

Psychological distress experienced by self-quarantined undergraduate university students in Lebanon during the COVID-19 outbreak

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Abstract

Introduction: Quarantine, although essential during contagious outbreaks, has been correlated with poor psychological outcomes in the general population. Such outcomes include low mood, suicide, and post-traumatic stress symptoms. Studies have mostly looked at the mental health of general citizens, healthcare workers, or infected survivors, with limited research targeting university students. This study aimed to understand the psychological distress experienced by self-quarantined undergraduate university students in Lebanon during the COVID-19 outbreak.

Methods: Undergraduate students enrolled at the American University of Beirut were invited to participate in a 47-items online questionnaire. 73 participants completed the questionnaire. Demographic data, data about COVID-19 exposure, stressors during quarantine, understanding the rationale, compliance, and difficulties associated with quarantine, and levels of psychological distress were analyzed.

Results: 75.3% of the participants were considered as having a high risk of developing acute stress. Undergoing quarantine for more than 14 days, having a chronic medical illness, inadequate access to supplies, and fear of infection were all significantly associated with an increased risk of higher acute distress.

Conclusion: Despite being a necessary preventive measure during infectious disease outbreaks, quarantine can be associated with negative psychological effects, particularly in undergraduate students. Providing preventive and effective interventions is of utmost necessity.

Keywords: COVID-19; Lebanon; Quarantine; Students.

Key points

- During COVID-19, three-quarters of students had a high-risk for acute stress.
- Females had higher odds of high-risk acute stress compared to males.
- Having a chronic medical condition was associated with high-risk acute stress.
- Long quarantine and lack of supplies were associated with high-risk acute stress.
- Providing interventions to protect the mental health of students is necessary.

1. Introduction

In December 2019, the city of Wuhan in China witnessed the emergence of a novel respiratory virus, Coronavirus Disease-2019 or COVID-19, belonging to the family of coronaviruses. The virus rapidly spread between countries, gaining worldwide attention, and raising serious public health concerns around the globe (Li et al., 2020). In early March 2020, the World Health Organization (WHO) announced the COVID-19 outbreak as a global pandemic; afterward, a call for quarantine and lockdown has been mandated at international levels (WHO, 2020).

Quarantine, although vital during contagious outbreaks, has been correlated with poor psychological outcomes in the general population (Barbisch et al., 2015; Brooks et al., 2020). Such outcomes include low mood, irritability, suicide, and post-traumatic stress symptoms (Brooks et al., 2020; Lee et al., 2005; Mihashi et al., 2009; Reynolds et al., 2008). A study among healthcare workers during the 2003 SARS outbreak found that being quarantined was the most predictive factor of acute stress disorder (Bai et al., 2004). Many elements play a role in the potential psychological distress that self-quarantine can induce. These include pre-quarantine factors such as female gender, younger age, living arrangements, having a history of emotional distress, and the perceived likelihood of having met infected individuals and being a carrier vector (Brooks et al., 2020; Le et al., 2020c). Other elements include stressors that emerge during the quarantine, including the length of quarantine, sheer frustration and boredom, inadequate supplies, and feelings of uncertainty around disease status (Brooks et al., 2020). Additionally, insufficient or inaccurate access to information, at times even supporting conspiracy theories (Olatunji et al., 2020; Orso et al., 2020), and stigma towards the infection itself and those carrying it (Chang et al., 2020b; Lin, 2020; Lin and Cheng, 2020; Ransing et al., 2020b), have been noted to further contribute to stress throughout pandemics and lockdowns.

During the current COVID-19 pandemic and previous outbreaks, studies mostly looked at the mental health of citizens, youths, general workforce and healthcare workers, infected survivors, or patients with mental illness (Cava et al., 2005; Chen et al., 2020; Fawaz and Samaha, 2020; Hawryluck et al., 2004; Pereira-Sanchez et al., 2020; Rubin and Wessely, 2020; Tan et al., 2020). For example, the COVID-19 pandemic was found to be associated with high levels of psychological distress in the general population (Xiong et al., 2020). Youths were also noted to have high rates of anxiety and depression, necessitating targeted interventions (Nathiya et al., 2020). Similarly, individuals with mental illness have expressed elevated scores on depression, anxiety, and trauma-related scales (Hao et al., 2020). In healthcare workers, the negative impact of the pandemic on psychological wellbeing was well established, though not

necessarily associated with the burden of COVID-19 cases (Chew et al., 2020). This tremendous impact of the COVID-19 pandemic has led to several international and global calls for timely psychosocial interventions and the incorporation of public mental health perspectives into disease control strategies (Adiukwu et al., 2020; Baviskar et al., 2020; Lin and Cheng, 2020; Ransing et al., 2020a).

In Lebanon, the first case of COVID-19 was identified in early February 2020, amid dire economic and financial conditions (MOPH, 2020). Following the WHO announcement, all private and public universities, including the American University of Beirut (AUB), a private and independent university centered in Lebanon's capital, Beirut, declared that they would close their campuses. Thereafter, academic continuity was ensured via online modalities (AUB, 2020). The Lebanese government, in turn, urged citizens to stay at home, with a mandatory mass quarantine and a quasi-total lockdown (MOPH, 2020). This, incidentally, came at a time when the country at large, and the academic body specifically, have been facing unprecedented challenges throughout the past year. The fall semester had already been severely interrupted, with students barely attending their academic duties due to the COVID-19 pandemic, the political crisis, and ongoing Lebanese protests.

Students have been, in fact, vulnerable during the pandemic; this is especially due to the shutdown of schools and universities and the suspension of face-to-face classes (Chen et al., 2020). Home-quarantined college students, for instance, displayed a high prevalence of depressive and trauma symptoms following the COVID-19 outbreak in China (Tang et al., 2020). Another study found that university students in Southeast Asia had elevated levels of anxiety and suicidal thoughts; these symptoms were related to low confidence in resources and limited support (Pramukti et al., 2020). In Lebanon, university students have had to deal with a sudden shift in educational modalities and course evaluations, in addition to severe national financial restrictions that may generate worries about tuition fees and employment prospects. Therefore, in this study, we aimed to look at the mental wellbeing of Lebanese students during the pandemic and the effect of quarantine on it. We hypothesized that quarantined AUB students are at a higher risk for emotional distress compared to those not quarantined. We also hypothesized that those known to have mental illness would be more vulnerable to experiencing psychological distress than others.

2. Materials and methods

2.1. Study design and participants

This cross-sectional study was conducted between June and September 2020. This period was chosen as the Lebanese authorities initially imposed a coronavirus lockdown starting end of March until mid-July, to be followed by another 2-week lockdown starting at the end of July until mid-August. Participants were considered eligible if they were undergraduate students (freshmen, sophomores, juniors, or seniors) enrolled at AUB at the time of the study. Graduate-level students and medical students were excluded.

As reported in a study by Wang et al. following the H1N1 pandemic (Wang et al., 2011), 25% of participants had a high level of psychological distress on the General Health Questionnaire-28 (GHQ-28) following the outbreak. Assuming a type I error of 5%, a significance level at $p < 0.05$, and an absolute error of precision of 5%, the minimum sample size required to replicate this analysis in our population of interest was 147 participants. With a 20% response rate for internal surveys, a final sample size of 800 participants was obtained. Therefore, 800 participants were invited to fill an online self-administered questionnaire via AUB LimeSurvey, an online survey application. They were informed about the study, its purpose, and its inclusion criteria via email, followed by a link to the online survey. Individuals who were willing to participate in the survey were required to read and accept an online consent form before enrollment. A reminder of the invitation was sent three times at a four-day interval. A total of 83 individuals filled the questionnaire; 73 provided complete responses that were included in the data analysis whereas 10 participants' results were removed due to incomplete data.

2.2. Ethical approval

Ethical approval was obtained from the Institutional Review Board of AUB before the initiation of this study (SBS-2020-0151). Since the study had no foreseeable risks, consent was obtained in an electronic format. Since two questions in the survey assessed for the presence of passive death wishes and suicidal ideations, participants were provided with available resources and services to reach out for help. Individual participants also had the right to accept or refuse participation in the study, with no financial compensation provided in exchange for participation. For privacy and confidentiality, the researchers were blinded to the list of emails of participants and all data were completely de-identified.

2.3. Questionnaire

The questionnaire included 47 questions and was administered in English since AUB is an English-speaking institution. It required approximately 10 minutes to be completed and was divided into five parts: demographics and personal data, data about COVID-19 exposure,

stressors during quarantine, understanding the rationale, compliance, and difficulties associated with quarantine, and psychological distress as captured by the GHQ-28.

- 1- **Demographics and personal data:** This section included ten questions and was used to obtain demographic information about gender, age, marital status, living arrangement (alone, with family, with no elderly or children or people with chronic medical illness, with elderly>65, with children, or with people with a chronic medical disease), and recent travel history. Participants were also asked to indicate how long they have been studying at AUB. Besides, they were asked to indicate “yes” or “no” to prompts about their mental health status: “Do you have a personal history of mental health problems?”, “Are you currently seeking a professional mental health provider?”, and “Are you currently taking any psychiatric medication?”. Lastly, they were asked about their history of chronic medical problems.
- 2- **Data about COVID-19 exposure:** This section included two self-reported questions about being in contact with an infected person and undergoing home-quarantine during the outbreak.
- 3- **Stressors during quarantine:** This section assessed the nature of stress experienced during quarantine by checking for the presence of the four following components: exacerbated fear of infection (whether infecting others or getting infected), increased frustration and boredom (due to confinement, loss of usual routine, or reduced social and physical contact with others), inadequate access to or shortage of supplies (including food, water, clothes, medicine, and accommodation), and lack of adequate access to information or absence of guidelines from health authorities (Brooks et al., 2020).
- 4- **Rationale, compliance, and difficulties associated with quarantine:** This three-questions section was used to assess the understanding of participants towards the implementation of the quarantine, their compliance to it, and the associated experienced difficulties (Reynolds et al., 2008).
- 5- **Psychological distress as captured by the GHQ-28:** The GHQ-28 is a self-administered questionnaire composed of 28 questions. Each question is accompanied by four possible responses, typically “not at all”, “no more than usual”, “rather more than usual”, and “much more than usual”. Answers can be scored from 0 to 3, with a total possible score ranging between 0 to 84. Using this method, a total score of 23 and above is usually used as a cutoff for the presence of acute distress (Goldberg and Hillier, 1979). Alternatively, the GHQ-28 can be divided into four subcategories: somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. Scoring of subcategories follows a binary method

(0,0,1,1), with the two least symptomatic responses scoring “0” and the most two symptomatic responses scoring “1”. Using this method, a score of 4 and above are considered “positive” for the subcategory (Goldberg and Hillier, 1979). This scale has been previously used but not validated in Lebanon (Chaaya et al., 2003).

2.4. Statistical analysis

Descriptive statistics were summarized by presenting the numbers and percentages for categorical variables. We used the total GHQ scores to group participants into either high-risk or low-risk groups, with a cutoff point of 23. Similarly, a cutoff point of 4 was used to group participants into high-risk and low-risk groups in all 4 subscales (Goldberg and Hillier, 1979). Correlations between the GHQ total and subscale scores and sociodemographic, clinical, and quarantine related variables were assessed using the Pearson Chi-Square test or Fisher’s Exact test, as appropriate. Students who answered yes for any of the following questions “Do you have a personal history of mental health problems”, or “Are you currently seeking a mental health professional”, or “Are you currently taking any psychiatric medications” were grouped and compared to students who answered no on all three questions. Similarly, students who were living with elderly, children, or individuals with chronic medical illness were grouped and compared to those who were living alone or with none of the grouped variables. The odds ratios (OR) with 95% confidence intervals (CI) were calculated for all significant variables. Variables were significant if their p-value was less than 0.050. Statistical analysis was conducted using IBM SPSS 26.0.

3. Results

Our population consisted of 73 AUB undergraduate students. The participants consisted of 20 (27.4%) males and 53 (72.6%) females. All participants were within the 18-24 age range and were single. In regards to their living arrangement, 6 (8.2%) were living alone, 20 (27.4%) living with an elderly, 18 (24.7%) living with children, 5 (6.8%) living with an individual with chronic medical illness, 33 (45.2%) living with neither an elderly, a child, or an individual with a chronic medical condition, and 5 (6.8%) chose not to disclose their living arrangement. Further sociodemographic characteristics are displayed in **Table 1**. COVID-19 exposure- and quarantine- related information are presented in **Table 2**.

Table 1. General sociodemographic characteristics of participants.

	Sample Characteristics	Percentage (n)
Gender	Male	27.4 % (20)
	Living alone	8.2% (6)

Living Arrangement	Living with elderly	27.4% (20)
	Living with children	24.7% (18)
	Living with chronic medical illness	6.8% (5)
	Living without elderly, children, or chronic medical illness	45.2% (33)
	Prefer not to disclose	6.8% (5)
Number of undergraduate years studied	1 year	39.7% (29)
	2 years	39.7% (29)
	3 years	15.1% (11)
	4 years	5.5% (4)
History of medical problems		16.4% (12)
History of mental health problems		23.3% (17)
Currently seeking a mental health provider		16.4% (12)
Currently taking psychiatric medications		8.2% (6)
Recent travel history		19.2% (14)

Table 2. COVID-19 exposure- and quarantine- related information in the sample of participants.

COVID-19 and Quarantine		Percentage (N)
Exposure to COVID-19	Yes	2.7% (2)
	No	91.8% (67)
	Not sure	5.5% (4)
Quarantine	Yes; > 14 days	86.3% (63)
	Yes; < 14 days	4.1% (3)
	No	9.6% (7)
Stressors during quarantine	Fear of infecting others	34.2% (25)
	Fear of getting infected	31.5% (23)
	Frustration/Boredom	78.1% (57)
	Inadequate access to supplies	20.5% (15)
	Inadequate access to information/Lack of clear guidelines	30.1% (22)
Rationale of quarantine	Protecting oneself	0.0% (0)
	Protecting the household	1.4% (1)
	Protecting the community	2.7% (2)
	All of the above	94.5% (69)
Compliance with protective measures	Washing hands	86.3% (63)
	Covering mouth and nose while sneezing/coughing	79.5% (58)
	Avoiding touching face	68.5% (50)
	Avoiding contact with symptomatic individuals	95.9% (70)
	Avoiding crowded places	95.9% (70)
	None of the above	0.0% (0)
Common difficulties experienced during the quarantine	Not leaving the house to socialize	76.7% (56)
	Not leaving the house on errands	72.6% (53)
	Wearing a mask when a household member is present	15.1% (11)
	Taking care of a child	2.7% (2)
	Staying in the room alone with the door closed	32.9% (24)
	None of the above	8.2% (6)

3.1. Total GHQ score

The results of the conducted covariate analysis are presented in **Table 3**. The mean total GHQ score was 36. 55 (75.3%) participants were considered as having a high-risk for developing acute stress. There was a significant association between gender and total GHQ score ($\chi^2 (1) = 6.14$; $p = 0.013$). The odds of having a high GHQ score was 4 times higher in females than males. Suffering from a chronic medical condition was also associated with high-risk GHQ score ($\chi^2 (1) = 4.80$; OR = 10.88; $p = 0.030$). Undergoing quarantine for more than 14 days, as compared to quarantining for less than 14 days or not at all, was likewise associated with high-risk GHQ scores ($\chi^2 (1) = 4.80$; OR = 3.84; $p = 0.045$). Regarding experienced difficulties, fear of getting infected or infecting others ($\chi^2 (1) = 4.80$; OR = 3.37; $p = 0.046$), increased frustration or boredom ($\chi^2 (1) = 7.02$ OR = 5.64; $p = 0.008$), and inadequate access to supplies ($\chi^2 (1) = 6.12$; OR = 14.09; $p = 0.015$) were all associated with increased risk of a high GHQ score.

3.2. Somatic symptom subscale

15 (20.5%) participants were characterized as high-risk. A history of chronic medical illness ($\chi^2 (1) = 8.58$; OR = 6.50; $p = 0.003$), inadequate access to supplies ($\chi^2 (1) = 3.91$; OR = 3.41; $p = 0.048$), and inadequate access to clear information or guidelines ($\chi^2 (1) = 7.1$; OR = 5.12; $p = 0.008$) were all significantly associated with a high-risk score in the somatic symptom subscale.

3.3. Anxiety and insomnia subscale

30 (42.3%) participants were characterized as high-risk. Increased fear of getting infected or infecting others ($\chi^2 (1) = 5.42$; OR = 4.71; $p = 0.023$), increased frustration or boredom ($\chi^2 (1) = 6.04$; OR = 9.66; $p = 0.018$), inadequate access to supplies ($\chi^2 (1) = 7.24$; OR = 6.70; $p = 0.009$), and inadequate access to clear information or guidelines ($\chi^2 (1) = 7.36$; OR = 4.93; $p = 0.007$) were all significantly associated with belonging to the high-risk group in the anxiety and insomnia subscale.

3.4. Social dysfunction subscale

28 (38.4%) participants were characterized as high-risk. Increased frustration or boredom ($\chi^2 (1) = 8.64$, OR = 20.74, $p = 0.002$), inadequate access to supplies ($\chi^2 (1) = 7.12$; OR = 4.87, $p = 0.008$), and inadequate access to information or clear guidelines ($\chi^2 (1) = 8.51$; OR = 4.39; $p = 0.004$) were all significantly associated with belonging to the high-risk group in the social dysfunction subscale.

3.5. Severe depression subscale

10 (7.3%) participants were characterized as high-risk. Living with the elderly, children, or individuals with a medical illness was associated with being at high risk for severe depression ($\chi^2(1) = 6.16$; OR = 6.50; $p = 0.018$) as compared to living alone. Having a chronic medical condition ($\chi^2(1) = 5.34$; OR = 4.70; $p = 0.021$) and taking a psychiatric medication, seeing a mental health professional, or having a history of mental illness ($\chi^2(1) = 18.50$; OR = 17.33; $p = 0.001$) were also associated with being at high risk for severe depression.

Table 3. Covariate analysis of the GHQ-28 scale and its subscales. Values in bold denote statistical significance with a p -value < 0.050 . ^a Yes refers to living with either elderly, children, or individuals with chronic illness. No refers to living with none of these individuals or living alone. ^b Yes refers to either having a mental health problem, following with a mental health profession, or taking psychotropic medications. No refers to none.

GHQ-28 Variable		Acute stress			Somatic symptoms			Anxiety and insomnia			Social dysfunction			Severe depression		
		No	Yes	P-value	No	Yes	P-value	No	Yes	P-value	No	Yes	P-value	No	Yes	P-value
Gender	Female	9	44	0.013	43	10	0.563	31	22	0.907	31	22	0.367	47	6	0.446
	Male	9	11		15	5		12	8		14	6		6	4	
Living with vulnerable members ^a	Yes	6	26	0.301	25	7	0.804	17	15	0.375	20	12	0.894	24	8	0.018
	No	12	29		33	8		26	15		25	16		39	2	
Chronic medical condition	Yes	0	12	0.030	6	6	0.003	5	7	0.162	6	6	0.327	6	6	0.001
	No	18	42		52	8		38	22		39	21		52	3	
Mental health status ^b	Yes	2	19	0.052	15	6	0.300	11	10	0.511	14	7	0.535	15	6	0.021
	No	16	35		42	9		31	20		30	21		47	4	
Travel history	Yes	3	11	1.000	12	2	0.720	10	4	0.372	7	7	0.319	12	2	1.000
	No	15	44		46	13		38	21		38	21		51	8	
COVID-19 contact	Yes	2	4	0.632	4	2	0.596	4	2	1.000	3	3	0.669	5	1	1.000
	No	16	51		54	13		39	28		42	25		58	9	
Quarantine	Yes	13	50	0.045	50	13	1.000	35	28	0.182	37	26	0.299	54	9	1.000
	No/ \leq 14 days	5	5		8	2		8	2		8	2		9	1	
Fear of infection	Yes	9	39	0.046	34	14	0.089	23	25	0.023	29	19	0.223	42	6	1.000
	No	7	9		15	1		13	3		13	3		14	2	
Frustration	Yes	10	47	0.008	43	14	0.443	29	28	0.018	30	27	0.002	49	8	0.337
	No	6	5		10	1		10	1		11	0		11	0	
Inadequate access to supplies	Yes	0	15	0.015	9	6	0.048	4	11	0.009	5	10	0.008	12	3	0.437
	No	17	38		46	9		39	16		39	16		48	7	
Inadequate access to information	Yes	2	20	0.065	13	9	0.008	8	14	0.007	8	14	0.004	19	3	0.943
	No	13	29		37	5		31	11		31	11		36	6	

4. Discussion

This is the first study examining the psychological distress experienced by self-quarantined undergraduate students in the Arab North Africa and Middle East region, particularly in Beirut, Lebanon. While this study is exploratory, it sheds a light on the importance of understanding the mental health outcomes of students undergoing quarantine during a public health crisis such as the COVID-19 pandemic.

Our study results showed that 75% of our total sample of AUB undergraduate students were at an increased risk of developing acute stress, more so in females than in males. Multiple studies have shown that females are more likely to be psychologically affected by pandemics than males (Altemus et al., 2014; González-Sanguino et al., 2020; Zhang and Ma, 2020). One particular study looking at the gender-related differences in the psychological impact of quarantine in Spain showed that females were at a significantly higher risk of developing depression, anxiety, and post-traumatic stress disorder both acutely after the quarantine (2 weeks post-quarantine) and on the long run (Ausín et al., 2020). Similar findings were noted in other countries, including Vietnam (Le et al., 2020a; Le et al., 2020c), China (Wang et al., 2020b), and the Philippines (Tee et al., 2020). One possible explanation for this finding is that depression and anxiety are overall more prevalent in women than in men (Lim et al., 2018). Additionally, distress was heightened in students suffering from chronic medical conditions. These results are not surprising as multiple studies showed that the medically ill are more likely to experience a more severe and debilitating illness course, with higher rates of mortality due to COVID-19 related complications, making them constantly worried about getting infected and experiencing a deterioration in their health status (Abbas et al., 2020; CDC, 2020). Another possible explanation for these findings is that students with chronic medical conditions might worry about being unable to regularly visit their primary physicians' clinics due to the confinement or the lack of essential medications. This is of particular relevance in Lebanon where the financial crisis has resulted in a scarcity of medical supplies (HRC, 2020). Students who feared getting infection were also found to be at higher risk of acute distress. Although fear is an adaptive response in the presence of danger, fear can become burdensome if the threat is uncertain and ongoing, such as during the COVID-19 outbreak. This would warrant an investigation of factors contributing to fear in an attempt to better manage emotional distress. An online study that looked at the predictors of fear during the COVID-19 pandemic found that COVID-related fear was associated with multiple elements, mainly personal vulnerability factors such as health anxiety and obsessive-compulsive disorder (Davide et al., 2020; Kumar

and Somani, 2020), continuous exposure to media, and the fear of loved ones getting infected (Fitzpatrick et al., 2020a).

Besides, our results showed that inadequate access to supplies was associated with an increased risk of having acute distress. Supplies can range from personal protective equipment such as masks, gloves, and hand sanitizers to more basic needs including food and medication. In times of uncertainty, people tend to panic-buy and hoard, resulting in a cycle of further shortage and subsequently more distress. For example, one study conducted in the US during the COVID-19 pandemic found that food insecurity was positively associated with depressive symptoms among adults (Fitzpatrick et al., 2020b). In another study comparing two countries with different policies about wearing facemasks in the initial phase of the pandemic, the use of facemasks had a protective effect on both the physical and mental health of citizens (Wang et al., 2020a). This has an added relevance in Lebanon, as the country has been crippled by a severe financial crisis followed by a scarcity of general supplies, food, medications, and personal protective equipment (MOPH, 2020). As such one would expect further worsening of the psychological status of the Lebanese population overall, and students more specifically.

On the other hand, a prolonged quarantine duration of 14 days or more was found to be associated with an increased risk of acute distress; this was previously shown in multiple studies where a longer duration of quarantine is associated with poorer mental health outcomes such as post-traumatic stress disorder, anger, and avoidance behaviors (Chatterjee and Chauhan, 2020). One study conducted in Riyadh, Saudi Arabia, found that quarantine harmed the mental wellness and learning behaviors of medical students at King Saud University, with one-fourth of the medical students who participated in this study feeling depressed during the quarantine period of two weeks (Meo et al., 2020). Reasons for increased distress include feeling socially isolated from family and friends, a sense of loss of freedom, boredom and frustration, and anxiety about the disease (Brooks et al., 2020), all reported by our sample of participants.

When looking at the different subscales, it is noteworthy to mention that inadequate access to information, including the lack of well-timed data or the spread of inaccurate facts (Orso et al., 2020; Rathore and Farooq, 2020), was significantly associated with more somatic symptoms, anxiety and insomnia, and social dysfunction. This highlights the importance of access to timely and accurate information from trusted official sources, such as governmental authorities, during a crisis as the lack of information, or even the flooding of inaccurate information from different sources, can be sometimes confusing and overwhelming (Erku et al., 2020; Naeem et al., 2020; Weisæth and Tønnessen, 2020). Of importance, identifying group-specific demands

about COVID-19 related facts would be helpful to meet the particular needs of each subgroup in the population (Le et al., 2020b). For instance, redesigning training programs and communication activities among students, particularly those in the medical field, might be a targeted personalized avenue to ensure the provision of correct resources of information in this subgroup (Tran et al., 2020a).

Interestingly, our findings showed that students living with a mental health problem, following with a mental health profession, or taking psychotropic medications were not at an increased risk of experiencing acute distress during the quarantine. When looking at the various subscales, they were only more likely to have depressive symptoms compared to their counterparts. This is surprising as one would expect that students with mental health problems would be more vulnerable. Multiple studies have shown that individuals with psychiatric illness have had more concerns and challenges during the COVID-19 pandemic (Druss, 2020; Kavoor, 2020; Shinn and Viron, 2020). Also, one study about the psychological distress in Italian patients with mental illness during the one-month mass quarantine showed that the level of distress experienced by this vulnerable population was much higher than the general population (Iasevoli et al., 2020). Our results might hint toward more abundant coping skills and a higher level of resilience in the face of crises among Lebanese students, particularly that the prevalence of burnout and mental illnesses in this category is high (Talih et al., 2018). Nevertheless, different strategies to tackle these symptoms denote therapy, particularly digital cognitive behavioral therapy, mindfulness, and other telepsychiatry services as possible cost-effective and practical tools (Ho et al., 2020a; Ramalho et al., 2020; Soh et al., 2020; Zhang and Ho, 2017). Alternatively, the low level of reported acute distress can be explained by an underreporting of psychiatric symptoms, mainly due to stigma towards mental illness (Rayan and Fawaz, 2018) or COVID-19 infection itself (Lin, 2020; Lin and Cheng, 2020; Ransing et al., 2020b). Lastly, the quarantine might have appeased symptoms of acute stress in certain students, specifically those with social or performance anxiety, by limiting social interactions. Further research is warranted to explore the nature of this finding.

The study has several limitations. First, it has a cross-sectional design and a small sample size, limiting the power of the statistical analysis. Participants belonged to one institution of a high socioeconomic status possibly restricting the generalization of results to all Lebanese students. Also, medical students were excluded; the latter tend to cope with stressors differently (Tran et al., 2020b). Another limitation is the uneven number of participants in certain subcategories, which may have led to missing some significance or overestimating results. Future studies would benefit from including a larger sample of students belonging to different academic

institutions. An additional disadvantage is the presence of a current political turmoil and economic collapse in the country. This has started before the pandemic and worsened after it, particularly following Beirut's blast. These factors might have acted as a confounder and accounted for a partial deterioration in the mental health status of the population in general, and our participants in particular (Arafat et al., 2020; El Hayek and Bizri, 2020). Accounting for the economic status of participants and assessing their quality of life would be a way to overcome this pitfall in future studies. Lastly, the instruments employed in the study were all self-reported tools not validated in the Lebanese population. Also, no COVID-19 specific instruments were used. Future studies would benefit from COVID-19-related questionnaires which were found to have satisfactory psychometric properties (Ahorsu et al., 2020; Chang et al., 2020a) and from other more objective types of instruments, such as the structured clinical interview, the Hamilton Depression Rating Scale, and functional neuroimaging techniques (Ho et al., 2020b; Husain et al., 2020).

In conclusion, despite being a necessary preventive measure during the COVID-19 outbreak, quarantine is associated with negative psychological effects in Lebanese undergraduate students. Therefore, providing preventive and effective interventions to protect the mental health of this vulnerable group is of utmost necessity. As a longer quarantine duration was associated with severe acute distress, shortening its length to a scientifically proven and effective period might provide a better alternative; further studies are needed to determine the appropriate quarantine extent. Alternatively, authorities must provide people with accurate information and ensure the availability of supplies; this can mitigate a sense of safety during the uncertain periods of a crisis. As for quarantined university students, providing a home support group, shown to be effective in previous pandemics (Pan et al., 2005), might be helpful during the COVID-19 outbreak. Such groups can help with not only alleviating distress, but also coping with it, through mutual support, exploring personal growth during crisis, maintaining relationships with peers and classmates, and sustaining a sense of "normalcy" that might have been otherwise disrupted due to the confinement.

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None.

Conflict of interest

None.

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