The Prevalence of Mental Health Illness among Jordanian Patients during COVID-19 Pandemic: A Cross-Sectional Study

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Article

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Abstract: Background As a major virus outbreak in the 21st century, the Coronavirus disease 2019 (COVID-19) pandemic has led to unprecedented hazards to mental health globally. Health care workers, patients with COVID-19 are experiencing post-traumatic stress disorders, anxiety, depression, and insomnia. Methods: A cross-sectional study using a questionnaire consisted of four parts: sociodemographic, current and previous health status, measures in a social isolation, and the Arabic version of Depression, Anxiety and Stress Scale (DASS-21). Results: We had 110 patients who completed the data. 89 (80.9%) of patients recovered from COVID-19. They ranged from 18-84 with a mean of 37.6 years (SD = 9.8 years). We had 33.6% of patients reported moderate to extremely severe depression compared to 18.2% with mild reported symptoms. The anxiety severity showed that (35.4%) out of patients had moderate to extremely severe anxiety, compared to (6.4%) who had mild anxiety. While stress severity showed that (22.7%) had moderate to extremely severe stress compared to (13.6%) who had mild stress. Conclusion: COVID-19 has caused a significant increase in the prevalence of mental health illness in the general population. Large systematic reviews are required to set the general overall of impact of this pandemic on mental health.

Keywords: COVID-19; mental health; Anxiety

1. Introduction

The COVID-19, initially was identified as a respiratory disease caused by a pathogen from the family of coronaviruses that first emerged in Wuhan, China in December 2019. Unlike previous viral epidemics such as SARS, MERS, bird flu, and swine flu, COVID-19 spread widely to 20 countries in less than four months of its identification. This highly infectious virus caused a state of panic around the globe [1].

On March 2, 2020, Jordan reported their first known case of COVID-19 [2]. The patient was admitted and isolated at a major tertiary health institution in the Jordanian capital, Amman. The COVID-19 patients who were later admitted into this hospital were the subjects of this study. Some countries adopted the "herd immunity" approach and decided to prioritize economic stability, while others enforced the strict lockdown procedures in order to maintain a functioning healthcare system and keep cases and deaths at the lowest rates possible. [3]. Defense law was implemented, which enabled the military and public security to arrest individuals who did not comply with protective measures such as wearing masks and gloves, refraining from social gatherings and maintaining a safe distance of around two meters between each other [4,5].

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After taking a number of preventive measures over the span of seven months in an attempt to contain the spread of the disease, Jordan has recorded 1,283 confirmed cases, 1,189 recoveries, and 11 deaths as of August 14, 2020 [4].

While main efforts were directed contain the spread of the disease and providing medical care to infected individuals, mental health and well-being was mostly overlooked. In fact, one could argue that mental health promotion was even more essential during such times because these were the events that are most likely to produce high levels of stress, anxiety, depression, and even cases of post-traumatic stress disorder, especially for individuals who dealt directly with the disease and its consequences, such as healthcare workers, hospitalized patients, and patients' families [6,7].

New literature studying numerous aspects of the COVID-19 pandemic has been getting published almost daily [8], but there has been a clear shortage of research on the mental health effects of having COVID-19 on hospitalized patients, and none comparing the patients' mental health state during admission to its state months after discharge. While hospitalized patients, especially those suffering from severe illness, were expected to complain of negative mental health effects, being isolated for a highly infectious disease during an outbreak was a different story.

Quarantined or not, people living in areas affected by the pandemic have been psychologically impacted by the recent events. A study of the immediate psychological impact of COVID-19 in China reported that more than half of the respondents rated their psychological impact as moderate to severe, while about one third rated their level of anxiety as moderate to severe [9].

2. Materials and Methods

Participants:

COVID-19 patients who were still inpatients or recovered outpatients from one of the three government hospitals designated to treat COVID-19 patients in Jordan were eligible to participate in an online, voluntary and anonymized cross-sectional survey. Because of transmission potential and hospital policies the survey was first conducted by phone with COVID-19 patients who were 18 years old and older. After consent was obtained they were supplied a link to the online survey. One hundred eighty-six patients were contacted, 160 of whom agreed to participate, and 110 completed the questionnaire. The questionnaire was in Arabic, and it was conducted from July1st, 2020 to July14th, 2020. 74 patients completed the follow-up questionnaire which was conducted from April 6th, 2021 to April15th, 2021. The study protocol was ethically approved by the university institutional review board (IRB) and hospital IRB. All responses were kept confidential with no identifiable information, email address or traceable internet protocol address.

Measures

The questionnaire consisted of four parts: sociodemographic, current and previous health status, measures in a social isolation, and the Arabic version of Depression, Anxiety and Stress Scale (DASS-21).Demographic variables included age, gender, nationality, region of residence in Jordan, type of area of residency, marital status, number of children, level of education, professional field (for those with a college degree and above), current employment status, and average monthly income. The second part inquired about having co-morbidities like cancers, cardiovascular disorders, chronic obstructive pulmonary diseases, and diabetes mellitus in a true/ false based format. Also it inquired the physical symptoms that they complained of during their diagnosis such as fever, headache, general weakness and fatigue, dry cough, chills and shivers, productive cough, nausea and vomiting, rhinorrhea, shortness of breath, myalgia and arthralgia, appetite loss or dyspepsia, and sore throat in a scale from 0 to 10 (0 = never, 10 = severe), as well as if they were treated in the ICU for COVID-19 and number of days in hospital and their thoughts toward the meaningful contribution of the health care services they received in their COVID-19 treatment. The next part of the survey asked about social isolation from the community, followed by the DASS-21. The DASS-21was previously used in research related to SARS. The follow up study contain the Arabic version of the DASS 21 scale.

Statistical analysis

Frequency of demographic variables and DASS-21 severity subscales were described. Overall mental health score in categories vs. educational level were compared using Chi-square test. T-test

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was done to compare the overall mean score of DASS-21 according to gender and marital status. Pearson's correlation was made to investigate the correlation shortness of breath score vs. anxiety score, shortness of breath score vs. stress score, and number of days in hospital vs. overall DASS-21 scores. Also ANOVA test was done to identify the differences between depressions, anxiety, and stress scores vs. measures of social isolation, number of hospitalization days, and the meaningful contribution of the health care services they received in the recovery. Data analysis was conducted with SPSS version 25. The statistical significance level was put at $p < 0.05$ (two-sided).

3. Results

This A total of 110 participants completed the survey questionnaire, out of whom 89 (80.9%) considered themselves recovered from COVID-19. They ranged from 18-84 with a mean of 37.6 yrs (SD = 9.8 yrs). The majority was Jordanian 90% and most lived in the center of Jordan near the major cities 75.5%). Among them most were male (66.5%), but just over half (55.5%) were married, and almost half did not have children 46.6%). Over half of them (56.4%) held a bachelor's degree and above, whereas (50.9%) were employed. Regarding to the average monthly income almost half (48.2%) had a monthly income of less than 500JD. (Table A1)

Table A1. Sociodemographic characteristics of participants.

Characteristics		*Number of participants (%)*
Current health status	*COVID-19 (+) and quarantined in the hospital.*	*21 (19.1%)*
	Covid-19 (-) recovered from illness.	*89 (80.9%)*
Age groups	*18-29 years*	*37 (33.6%)*
	30-39 years	*32 (29.1%)*
	40-54 years	*21 (19.1%)*
	More than 55 years	*20 (18.2%)*
Gender	*Male*	*72 (65.5%)*
	Female	*38 (34.5%)*
Nationality	*Jordanians*	*99 (90.0%)*
	Non Jordanians	*11 (10.0%)*
Region of residence in Jordan	*North*	*14 (12.7%)*
	Middle	*83 (75.5%)*

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	East	*6 (5.5%)*
	South	*7 (6.4%)*
Type of area of residency	*City*	*94 (85.5%)*
	Village	*11 (10.0%)*
	Refugee camps	*4 (3.6%)*
	Rural region	*1 (0.9%)*
Marital status	*Married*	*61 (55.5%)*
	Single	*46 (41.8%)*
	Divorced	*1 (0.9%)*
	Widow	*2 (1.8%)*
Number of children in groups	*1-2 children*	*12 (10.9%)*
	3-5 children	*34 (30.9%)*
	More than 5 children	*13 (11.8%)*
	I do not have children	*51 (46.4%)*
Highest level of education	*Elementary School*	*11 (10.0%)*
	High School Diploma	*23 (20.9%)*
	Community College	*14 (12.7%)*
	Bachelor's degree	*52 (47.3%)*
	Master degree and above	*10 (9.1%)*
	Health care	*12 (10.9%)*
	Engineering	*15 (13.6%)*

Professional field for those with college degree and above	*Physical and Life Sciences*	*10 (9.1%)*
	Finance and Administration	*25 (22.7%)*
	Humanitarian and Social Sciences	*11 (10.0%)*
Current employment status	*Employed*	*56 (50.9%)*
	Unemployed	*29 (26.4%)*
	In school	*14 (12.7%)*
	Housewife	*11 (10.0%)*
Average monthly income in JD	*Less than 500JD*	*53 (48.2%)*
	500-1000JD	*24 (21.8%)*
	1000-1500JD	*5 (4.5%)*
	1500-2000JD	*8 (7.3%)*
	More than 2000JD	*20 (18.2%)*

According to the data collected from July1st, 2020 to July14th 2020, the DASS-21 showed that (33.6%) of patients reported moderate to extremely severe depression compared to 18.2% with mild reported symptoms. However, the anxiety severity showed that (35.4%) out of patients had moderate to extremely severe anxiety, compared to (6.4%) who had mild anxiety. While stress severity showed that (22.7%) had moderate to extremely severe stress compared to (13.6%) who had mild stress,.

To compare groups, depression, anxiety & stress, chi squares and t-tests were used based on the data being descriptive or numeric. The only statistically significant findings were Stress severity based on level of education (primary and secondary school degrees vs. college degree and above) X2 (2, N = 110)=6.05, p = 0.04, with higher stress being among primary and secondary school holder . See Table A2

Table A2. Chi-square test results.

Groups	*Depression severity*			*Anxiety severity*			*Stress severity*		
	X^2	*Df*	*p*	X^2	*df*	*p*	X^2	*df*	*p*
Current medical status	*1.95*	*2*	*0.377*	*2.02*	*2*	*0.362*	*2.19*	*2*	*0.334*

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Type of area of residency	*0.18*	*2*	*0.913*	*1.37*	*2*	*0.502*	*1.95*	*2*	*0.377*
Highest level of education	*0.94*	*2*	*0.624*	*0.12*	*2*	*0.940*	*6.05*	*2*	*0.049*
Average monthly income groups	*2.68*	*2*	*0.262*	*2.21*	*2*	*0.331*	*5.06*	*2*	*0.080*

T—tests indicated that overall score , depression, anxiety, and stress scores did not differ significantly between males and females (t = -2.914,p = 0.86; t = -2.646, p = 0.874; t = 2.245, p = 0.354: = -3.102, p = 0.988 respectively). Also there were no significant differences based on martial between married vs. single (single, divorced and widow) (t = -1.577, p = 0.672; t = -1.239, p = 0.191; t = -2.165, p = 0.265; t = -1.119, p = 0.424).

The findings showed a significant positive correlation between shortness of breath score and anxiety, (r = 0.51 (p = 0.00) as well as with their stress scores (r = 0.30 (p = 0.01). Furthermore number of days in the hospital was significantly correlated with overall score of DASS-21 (r = 0.29, p = 0.002).Who were admitted to ICU were not significantly a risk for depression, anxiety, stress, (OR: 1, 95%CI: 0.193-5.185) (OR: 0.339, 95%CI: 0.059-1.934) (OR: 1.25, 95%CI: 0.219-7.141) respectively. Regarding co-morbidities who have a cardiovascular diseases not significantly at risk for depression, anxiety, and stress (OR: 0.745, 95%CI: 0.256-2.167) (OR: 0.505, 95%CI: 0.173-1.473) (OR: 0.421, 95%CI: 0.144-1.232) respectively. Also who have a COPD not significantly at risk for depression, anxiety, and stress (OR: 1.038, 95%CI: 0.986-1.092) (OR: 1.045, 95%CI: 0.983-1.112) (OR: 0.612, 95%CI: 0.037-10.052) respectively. Moreover, who have a DM not significantly at risk for depression, anxiety, and stress (OR: 0.784, 95%CI: 0.199-3.091) (OR: 0.547, 95%CI: 0.138-2.159) (OR: 0.227, 95%CI: 0.065-1.174) respectively.

An ANOVA was conducted to determine if there was a difference among depression, anxiety, and stress scores in relation to social isolation. The data showed there was a statistically significantly difference (F= 3.09 P= 0.019, F=.3.54 P= 0.009, F=3.54 P=0.006) respectively. Also, Anxiety and stress severity significantly differed among number of hospitalization days (F=2.53 P = 0.001, F=1.69 P=0.038) respectively while anxiety score was significantly differed with the meaningful contribution of the health care services they received in the recovery (F= 1.99 P=0.03) (See Table A3).

Table A3. ANOVA analysis results.

Groups		Sum of Squares	df	Mean of squares	F	Sig
Depression score	Average monthly income groups	651.64	4	162.91	1.91	0.115

 doi:10.20944/preprints202310.0165.v1

	Social isolation question	1014.70	4	253.68	3.09	0.019
	Number of hospitalization days	59.67	26	2.30	1.42	0.120
Anxiety score	Average monthly income groups	332.93	4	83.23	1.42	0.231
	Social isolation question	769.67	4	192.42	3.54	0.009
	Number of hospitalization days	103.59	26	3.98	2.53	0.001
Stress score	Average monthly income groups	688.94	4	172.24	1.82	0.131
	Social isolation question	1348.79	4	192.42	3.54	0.006
	Number of hospitalization days	45.81	26	1.76	1.69	0.038
Overall DASS score	The meaningful contribution of the health care services they received in the recovery	45.41	36	1.26	0.77	0.81
Depression score	The meaningful contribution of the health care services they received in the recovery	35.11	17	2.07	1.22	0.268

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Anxiety score	The meaningful contribution of the health care services they received in the recovery	40.61	13	3.12	1.99	0.03
Stress score	The meaningful contribution of the health care services they received in the recovery	33.28	16	2.08	1.22	0.266

The follow up study DASS 21 showed that there were an increasing in the severity of depression, anxiety and stress 36.5% , 56.8% ,32% respectively .

4. Discussion

Until September 19, 2020, and possibly later, this was the first study discussing the mental health effects of the COVID-19 pandemic and its associated factors on patients in Jordan. In this predominantly adult Jordanian male, living in the middle of Jordan, married with no children, well-educated, working with a monthly income below 1000JD, and recovered from illness population, The overall percentage of depression, anxiety, and stress was 51.8%, 41.8%, 36.3% reported by those participating the study who had covid- 19 showed that respectively indicating that COVID-19 it had a significant impact on their self-reported mental health among patients.

Manen et al. (2002) concluded that there is a correlation between shortness of breath and psychological symptoms, one of which found that the risk for depression was 2.5 times greater in individuals with increased dyspnea in comparison to the controls. Multiple studies have shown a correlation between shortness of breath and anxiety. There was evidence suggesting that symptoms of depression and anxiety played an important role in the development of dyspnea, while not enough evidence supported that dyspnea could induce these psychological symptoms (Neuman et al. 2006). Many previous cross-sectional studies have established this causal relationship between shortness of breath and psychological symptoms, one of which found that the risk for depression was 2.5 times greater in individuals with increased dyspnoea in comparison to the controls (Manen et al. 2002). This was also evident in this study, where a significant correlation between shortness of breath and anxiety, as well as between shortness of breath and stress.

The existing literature heavily supported a correlation between mental health and the length of hospital stay, but not in the same manner found in this study . The results of this study showed a relationship in the opposite direction, where a prolonged length of hospital stay significantly increased the overall DASS score for depression, anxiety, and stress. The relationship that was better supported by previous publications was that patients had a prolonged hospital stay as a result of a mental illness diagnosis or comorbidity [10]. The results of this study, however, highlighted a relationship in the opposite direction, where a prolonged length of hospital stay significantly increased the overall DASS score for depression, anxiety, and stress.

Even though social and specifically marital relationships have been shown to have a positive impact on mental health by sociologists because of the way they connected people in society [11], this study found no significant difference between the impact of COVID-19 on mental health between married people in comparison to single individuals. When it comes to mental health problems,

women have been known to predominate. In the United Kingdom, a 2016 report noted that they were almost twice as likely to get diagnosed with an anxiety disorder (Mental Health Foundation). However, in this study, there was no significant difference in mental health status between males and females, which could partly be due to the smaller percentage of women who took part in the study (34.5%).

In addition to the limited sample representativeness, the second limitation of this study is that the assessment of mental health effects of COVID-19 on patients would be better assessed through discussion, interview, and constructed as multi-dimensional measures.

5. Conclusions

In conclusion, the findings suggest that COVID-19 patients in Jordan have complained from negative effects on mental health. These negative effects varied according to the level of education, shortness of breath score, social isolation, number of hospitalization days, and the meaningful contribution of the health care services they received in the recovery. These findings suggest that healthcare providers should carefully examine and address the mental health status of the patients in order to decrease the burden of such complications on their overall health and ability to recover. The fact that we could name a few factors associated with COVID-19 management and hospitalization that caused a difference in the impact on the patients' mental health means that now we at least have specific areas where attention can be directed and change can be implemented to improve the mental health outcomes. It is also recommended that the Ministry of Health in Jordan starts some mental health rehabilitation programs for those who recovered from the illness. It is only under the combined efforts of health authorities and healthcare services that patients will experience better mental and physical health outcomes.

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