style-type: none"> <li>• <i>ASSIST – Arabic Version 3.0</i></li> </ul>	Oman	Al-Hinaai et al., 2021 ( <i>n</i> = 375)	41.3%
		Saudi Arabia	Koura et al., 2011 ( <i>n</i> = 1020)	8.6%
Suicidal Ideation	<ul style="list-style-type: none"> <li>• <i>4-Items on Suicidal Ideation derived from General Health Questionnaire (GHQ-28)</i></li> </ul>	Oman	El-Sayed et al., 2020 ( <i>n</i> = 314)	33.4%
		Saudi Arabia	Madadin et al., 2020 ( <i>n</i> = 265)	42.2%
Social Phobia	<ul style="list-style-type: none"> <li>• <i>Composite International Diagnostic Interview</i></li> </ul>	Oman	Al-Hinai et al., 2006 ( <i>n</i> = 240).	54%

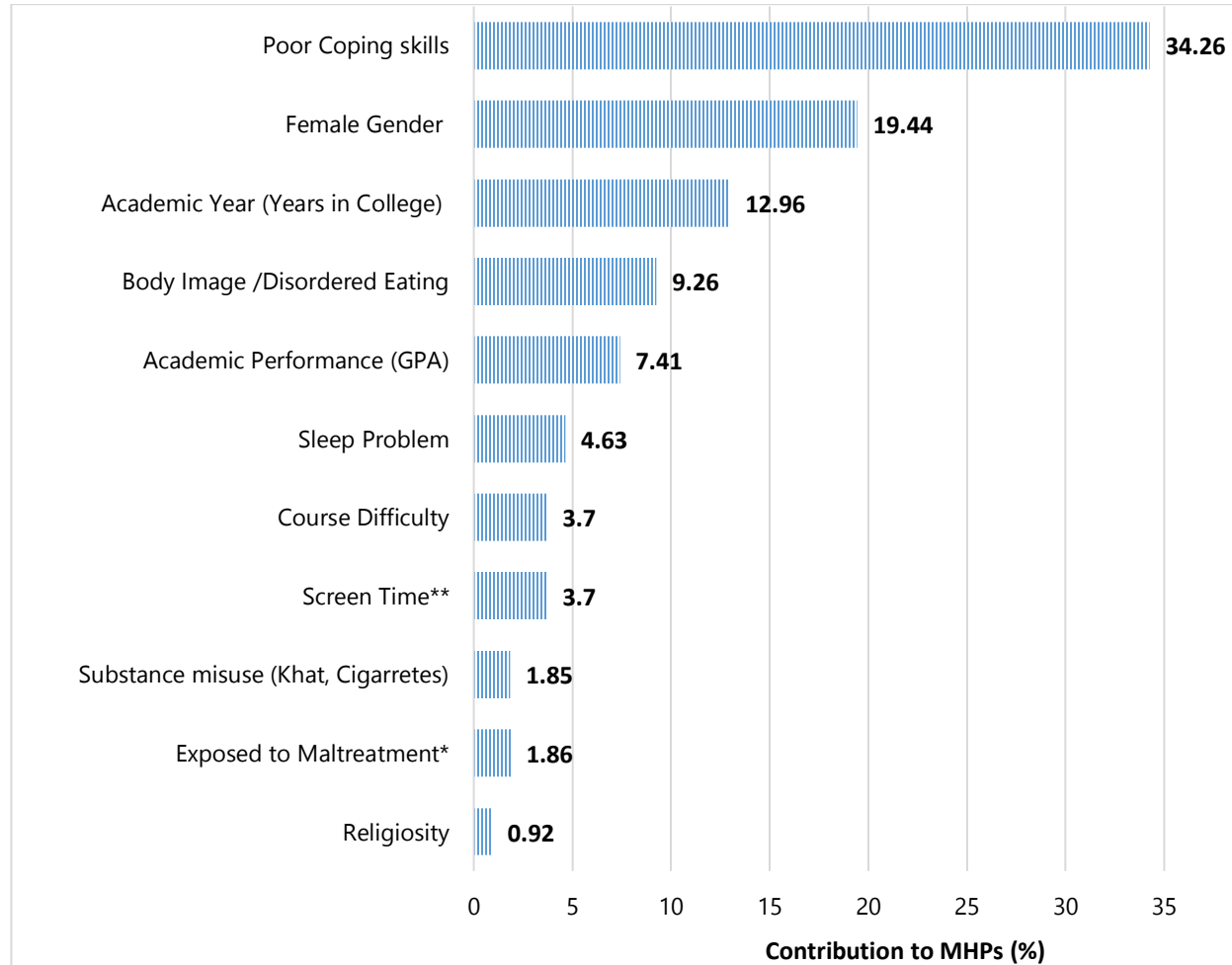
\*History of physical, emotional, sexual, or academic abuse

\*\*Perceived stress and academic stress



**Figure 1**

*Associated factors to mental health problems among Khaliji students in tertiary education*





*Notes.* \*Amount of time spent using a device with a screen such as a smartphone, computer, television, or video game console.

\*\* Endorsed history of academic, emotional, physical, and sexual harassment or abuse