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Mental Health Outcomes and Psychological Support among University Students during the COVID-19 Pandemic in Egypt

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Abstract

BACKGROUND: COVID-19 pandemic has demonstrated the impact of a major public health emergency on mental health.

AIM: The aim of the study was to assess psychological impact among university students and train them to raise mental health awareness among their peers during the pandemic.

METHODS: This an online electronic survey that was carried out over the period of July to September 2020. Study participants were medical and paramedical university students representing students' union alliance of the Egyptian Youth Initiative. A convenient non-probability sampling method used for recruiting the study participants. Key mental health outcomes investigated 2 weeks before the survey were posttraumatic stress symptoms, symptoms of depression using Patient Health Questionnaire (PHQ-9), anxiety using Generalized Anxiety Disorder scale (GAD-7), insomnia using Insomnia Severity Index, and perceived stress using Perceived Stress Scale (PSS). Based on the preliminary analysis of the online questionnaires, a PhD qualified psychiatrist was assigned to develop an online psychosocial support to the volunteers' students (n = 60) to be facilitators for raising mental awareness among peers and train them how to handle stress.

RESULTS: Of the 115 students, 42.6% experienced moderate to severe depression, 21.7% were afflicted with moderate to severe anxiety, and 62.7% suffered from sub-threshold to severe insomnia. PSS analysis showed moderate levels of stress among the study participants. A significant difference was detected between pre- and post-test mean scores of the PSS (p = 0.001) 8 weeks after the training program included psychological support for the students.

CONCLUSIONS: The findings of this study showed that young people suffered of more than one psychological problems and highlighted the urgent need to develop interventions and preventive strategies to address mental health of college students.

Introduction

The global COVID-19 pandemic has demonstrated the impact of a major public health emergency on mental health, and the ways that individuals, communities, professionals, and systems can react positively to such a crisis [1].

The pandemic brought not only the risk of death from infection but also intolerable psychological pressure to many people all over the world [2], [3]. It is well known that epidemics promote new stressors including fear and worry for oneself or the loved ones, restraints on physical movement and social activities due to quarantine, and unexpected radical lifestyle changes. Fears of infection, frustration, monotony, inadequate supplies, misinformation, financial loss, and stigma are all among stressors triggered by outbreaks and pandemics as documented in the recent body of the literature [4]. Existing literature revealed that symptoms of anxiety (feeling nervous, restless, or tense), depression (felling hopeless and helpless), and self-reported stress are common psychological responses to the COVID-19 pandemic [5].

The spread of novel coronavirus (COVID19), strict isolation measures, and delays in starting school, colleges and universities are expected to influence the mental health of university students. All mental health issues are the leading impediment to academic achievement. It can disturb students' motivation, concentration, and social interactions; crucial factors for students to succeed in higher education [6].

In the same vein, with the exception of few studies, notably from China [7], [8], there is a sparse evidence of the psychological or mental health effects of the current pandemic on college students, who are known to be a vulnerable population [9]. As reported in a recent survey administered during the COVID-19 pandemic, children and young adults are particularly at risk of developing anxious symptoms [10]. Moreover, promotion of psychological interventions on specific

population who is more likely to develop pathologies and suffering are needed as recommended recently [11] to use digital technologies in providing mental health interventions to ameliorates anxiety and stress levels and increase self-efficacy [3], [12]. Guidance for effective and appropriate regulation of students' emotion during public health emergencies and crisis is greatly needed. The aim of this study was to assess psychological impact (namely, depression, anxiety, insomnia, and stress) among university students and train them to raise mental health awareness among their peers during the pandemic.

Methods

Study design

This an online electronic self-administrated survey, carried out over the period of July to September 2020. Study participants were medical and paramedical university students who are members of the International federation of Medical Students Association, Egyptian Union of Physical Therapy, Egyptian Pharmaceutical Students' Federation, Egyptian Novice Nursing and Students Scientific Associations, representing students' union alliance of the Egyptian Youth Initiative (EYI) distributed over 25 universities. EYI was implemented through the National Population Council (NPC) in response to the Government of Egypt-United Nations Children's Fund (UNICEF) Country Program of Cooperation for 2016–2018. The EYI project relied on medical and paramedical students' efforts as volunteers to raise mental health awareness in the Egyptian universities and the whole community against COVID-19 pandemic.

Settings and participants

A convenient non-probability sampling method was used for recruiting the participants (Figure 1). A total of 115 participants completed the electronic forms of Patient Health Questionnaires (PHQ-9), Generalized Anxiety Disorder Assessment (GAD-7), Insomnia Severity Index (ISI), 81 participants completed the Global Psycho-trauma Screen (GPS-PTSS). Out of all, 60 students volunteered and join the Mental Health Psychological Support Group (MHPSSG) and filled the Perceived Stress Scale (PSS) before and after the training.

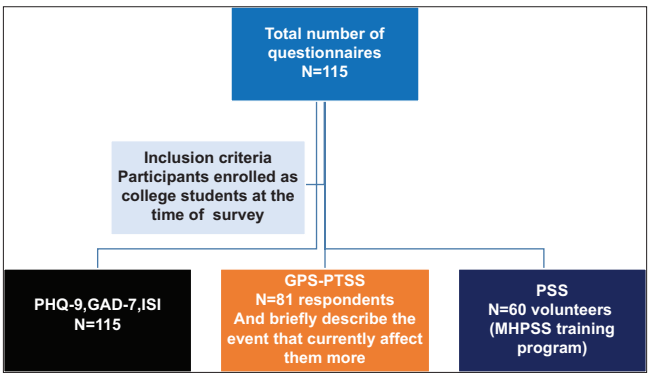

Figure 1: Sampling frame and recruitment of participants

Data collection

Self-administered anonymous data collection form was designed electronically in Arabic language using a secured and password protected platform. The data collection form was piloted on a subsample of students before wider dissemination, informed consents were obtained from participants at the outset of the survey. Collected data were password-protected and saved to a secured research drive available only to research team. In addition to the sociodemographic characteristics (age, gender, residence, university, and affiliation), data collection included the following tools:

Global psycho-trauma screen-posttraumatic stress disorders (GPS-PTSD)

The GPS-PTSD is a brief instrument used to screen for a range of trauma-related psychological problems, as well as risk and protective factors. Post-traumatic stress symptoms (PTSS) were assessed by the PTSD Checklist for DSM-5 (PCL-5) [13]. The PCL-5 is a self-report measure, consisting of 20 items that correspond directly to the DSM-5 PTSD. Each item reflected the severity of a particular symptom, rated on a five-point Likert scale from 0 (not at all) to 4 (extremely) during the previous month. The score of each symptom cluster was calculated as the sum of the corresponding items. PTSS severity was defined as the sum of the scores of all PCL-5 symptom clusters. The PCL-5 can determine a provisional diagnosis in two ways the presence (endorsed as 2 or greater), of at least one re-experiencing symptom (Criterion B item; questions 1–5), one avoidance symptom (Criterion C item; questions 6–7), two negative alterations in cognition or mood symptoms (Criterion D items; questions 8–14), and two arousal symptoms (Criterion E items; questions 15–20), and/or the sum of total score over cut point score of 33 points. The GPS is easy to administer, it showed good internal consistency, as well as convergent validity with measures of PTSD symptoms.

PHQ-9

PHQ-9 is a screening tool used by medical professionals as a diagnostic instrument for common mental. The questionnaire can be used to test mental health, particularly depression, during the lockdown related to the outbreak of COVID-19. The PHQ-9 is

the depression module, which scores each of the nine DSM-IV criteria as "0" (not at all) to "3" (nearly every day). Depression Severity: 0–4 none, 5–9 mild, 10–14 moderate, 15–19 moderately severe, and 20–27 severe. When screening for depression in adults it has 61% sensitivity and 94% specificity [14].

Measurement of generalized anxiety disorder scale (GAD-7)

The GAD-7 is a seven-item instrument that is used to measure or assess the severity of generalized anxiety disorder (GAD). Inquires the frequency with which respondents suffered from these symptoms within the last two weeks [15]. Each item asks the individual to rate the severity of his or her symptoms over the past 2 weeks. Response options include "not at all," "several days," "more than half the days" and "nearly every day." The GAD-7 score is calculated by assigning scores (4-item Likert rating scale) of 0, 1, 2, and 3, to the response categories of "not at all," "several days," "more than half the days," and "nearly every day," respectively, and adding together the scores for the seven questions. Scores of 5, 10, and 15 are taken as the cutoff points for mild, moderate, and severe anxiety, respectively. Using the threshold score of 10, the GAD-7 has a sensitivity of 89% and a specificity of 82% for GAD [16].

ISI

The ISI including seven questions, answers are added up to get a total score. A 5-point Likert scale is used to rate each item (e.g., 0 = no problem and 4 = very severe problem), yielding a total score ranging from 0 to 28. The total score is interpreted as follows: Absence of insomnia (0–7); sub-threshold insomnia (8–14); moderate insomnia (15–21); and severe insomnia (22–28). The ISI is a reliable and valid instrument to detect cases of insomnia in the population and is sensitive to treatment response in clinical patients [17].

PSS

The PSS is the most widely used psychological instrument for measuring the perception of stress. It measures the degree to which situations in one's life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. The scale also includes a number of direct queries about current levels of the experienced stress. The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way. PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1, and 4 = 0) to the four positively stated items (items 4, 5, 7, and 8) and then summing across all scale items. Because levels of appraised stress should be influenced by daily hassles, major events, and changes in coping resources, predictive validity of the PSS is expected to fall off rapidly after four to 8 weeks [18].

Total score for each questionnaire was calculated and students were classified as endorsing the previously listed symptoms according to the following cutoffs: At least 3 on the 5 item GPS-post-traumatic stress disorder subscale, at least 15 on the PHQ-9, at least 15 on the GAD-7, and at least 22 on the ISI. Cutoffs were extracted from the original articles describing each measure. Because no official cutoff for the PSS was available, a quartile split was used.

Mental health and psychological support (MHPSS) training program

A PhD qualified psychiatrist was assigned to develop the online psychosocial support to the volunteers (60 facilitator), for raising mental awareness among peers and train them how to handle stress. Based on the preliminary analysis of the online questionnaires, six sessions were delivered four of them included the following topics: Introduction and drawing, expectations, learning about stress, managing difficult feelings and thoughts, behaviors change to stay healthy, self-compassion, when to seek professional help. Pre- and post-test was used to assess PSS mean scores 8 weeks after the training program. The last two sessions were held to train students as facilitators to raise awareness about mental health disorders, and to encourage colleagues to seek help using hotlines.

Data management and statistical analysis

Statistical analysis was done using the Statistical Package for the Social Sciences (SPSS) version 20 (IBM, SPSS Statistics, New York, USA). Descriptive analysis was performed to present summary statistics; mean, median, standard deviation, and interquartile range for numerical variables using tests of significance including Mann–Whitney (for independent samples) and Wilcoxon Sign tests (for pre-post comparison). Frequencies and percentage used to express qualitative data, and Chi-Square test was used to examine the statistical associations. p value of <0.05 was considered statistically significant.

Ethical considerations mention the approval number of ethical committee board.

Approval for this study was obtained from the EYI executive board (NPC/UNICEF). The objective and purpose of the study were verified briefly to the study participants and confidentiality was assured. This study was conducted in accordance with the Declaration of Helsinki.

Results

The age range of the participants was 18–24 years, mean of 21.3 ± 1.2 years, females constituted 57.4% (n = 66). Psychological symptoms experienced by participants' 2-weeks before the survey is depicted in Table 1. Moderate to severe depression was detected among 42.6% of the participants, 21.8% complained of anxiety, and 62.7% suffered from sub-threshold to severe insomnia.

Table 1: Distribution of the perceived psychological problems by gender of the participants

Tools and different cutoff of scores	Males No. (%)	Females No. (%)	Total No. (%)
Patient health questionnaires			
None (0–4)	11 (22.4)	15 (22.7)	26 (22.6)
Mild (5–9)	14 (28.6)	26 (39.4)	40 (34.8)
Moderate (10–14)	11 (22.4)	11 (16.7)	22 (19.1)
Moderately severe (15–19)	6 (12.2)	5 (7.6)	11 (9.6)
Severe (20–27)	7 (14.3)	9 (13.6)	16 (13.9)
Generalized anxiety disorder assessment			
None (0–4)	13 (26.5)	23 (34.8)	36 (31.3)
Mild (5–9)	23 (46.9)	31 (47.0)	54 (47.0)
Moderate (10–14)	9 (18.4)	9 (13.6)	18 (15.7)
Severe>15	4 (8.2)	3 (4.5)	7 (6.1)
Insomnia severity index			
Absence (0–7)	16 (32.7)	27 (40.9)	43 (37.4)
Sub-threshold (8–14)	16 (32.7)	24 (36.4)	40 (34.8)
Moderate (15–21)	13 (26.5)	8 (12.1)	21 (18.3)
Severe (22–28)	4 (8.2)	7 (10.6)	11 (9.6)
Total	49 (42.6)	66 (57.4)	115 (100.0)

Cutoff scores of the psychological symptoms between male and female participants revealed a statistical significant difference in Global Psycho-trauma Screen (GPS) where 21.9% of males were exposed to more than three traumatic events in his life compared to females of only 6.1% (p = 0.035). While (26/37) 70.3% of the included females experienced stress, occupying the middle and 3rd quartile on scale compared to males (only 6/23), p = 0.001 (Table 2).

Table 2: Comparison of psychological symptoms cutoff scores in relation to genders included

Tools and cut-off scores	Males No. (%)	Females No. (%)	Total No. (%)	p-value*
Patient Health Questionnaires (PHQ-9)				
<10	25 (51.0)	41 (62.1)	66 (57.4)	0.234
≥10	24 (49.0)	25 (37.9)	49 (42.6)	
Total	49 (42.6)	66 (57.4)	115 (100.0)	
Generalized anxiety disorder assessment				
<10	36 (73.5)	54 (81.8)	90 (78.3)	0.283
≥15	13 (26.5)	12 (18.2)	25 (21.7)	
Total	49 (42.6)	66 (57.4)	115 (100.0)	
Insomnia severity index				
≤22	45 (91.8)	59 (89.4)	104 (90.4)	0.660
>22	4 (8.2)	7 (10.6)	11 (9.6)	
Total	49 (42.6)	66 (57.4)	115 (100.0)	
Global psycho-trauma screen				
<3 event	25 (78.1)	46 (93.9)	71 (87.7)	0.035**
≥3 event	7 (21.9)	3 (6.1)	10 (12.3)	
Total	32 (39.5)	49 (60.5)	81 (100.0)	
Perceived stress scale				
First quartile<20	17 (73.9)	11 (29.7)	28 (46.7)	0.001**
Middle/third quartile>20	6 (26.1)	26 (70.3)	32 (53.3)	
Total	23 (38.3)	37 (61.7)	60 (100.0)	

*Chi-square test for independent samples **statistically significant.

Out of the included 115 participants, many of them found to have more than one problem. Of those complained of depression (n=85), 50% and 22.4% of them complained of anxiety and insomnia, respectively.

GPS-PTSS

Of 81 participants, 63% experienced posttraumatic events in the last year, 18% longer ago, 12.5% in the last month, and 6.5% mentioned in the 6 month. Most of them (70%) characterize the event as life threatening (COVID-19) or death of a loved one, 11% mentioned serious injury happened to someone else, 10.2% as an emotional abuse, and 8.8% suffered physical violence.

PTSS were assessed by the PTSD Checklist for (DSM-5), (Table 3), additional findings included that 70% of participants considered themselves resilient persons and rating their present functioning state (at work/home) at a level of 5–7 points out of 10 and 66.7% scored higher than 33 points using the calculated sum of total score.

Table 3: Findings of the GPS, post-traumatic event in the last month

Criterion	Findings
Criterion B items	Forty-two percent of those complaining of post-traumatic event (s) had nightmares, 67% tried not to think about past traumatic life event (s) or avoid situations that reminded them of the event (s). Forty-eight percent constantly guarding, watchful or easily startled, felt numb or detached from people, activities or surroundings, felt guilty or unable to stop blaming self or others for past traumatic life event (s) or problems the event (s) caused.
Criterion C items	Nearly 30% tended to feel worthless, experienced uncontrollable angry outbursts
Criterion D items	Fifty percent felt down, depressed and hopeless, nervous, anxious, or on edge. Forty percent missed supportive people nearby who could readily count on for help in times of difficulty (e.g., emotional support, watch over children or pets, give rides to hospital or store, and help while sick) and 30% unable to stop or control worrying. Nearly half experienced little interest or pleasure in doing things, had problems falling or staying asleep, One fourth perceived or experienced world or other people differently; things seem dreamlike, strange or unreal, and 15% tried to intentionally hurt themselves,
Criterion E items	Two-third felt detached or separated from their bodies (looking down on self from above, or like an outside observer of own body). Fifty-eight percent had physical, emotional, or social problems that bothered him/her. Experienced other stressful events (financial problems, changing jobs, moving to another house, and relational crisis in work or private life). Seven percent tried to reduce tensions using alcohol, tobacco, drugs or medications and 14% received a psychiatric diagnosis or treated for psychological problems (depression, anxiety, or a personality disorder).

Table 4 displays mean scores of the PSS items at the pretest and following 8 weeks of the training program for psychological support. Overall scores showed a significant difference between pre and posttest (p = 0.001). On average, pre-test scores were 6 points higher than post-test scores.

Discussion

This study showed that, 42.6% of the participants reported experiencing an increased level of depressive thoughts. Recent studies, Zeng *et al*. [19], Fitzpatrick *et al*. [20] reported varied percent between 29 and 38%, which may suggest an uptick in pandemic-related depressive symptoms among college students similar to recent studies in China [7], [21]. The study findings revealed that undergraduates experienced more than one psychological symptom at the same

Table 4: Comparing mean scores for each of Perceived Stress Scale (PSS) items

Perceived Stress in the last two week: Scale-10 items (mean ± SD)	Pretest score	Posttest score
How often been upset because of something happened unexpectedly?	2.4 (1.2)	1.7 (0.8)
How often felt unable to control the important things in your life?	1.8 (0.8)	1.5 (1.1)
How often felt nervous and "stressed"?	2.1 (1.0)	2.0 (1.0)
How often felt confident about your ability to handle personal problems?	1.6 (0.9)	1.3 (0.8)
How often felt that things were going your way?	1.9 (0.8)	1.5 (0.7)
How often found you couldn't' cope with all the things you had to do?	1.8 (0.9)	1.7 (1.1)
How often been able to control irritations in your life?	1.7 (0.7)	1.7 (0.9)
How often felt that you were on top of things?	1.7 (0.9)	1.5 (0.7)
How often been angered because of things outside of your control?	1.9 (1.1)	1.8 (0.9)
How often felt difficulties are piling up so high that you couldn't' overcome them?	1.9 (1.1)	1.6 (1.1)
Total score*	19.2 (7.3)	16.6 (6.1)

*Significant Wilcoxon sign test for dependent sample.

time and this is in line with that reported by the following studies [22], [23]. In China Li *et al.*, 2020, [24] found that college students are more likely to experiencing stress, anxiety, and depression than others during the pandemic. This is the fact can be partially explained by the isolation, social distancing, and extreme changes in daily life cause clinical depression because of COVID-19 [25].

This survey indicated that 21.7% of college students were afflicted with moderate to severe anxiety because of the COVID-19 pandemic; this anxiety may be related to the effect of their fears on their academic achievements [26] and future employment [27]. Students' anxiety may have been caused by the gradually increasing distances between people resulting from quarantine. Furthermore, the significant shortage of masks and disinfectants, the overwhelming and sensational news headlines, and erroneous news reports also added to anxiety and fear [28]. However, no significant difference in gender was found, contrary to previous findings [29].

Insomnia is a prevalent condition and carries significant burden in terms of functional impairment, health-care costs, and increased risk of depression [30]. Despite its high prevalence and significant morbidity, insomnia often remains unrecognized and untreated, partly due to several barriers to assessment. More than half of our participants (62.7%) complained of sub-threshold to severe insomnia. Identifying clinically significant insomnia is also important to intervene early and reduce morbidity.

PSS analysis showed moderate levels of stress among the study participants, this is in line with a recent COVID-19 survey conducted in the United Kingdom with a mean PSS score 18.8 ± 4.9 [31]. The present study revealed a statistical significantly difference between male and female participants regarding level of stress. Finding supported result of a study done in India [5].

This might be explained by the fact that females are more commonly exposed to mental illness, cultural factors, economic deprivation, or due to hormonal fluctuations [32]. In addition, comparing PSS pre- and post-test mean scores indicated a statistical significant decline in the level of stress among students eight weeks after the project-training program. These results enforce the notion that monitoring and promoting mental health of youths is of value to reduce the negative impact of the quarantine [33].

The mental health of college students is significantly affected when challenged with public health emergencies, and they require attention, help, and support of the society, families, and colleges. It is suggested that the government and schools should collaborate to provide high-quality, timely crisis-oriented psychological services to college students to tackle and preserve their mental health.

In light of the projected continuation of the COVID-19 pandemic [34] and in the lights of our findings, there is a need for immediate attention to and support for students and other vulnerable groups who have mental health issues. As suggested by a recent study [35] based on the Italian experience of this pandemic, it is essential to assess the population's stress levels and psychosocial adjustment to plan for necessary support mechanisms, especially during the recovery phase, as well as for similar events in the future. Although the COVID-19 pandemic seems to have resulted in a widespread forced adoption of telehealth services to deliver psychiatric and mental health support, more research is needed to investigate use beyond COVID-19 as well as to improve preparedness for rapid virtualization of psychiatric counseling or tele-psychiatry [36], [37].

One way to improve mental health is to focus on reducing social inequity through an integrated community-oriented system of care operating across health and social care systems, supported by operational research to guide implementers and policy-makers to deal with current and future challenges. This requires political will at the highest policy-making level with increase in resources at all levels of the health and social care systems [38], [39]. As we enter the past 10 years of the Sustainable Development Goals era, the shock of the COVID-19 pandemic provides an opportunity to reassert the messages of recent learning in global mental health.

Conclusions and Recommendations

COVID-19 pandemic has demonstrated an impact on mental health, the findings of this

cross-sectional study showed that young people suffered of psychological problems, namely, anxiety, insomnia, and depression. Psychological support is critical in this phase of recovery and for the readiness for the next phases of the pandemic especially dedicated to the most vulnerable population, the youth. The promotion of psychological interventions on the specific population who is more likely to develop pathologies and suffering is needed. The Lancet Global Mental Health Commission's observation. Patel, 2018, [11] reported that the use of digital technologies can provide mental health interventions in order to reduce anxiety and stress levels and increase self-efficacy [12].

Limitation and future directions

The results of this study should be considered within the following limitations, first the cross-sectional nature with lack of cause-effect relationship, giving only prevalence of acute PTSS and sub-symptoms, second, the sample size and sample representativeness, considering the relatively small sample size and the accessibility of the sampling units, and finally, the period was short. Future studies are needed to better monitoring the trend of mental health issues among youth and evaluating specific interventions throughout the COVID-19 pandemic to prevent long-term mental health-related disabilities.

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Authors' Contribution

Shaimaa Baher Abdel-Aziz: Primary data collection of the questionnaire and implementation of sessions. Also helped in data acquirement, analysis, and interpretation. Maha Emadeldin: Contributed to the concept and design of the study, helped in designing the questionnaire, and implementation phase of the training sessions. Salah Hassan Al Hanafy: Helped conceptualize the focus of the study, development of study materials and tools. Also drafting and reviewing of the manuscript. Tarek Tawfik Amin: Contributed to the concept and design of the study, he also helped in drafting, reviewing, and gave final approval of the manuscript.

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