



Research article

Depression, coping skills, and quality of life among Jordanian adults during the initial outbreak of COVID-19 pandemic: cross sectional study

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ABSTRACT

Little is known about the immediate psychological impacts of the national lockdown implemented during the COVID-19 pandemic on the general population in Arab countries like Jordan. The aim of this study was to assess the levels of depression, coping skills, and quality of life and their correlates among a sample of Jordanian adults aged ≥ 18 years during the COVID-19 lockdown implemented in Jordan. A quantitative, descriptive, correlational, cross-sectional design was conducted using an anonymous online self-report survey to collect data on participants' demographics, depression, coping skills, and quality of life. This study included a total of 511 participants aged 18–65 years (mean = 30, SD = 10.6), most of whom were female ($n = 333$, 65.2%). About 65% ($n = 332$) of the participants were found to be suffering from depressive symptoms and 32% ($n = 163$) of them had moderate to severe depression levels. Religion, acceptance, and planning were the most frequently reported coping skills. The mean total quality of life score among all of the participants was 73.21 (SD = 16.17). Female participants had significantly higher levels of depression and lower levels of quality of life than male participants. Further, age was not found to be significantly correlated with depression, coping skills, or total quality of life scores. Depression scores were significantly positively correlated with coping skills and negatively correlated with total quality of life scores. No significant correlation was found between coping skills scores and total quality of life scores in this study. Being employed, holding an undergraduate degree, having chronic physical problems, and having mental health problems were found to be significantly associated with higher levels of depression. Holding a graduate degree, being a student, having military health insurance, not having mental health problems, and being a non-smoker were found to be significantly associated with lower coping skills scores. Being female, being educated to high school level or below, having mental health problems, and having family history of chronic physical problems were found to be significantly associated with lower total quality of life scores. This study provides valuable information on the psychological impacts of the national lockdown during the initial outbreak of the COVID-19 pandemic on Jordanian adults. This information may help in the development of appropriate psychological interventions aimed at improving mental health and quality of life among at-risk groups during the COVID-19 pandemic.

1. Introduction

Outbreaks of communicable infectious diseases are well known to have adverse impacts on psychological wellbeing among the general population. Evidence has shown that the psychological impacts of epidemics (e.g., MERS, H1N1, Ebola, and SARS) on the general population include depression, substance abuse, and anxiety [1, 2, 3]. The majority of studies related to COVID-19 have mainly focused on the epidemiological and physical aspects of the disease and the challenges it has posed on healthcare organizations around the world [4]. However, interest in

the psychological impacts of the COVID-19 outbreak has been increasing worldwide [4, 5, 6, 7, 8, 9, 10]. For example, in the recent study of Wang and colleagues [4], 53.8% of 1210 Chinese participants reported moderate to severe levels of stress, anxiety, and depression during the first outbreak of COVID-19. In addition, the use of pandemic-related restraints and measures, including lockdown, social distancing, quarantine, and isolation, has been found to be associated with negative psychological impacts among the general population [6, 7, 8, 9, 10]. Thus, the outbreak of the COVID-19 pandemic and the implementation of pandemic-related restraints (e.g., lockdown) have been associated with panic, anxiety, fear,

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worry, stress, depression, loneliness, sleep problems, and other psychological impacts at different levels among people worldwide [4, 5, 6, 7, 8, 9, 10, 11, 12].

More importantly, however, the psychological impacts resulting from the outbreak of COVID-19 may ultimately lead to suicidal behaviors among some individuals, which includes suicidal thoughts, suicide attempts, and suicide plans [13, 14, 15, 16]. For example, in a recent study conducted in Bangladesh by Mamun and colleagues [17], it was reported that approximately 6.1% of 3388 participants had suicidal behaviors related to the outbreak of COVID-19. This finding was consistent with the results of other recent studies on suicide related to the COVID-19 pandemic, including the study of Dsouza and colleagues [14] in India and the study of Mamun and Ullah [16] in Pakistan. In addition, fear of becoming infected with COVID-19, the lockdown-related economic recession and crisis, loneliness, social distancing, isolation, and being infected with COVID-19 have been associated with suicide causalities [15, 16, 18]. Other risk factors of suicide related to COVID-19 include being female, being divorced, and not having children [17]. Such significant findings highlight the importance of assessing the psychological impacts of the COVID-19 pandemic on the general population and providing psychosocial support. It is also essential to develop psychological interventions and measures aimed at ensuring the early management of these psychological impacts and hence the improvement of psychological wellbeing and prevention of suicide among at-risk groups.

Although the immediate psychological impacts of national lockdowns implemented during the COVID-19 pandemic were investigated in Western countries [4, 6, 18, 19, 20, 21], little is known about the immediate psychological impacts of the national lockdowns implemented during the COVID-19 pandemic in Arab countries like Jordan. Jordan is located in the Middle East and has an estimated population of about 10.5 million people, with 52.9% of the population being male and 47.1% being female [22]. The first case of COVID-19 in Jordan was reported on March 3rd, 2020 by the Jordanian Ministry of Health [23, 24]. To prevent the disease from spreading and protect the country's people, the Jordanian government immediately activated the National Defense Law and implemented a complete lockdown, in addition to other preventive measures such as social distancing and quarantine rules [23]. As a result, Jordanian people were forced to adapt to new ways of living in order to deal with this global health crisis. In light of these changes, which include the national lockdowns implemented worldwide, it is necessary to explore the initial psychological responses of the outbreak of the COVID-19 pandemic on the general population. The current study is one of the first studies to investigate the psychological wellbeing of the general during the national lockdown implemented in Jordan. Therefore, the purpose of this study was to assess depression, coping skills, and quality of life (QOL) and their correlates among a sample of Jordanian adults during the COVID-19 lockdown in Jordan. Despite the preliminary nature of this study, the findings contribute to the identification of some demographic factors which influence psychological wellbeing among the general population during the COVID-19 pandemic. The present study identifies the groups of individuals who are at high risk of suffering from these psychological responses and suggests early interventions aimed at improving psychological wellbeing and preventing suicidal behaviors among these at-risk groups. As the COVID-19 pandemic continues to spread, it is likely to have further adverse psychological problems on the general population. Therefore, there is an urgent need for further research aimed at better understanding the full psychological impacts of the COVID-19 pandemic during and after the lockdown.

2. Methods

2.1. Participants and procedures

A quantitative approach using a descriptive, correlational, cross-sectional design was adopted for this study. An anonymous online self-report survey using Google Forms was carried out from 1 May to 15 May

2020, in the second month during the implementation of the lockdown and the precautionary measures taken in Jordan to fight the spread of COVID-19. The institutional review board (IRB) approval (No. 98/132/2020) was obtained from Jordan University of Science and Technology. The inclusion criteria for participation in the current study were: (a) being an adult aged between 18 and 65 years, and (b) living in Jordan. The exclusion criteria were: (a) being aged under 18 or over 65 years and (b) not residing in Jordan during the COVID-19 lockdown. The participants were recruited through social media (Facebook and WhatsApp) and snowball sampling methods. The Arabic versions of the standardized measures were used to assess demographics, depression, coping skills, and quality of life (QOL). An introductory message was included at the beginning of the online survey, informing the participants about the study purpose, the use of data, and the study procedures. The message also informed the participants that their participation was totally voluntary and that their identities would be kept confidential. Informed consent was obtained from the participants electronically before participation. After agreeing to participate in the study, the participants were asked to complete and submit only one online self-report survey each. All of the survey questions were mandatory, and thus, there were no cases of missing data.

2.2. Measures

2.2.1. Demographic data

A demographic questionnaire was used to collect data on the sample characteristics. It included age, gender, marital status, educational level, employment status, health insurance, medical and mental illness history, family history of physical and mental illnesses, and lastly, smoking.

2.2.2. Beck Depression Inventory-II (BDI-II)

Depression symptoms was assessed using Beck Depression Inventory-II (BDI-II). The BDI-II is a self-report questionnaire consisting of 21 items that measure the symptoms and severity of depression experienced by the respondent in the preceding two weeks [25]. A 4-point Likert scale ranging from 0 (symptom not present) to 3 (symptom strongly present) is used for responding to the questionnaire items. The total score ranges from 0 to 63, with a cut-off score of 13 indicating depression. Scores from 0 to 13 indicate no or minimal depression; scores from 14 to 19 indicate mild depression; scores from 20 to 28 indicate moderate depression; and scores from 29 to 63 indicate severe depression [25]. The Arabic version of the BDI-II has good internal consistency, with a Cronbach's alpha of $\geq .85$ in Jordan [26, 27]. In this study, the Cronbach's alpha for the BDI-II scale was .92.

2.2.3. The Brief COPE scale

Coping skills was assessed using the Brief COPE Scale. The Brief COPE Scale is the short version of a self-report questionnaire and consists of 28 items which aim to determine the coping skills that individuals use during a stressful life event [28]. The questionnaire items are answered on a 4-point Likert scale ranging from 1 (I haven't been doing this at all) to 4 (I have been doing this a lot). The questionnaire consists of 14 subscales – each subscale consisting of 2 items – as follows: (1) Self-distraction, (2) Active coping, (3) Denial, (4) Substance use, (5) Using emotional support, (6) Using instrumental support, (7) Behavioral disengagement, (8) Venting, (9) Positive reframing, (10) Planning, (11) Humor, (12) Acceptance, (13) Religion, and (14) Self-blame. There are no cut-off point scores for the coping skills scale. The total score ranges from 28 to 112 and the total subscale score ranges from 2 to 8 [28]. The Arabic version of the Brief COPE scale was found to be reliable and valid in Jordan, with a Cronbach's alpha of .73 [27,29]. In this study, the Cronbach's alpha for the Brief COPE scale was .92.

2.2.4. The World Health Organization Quality of Life-BREF (WHOQOL-BREF)

Quality of Life (QOL) was assessed using the World Health Organization Quality of Life-BREF (WHOQOL-BREF). The WHOQOL-BREF is the

short version of the WHOQOL-100 scale and consists of 26 items which is used to assess individuals' quality of life in the preceding two weeks [30]. It has four domains and a general health domain. The four domains are physical health (7 items), psychological health (6 items), social relationships (3 items), and environment (8 items). The remaining two items belong to the general health domain, which requires respondents to rate their satisfaction with their health and overall quality of life [30]. The scale items are answered on a 5-point Likert scale ranging from 1 (very dissatisfied/very poor) to 5 (very satisfied/very good), with higher scores indicating higher quality of life. The Arabic version of the WHOQOL-BREF was used after obtaining permission from the WHO Permissions and Licensing Center. The Arabic version of the WHOQOL-BREF demonstrated a Cronbach's alpha coefficient ≥ 0.70 [31, 32, 33]. In this study, the Cronbach's alpha for the whole scale was .94; as for the subscales, the Cronbach's alphas were as follows: .75 for the physical health domain, .75 for the psychological health domain, .84 for the social relationship domain, and .89 for the environment domain.

2.3. Data analysis

The IBM Statistical Package for the Social Sciences (SPSS) version 25 was used to analyze the collected data. Descriptive analysis was used to describe (a) the sample characteristics and (b) all the major study variables, including (1) depression, (2) coping skills, and (3) quality of life (QOL). Means, standard deviations, and ranges were used for the continuous variables, whilst frequencies and percentages were used for the categorical variables. Pearson's correlation coefficient (r) was used to examine the direction and strength of the relationships between age, depression, coping skills, and total QOL score. To examine the differences in the mean depression, coping skills, and total QOL scores based on demographic variables, we used independent-samples t-test for two groups and one-way ANOVA test for three or more groups. With regards to the one-way ANOVA test, post-hoc comparisons using the Bonferroni test were conducted to determine the groups between which there were differences in mean scores. The adjusted P-value for pairwise multiple comparisons was performed using the Bonferroni procedure. Simultaneous multiple regression was performed to determine the significant predictors of depression, coping skills, and total QOL scores among the study participants. Depression, coping skills, and total QOL scores were entered as an outcome variable, whilst demographic characteristics were entered as potential predictors (11 predictors). These characteristics were age, gender, educational level, marital status, employment status, health insurance, chronic physical problems, mental health problems, family history of chronic physical problems, family history of mental health problems, and smoking. Categorical variables were entered as dummy codes, with the most frequent category being the reference group. For example, for gender, females were the reference group. There was also no violation of the regression assumptions, including normality, linearity, and homoscedasticity, based on the preliminary analysis. The level of significance was as set at $p < 0.05$.

3. Results

3.1. Participants' characteristics

A total of 511 respondents agreed to participate in the study and completed the online survey, leading to a response rate of 98.1%. Table 1 presents the characteristics of the study participants. The participants' ages ranged from 18 to 65 years, with a mean age of 30 years ($SD = 10.6$). About 65.2% ($n = 333$) of the participants were female, while 34.8% ($n = 178$) were male. The majority of the participants (49.3%, $n = 252$) were single, 208 (40.7%) were married, 32 (6.3%) were divorced, and 19 (3.7%) were widowed. The majority of the participants (66.3%, $n = 339$) held an undergraduate degree, 39.2% ($n = 200$) were students, and 51.3% ($n = 262$) had governmental health insurance. Among the participants, 72.8% ($n = 372$) reported not suffering from any chronic health

problems, and 87.7% ($n = 448$) reported not suffering from any mental health problems. In addition, 54.8% ($n = 280$) of the participants reported having a family history of chronic physical problems, while 79.3% ($n = 405$) reported not having a family history of mental problems. The analysis also showed that most of the participants (52.6%, $n = 269$) were non-smokers. See Table 1.

3.2. Depression

An analysis of the participants' BDI-II scale scores revealed a mean total score of 17.28 ($SD = 11.02$), with scores ranging from 0 to 61 (Table 4). About 50% of the participants had a score of 16 or above and that 50% had a score between 11 and 22 (Table 4). The analysis showed that of the 511 participants, 35% ($n = 179$) reported scores indicating no or minimal depression, 33% ($n = 169$) reported scores indicating mild depression, 19% ($n = 97$) reported scores indicating moderate depression, and 13% ($n = 66$) reported scores indicating severe depression (Table 2). The analysis also indicated that about 65% ($n = 332$) of the participants were suffering from depressive symptoms, while 32% ($n = 163$) had moderate to severe depression levels. See Table 2.

3.3. Coping skills

An analysis of the participants' brief COPE scale scores revealed a mean total score of 63.85 ($SD = 15.22$), with scores ranging from 28 to 112 (Table 4). The analysis showed that 50% of the participants had a score of 63 or above and 50% of them had a score between 54 and 74 (Table 4). These findings indicate that the participants had moderate ability to cope effectively with their situation. Table 3 presents the 14 major categories of coping skills used by the participants during the COVID-19 outbreak. The most frequently used coping strategies were religion (mean 6.07 ± 1.64), acceptance (mean 5.72 ± 1.59), and planning (mean 5.06 ± 1.57). These were followed by positive reframing (mean 4.97 ± 1.70), active coping (mean 4.84 ± 1.59), the use of instrumental support and self-distraction (mean 4.75 ± 1.72 vs. mean 4.72 ± 1.59 , respectively), the use of emotional support (mean 4.60 ± 1.72), and venting (mean 4.51 ± 1.58). The least frequently used strategies were denial (mean 3.91 ± 1.68), behavioral disengagement and self-blame (mean 3.78 ± 1.62 vs. mean 3.70 ± 1.85 , respectively), humor (mean 3.65 ± 1.46), and lastly, substance use (mean 3.57 ± 1.96). See Table 3.

3.4. Quality of life (QOL)

According to the WHO guidelines, there are three ways to calculate WHOQOL-BREF scores: (1) counting the raw scores, (2) converting the raw scores to range from 4 to 20, and (3) converting the raw scores to range from 0 to 100 [17]. In this study, the first method (counting the raw scores) was utilized, with higher scores indicating higher QOL. By using the first method, we could not do comparison between four QOL domains. Each domain score has not the same range due to the number of items is different for each domain (Table 4). The analysis of the WHOQOL-BREF scale scores included the total score, four subscales scores, and the individual scores of the two items about the respondents' overall perception of their QOL and health (Table 4). The results revealed a mean (SD) for total QOL score of 73.21 ($SD = 16.17$). The mean (SD) general QOL and health scores were 3.15 ($SD = 0.94$) and 3.40 ($SD = 0.95$), respectively. With regards to the first question in the WHOQOL-BREF scale, "How would you rate your quality of life?", the results revealed that 40.7% ($n = 208$) of the participants described their QOL during the outbreak of COVID-19 as being neither poor nor good. As for the second question, "How satisfied are you with your health?", 47.6% ($n = 243$) of the participants reported feeling satisfied with their health. As for the four QOL subscales, the mean scores in each domain were as follows: 18.04 ($SD = 4.39$) for physical health, 17.65 ($SD = 3.77$)

Table 1. Depression, coping skills, and total QOL score differences between participants based on their demographics (N = 511).

Characteristic	n	%	Depression scores			Coping Skills scores			Total QOL score		
			M (SD)	t/F ^a	P	M (SD)	t/F ^a	p	M (SD)	t/F ^a	p
Gender											
Male	178	34.8	15.82 ± 11.60	2.20	.028*	63.60 ± 16.56	.27	.788	75.86 ± 15.19	-2.73	.007**
Female	333	65.2	18.07 ± 10.65			63.98 ± 14.48			71.79 ± 16.52		
Educational level											
High school and below	87	17.1	20.24 ± 12.31	9.39	<.001***	68.49 ± 16.31	6.98	.001**	66.40 ± 13.60	9.98	<.001***
Undergraduate degree	339	66.3	17.55 ± 10.91			63.63 ± 15.19			74.27 ± 16.11		
Graduate degree	85	16.6	13.19 ± 8.85			59.99 ± 15.22			75.93 ± 17.17		
Marital status											
Single	252	49.3	17.77 ± 10.59	4.88	.002**	63.27 ± 14.72	10.23	<.001***	72.08 ± 16.12	5.15	.002**
Married	208	40.7	15.57 ± 10.92			61.91 ± 14.72			76.07 ± 16.74		
Divorced	32	6.3	21.94 ± 12.95			74.53 ± 15.22			67.16 ± 11.37		
Widowed	19	3.7	21.74 ± 11.15			74.68 ± 12.40			66.95 ± 11.07		
Employment status											
Employed	155	30.3	18.92 ± 10.08	9.65	<.001***	64.07 ± 14.16	10.83	<.001***	71.17 ± 15.32	2.26	.081
Not employed	129	25.2	19.39 ± 12.93			68.34 ± 15.50			72.51 ± 15.57		
Retired	27	5.3	21.11 ± 13.12			70.78 ± 17.79			71.70 ± 14.75		
Student	200	39.2	14.15 ± 9.54			59.85 ± 14.38			75.44 ± 17.19		
Health insurance											
Governmental	262	51.3	18.07 ± 11.43	2.19	.069	64.98 ± 15.32	2.26	.062	72.38 ± 15.65	4.14	.003**
Private	70	13.7	17.55 ± 10.72			66.13 ± 17.24			72.79 ± 18.73		
Military	103	20.2	17.55 ± 10.60			61.96 ± 14.37			70.88 ± 15.56		
Others	19	3.7	11.42 ± 9.74			62.37 ± 14.60			83.42 ± 16.30		
None	57	11.2	15.28 ± 10.16			59.74 ± 12.96			78.33 ± 14.37		
Chronic physical problems											
Yes	139	27.2	21.72 ± 12.15	-5.73	<.001***	69.88 ± 16.06	-5.64	<.001***	68.55 ± 15.83	4.04	<.001***
No	372	72.8	15.63 ± 10.11			61.59 ± 14.28			74.95 ± 15.98		
Mental health problems											
Yes	63	12.3	28.75 ± 14.39	-9.59	<.001***	75.73 ± 16.77	-6.91	<.001***	60.70 ± 13.81	6.84	<.001***
No	448	87.7	15.67 ± 9.43			62.18 ± 14.23			74.97 ± 15.71		
Family history of chronic physical problems											
Yes	280	54.8	18.94 ± 10.75	-3.79	<.001***	66.80 ± 15.64	-4.93	<.001***	69.54 ± 15.46	5.83	<.001***
No	231	45.2	15.27 ± 11.05			60.28 ± 13.92			77.66 ± 15.93		
Family history of mental health problems											
Yes	106	20.7	22.09 ± 12.83	-5.17	<.001***	71.41 ± 15.80	-5.93	<.001***	66.46 ± 13.06	4.93	<.001***
No	405	79.3	16.02 ± 10.15			61.87 ± 14.45			74.97 ± 16.46		
Smoking											
Yes	242	47.4	19.01 ± 10.79	-3.40	.001**	68.80 ± 15.88	-7.32	<.001***	70.74 ± 15.08	3.31	.001**
No	269	52.6	15.73 ± 11.03			59.39 ± 13.12			75.43 ± 16.84		

*Significant difference at P value <0.05; **Significant difference at P value <0.01; ***Significant difference at P value <0.001.

^a Independent samples t-test was applied for two groups (t-test value) and one-way ANOVA was applied for three or more groups (F value).

Table 2. Depression symptoms severity (N = 511).

Cutoff Scores	Depression Severity	n	%
0–13	Minimal	179	35
14–19	Mild	169	33
20–28	Moderate	97	19
29–63	Severe	66	13

for psychological health, 8.69 (SD = 2.67) for social relationships, and 22.29 (SD = 5.84) for environment (Table 4). See Table 4.

3.5. Differences in depression, coping skills, and total QOL score based on participants' demographics

Table 1 presents the results of the independent samples t-test. With regards to gender, the analysis revealed that female participants had higher depression scores and lower total QOL scores than male

participants (t = 2.20, p = .028; t = -2.73, p = .007, respectively). Meanwhile, no significant gender-based difference in the participants' coping skills scores was identified. Interestingly, significant differences in the participants' depression, coping skills, and total QOL scores were identified based on all of the remaining demographic variables, including the presence of chronic physical problems, the presence of mental health problems, family history of chronic physical problems, family history of mental problems, and smoking (Table 1). See Table 1.

Table 1 also presents the results of the one-way ANOVA test for the differences in depression, coping skills, and total QOL scores between the groups. The analysis revealed that there were statistically significant differences in depression scores between the participants based on educational level (F (2, 508) = 9.39, p < .001), marital status (F (3, 507) = 4.88, p = .002), and employment status (F (3, 507) = 9.65, p < .001) (Table 1). Further, post-hoc comparisons using the Bonferroni test showed significant differences in depression scores were identified between divorced and married participants (mean difference = Md = 6.37, p = .013); participants with a high school degree or below and

Table 3. Descriptive statistics of coping skills categories.

14 Categories	Items	M	SD
Self-distraction	1 & 19	4.72	1.59
Active coping	2 & 7	4.84	1.54
Denial	3 & 8	3.91	1.68
Substance use	4 & 11	3.57	1.96
Emotional support	5 & 15	4.06	1.72
Instrumental support	10 & 23	4.75	1.72
Behavioral disengagement	6 & 16	3.78	1.62
Venting	9 & 21	4.51	1.58
Positive reframing	12 & 17	4.79	1.70
Planning	14 & 25	5.06	1.57
Humor	18 & 28	3.65	1.46
Acceptance	20 & 24	5.72	1.59
Religion	22 & 27	6.07	1.64
Self-blame	13 & 26	3.70	1.85

participants with a graduate degree ($Md = 7.05, p < .001$); participants with an undergraduate degree and participants with a graduate degree ($Md = 4.36, p = .003$); employed participants and students ($Md = 4.77, p < .001$); unemployed participants and students ($Md = 5.24, p < .001$); and lastly, retired participants and students ($Md = 6.92, p = .010$). Meanwhile, no significant differences in depression scores were observed between the participants based on their type of health insurance. The analysis also revealed statistically significant differences in coping skills scores between the participants based on their educational level ($F(2, 508) = 6.98, p = .001$), marital status ($F(3, 507) = 10.23, p < .001$), and employment status ($F(3, 507) = 10.83, p < .001$) (Table 1). Additionally, post-hoc comparisons using the Bonferroni showed significant differences in coping skills scores were identified between single and divorced participants ($Md = 11.26, p < .001$); widowed and single participants ($Md = 11.41, p = .008$); widowed and married participants ($Md = 12.77, p = .002$); participants with a high school degree or below and those with an undergraduate degree ($Md = 4.87, p = .022$); participants with a high school degree or below and those with a graduate degree ($Md = 8.51, p = .001$); unemployed participants and students ($Md = 8.50, p < .001$); and lastly, retired participants and students ($Md = 10.93, p = .002$). Meanwhile, no significant differences in coping skills scores were observed between the participants based on their type of health insurance. The analysis also revealed statistically significant differences in total QOL scores between participants based on their educational level ($F(2, 508) = 9.98, p < .001$), marital status ($F(3, 507) = 5.15, p = .002$), and type of health insurance ($F(4, 506) = 4.41, p = .003$) (Table 1). Post-hoc comparisons for total QOL scores using the Bonferroni showed significant differences in total QOL scores were identified between married and divorced participants ($Md = 8.92, p = .021$); participants with an undergraduate degree and those with a high school degree or below ($Md = 7.87, p < .001$); participants with a graduate degree and those with a high

school degree or below ($Md = 9.53, p < .001$); participants with other types of health insurance and those with governmental health insurance ($Md = 11.04, p = .038$); and participants with other types of health insurance and those with military health insurance ($Md = 12.54, p = .018$). Meanwhile, no significant differences in total QOL scores were identified between the participants based on employment status. See Table 1.

3.6. Correlations between age, depression, coping skills, and total QOL score

Table 5 shows the correlations between age, depression scores, coping skills scores, and total QOL scores. Using Pearson's correlation coefficient (r), the analysis showed that age had no significant correlation with depression, coping skills, or total QOL scores ($p > 0.05$). On the other hand, depression scores had a significantly positive correlation with coping skills scores ($r = .405, p < .001$) and a negative correlation with total QOL scores ($r = -.495, p < .001$). Therefore, participants with higher levels of depression were more likely to use coping skills and report lower levels of QOL. Lastly, no significant correlation was found between coping skills scores and total QOL scores in the current study ($p > 0.05$). See Table 5.

3.7. Factors predicting depression, coping skills, and total QOL scores

Table 6 shows the results of the multiple regression analysis for the predictors of depression, coping skills, and total QOL scores among the participants. The analysis revealed that the participants' characteristics explained 20.9% of the variance in depression scores ($F(19, 491) = 8.098, p < .001, adjusted R^2 = .209$) (Table 6). Educational level, employment status, having chronic physical problems, and having mental health problems were found to impact the participants' depression levels. Participants with a graduate degree, as compared to participants with an undergraduate degree ($B = -.10, 95\% CI: -5.59 - -.51, p = .019$), had lower levels of depression. Meanwhile, participants who were employed had higher levels of depression than students ($B = .19, 95\% CI: 1.95-7.30, p = .001$), and participants with chronic physical problems had higher depression levels than participants with no chronic physical problems ($B = .18, 95\% CI: 1.83-7.05, p = .001$). Further, participants with mental health problems had higher depression levels than participants with no mental health problems ($B = .34, 95\% CI: 8.14-14.87, p = .001$). The remaining demographic variables were not found to be significantly associated with depression scores. See Table 6.

The participants' characteristics explained 19.8% of the variance in coping skills scores ($F(19, 491) = 7.610, p < .001, adjusted R^2 = .198$) (Table 6). Educational level, employment status, health insurance, having mental health problems, and being a smoker were found significantly impact coping skills scores among the participants. Participants with a graduate degree had lower coping skills scores than participants with an undergraduate degree ($B = -.09, 95\% CI: -7.25 - -.19, p = .039$), and participants with military health insurance had lower coping skills scores

Table 4. Description of the depression, coping skills, and QOL scales.

Scale	Range score	Number of items	M	SD	Min	Max	P ₂₅	P ₅₀	P ₇₅
Total Depression Score	0–63	21	17.3	11.0	0	61	11	16	22
Total Coping Skills Score	28–112	28	63.9	15.2	28	112	54	63	74
Total QOL Score	26–130	26	73.2	16.2	26	122	62	74	83
Overall QOL	1–5	1	3.1	0.9	1	5	3	3	4
General Health	1–5	1	3.4	0.9	1	5	3	4	4
Physical Health	7–35	7	18.0	4.4	7	30	15	18	20
Psychological Health	6–30	6	17.7	3.8	6	30	15	18	21
Social Health	3–15	3	8.7	2.7	3	5	6	9	11
Environmental Health	8–40	8	22.3	5.8	8	40	18	22	26

Note: QOL: quality of life, M: mean, SD: standard deviation, Min: observed minimum, Max: observed maximum.

Table 5. Correlations between study variables (N = 511).

	Age	Total Depression Scores	Total Coping skills Scores	Total QOL score
Age	1			
Total Depression Scores	-.065	1		
Total Coping Skills Scores	.004	.405***	1	
Total QOL Score	.081	-.495***	-.010	1

*Correlation is significant at $p < 0.05$; **Correlation is significant at $p < 0.01$; ***Correlation is significant at $p < 0.001$.

than participants with governmental health insurance ($B = -.11$, 95%CI: $-.729 - -.72$, $p = .017$). Meanwhile, participants who were unemployed or retired or employed had higher coping skills scores than students ($B = .17$, 95%CI: $2.58-9.62$, $p = .001$; $B = .11$, 95%CI: $1.47-13.13$, $p = .014$; $B = .19$, 95%CI: $2.53-9.96$, $p = .001$, respectively). Further, participants with mental health problems had higher coping skills scores than participants with no mental health problems ($B = .14$, 95%CI: $1.69-11.05$, $p = .008$), and participants who were smokers had higher coping skills scores than non-smokers ($B = .24$, 95%CI: $4.15 - -10.24$, $p < .001$). No statistically significant association was identified between any of the remaining demographic variables and coping skills scores. See Table 6.

The participants' characteristics explained 15% of the variance in total QOL scores ($F(19, 491) = 5.755$, $p < .001$, adjusted $R^2 = .150$)

(Table 6). Gender, educational level, having mental health problems, and family history of chronic physical problems were found to significantly impact total QOL scores. Male participants were significantly more likely to have higher total QOL scores than female participants ($B = .13$, 95%CI: $1.09-7.74$, $p = .009$). Meanwhile, participants with a high school degree or below had lower total QOL scores than participants with an undergraduate degree ($B = -.17$, 95%CI: $-11.05 - -3.47$, $p < .001$), whilst participants with mental health problems had lower total QOL scores than participants with no mental health problems ($B = -.24$, 95%CI: $-16.67 - -6.44$, $p < .001$). Further, participants with family history of chronic health problems had lower total QOL scores than participants with no family history of chronic health problems ($B = -.12$, 95%CI: $-7.26 - .64$, $p = .020$). Lastly, no statistically significant associations were

Table 6. Regression analysis for the predictors of depression, coping skills, and total QOL scores.

Independent Variable	Depression Scores	Coping Skills Scores	Total QOL Score
	B (95% CI)	B (95% CI)	B (95% CI)
Age	-.05 (-.16-.06)	-.00 (-.16-.15)	.04 (-.10-.23)
Gender ^a	-.05 (-3.32-1.06)	-.03 (-3.92-2.16)	.13** (1.09-7.74)
Educational Level^b:			
Undergraduate Degree vs High school and below	.07 (-.31-4.68)	.06 (-.92-6.02)	-.17***(-11.05 - -3.47)
Undergraduate Degree vs Graduate Degree	-.10* (-5.59 - -.51)	-.09* (-7.25 - -.19)	.01 (-3.23-4.49)
Marital Status^c:			
Single vs Married	.02 (-2.12-2.89)	.01 (-3.04-3.93)	.00 (-3.79-3.83)
Single vs Divorced	.03 (-2.79-5.48)	.08 (-.63-10.88)	-.03 (-8.29-4.29)
Single vs Widowed	-.03 (-6.85-3.37)	.04 (-3.80-10.44)	.01 (-6.73-8.84)
Employment Status^d:			
Student vs Unemployed	.01 (-.59-4.48)	.17** (2.58-9.62)	.08 (-.88-6.82)
Student vs Retired	.07 (-.85-7.54)	.11** (1.47-13.13)	.00 (-6.25-6.51)
Student vs Employed	.19** (1.95-7.30)	.19** (2.53-9.96)	-.07 (-6.60-1.53)
Health insurance^e:			
Governmental vs private	-.03 (-3.62-1.72)	.04 (-2.01-5.40)	.01 (-3.55-4.56)
Governmental vs military	-.05 (-3.75-.97)	-.11* (-7.29 - -.72)	-.01 (-4.08-3.11)
Governmental vs other	-.06 (-8.43-.97)	.04 (-3.34-9.73)	.08 (-.55-13.74)
Governmental vs none	-.06 (-4.92-1.06)	.06 (-7.11-1.22)	.06 (-1.57-7.53)
Chronic Physical Problems^f			
	.18*** (1.83-7.05)	.08 (-1.06-6.19)	-.08 (-6.70-1.23)
Mental Health Problems^g			
	.34** (8.14-14.87)	.14** (1.69-11.05)	-.24***(-16.67 - -6.44)
Family history of physical problems^h			
	-.01 (-2.39-2.00)	.25 (-2.27 - - 3.79)	-.12*(-7.26 - .64)
Family history of mental problemsⁱ			
	-.10 (-5.65-.01)	-.02 (-.4.68 - - 3.19)	.06 (-1.75-6.86)
Smoking^j			
	.07 (-.74-3.64)	.24*** (4.15 - -10.24)	-.06 (-5.27-1.39)
Adjusted R ²	.209	.198	.150
F	8.098	7.610	5.755

* $p < .05$; ** $p < .01$; *** $p < .001$; B: beta coefficient (standardized); 95%CI: 95% Confidence interval.

^a Females were the reference group.

^b Participants with an undergraduate degree were the reference group.

^c Single participants were the reference group.

^d Students were the reference group.

^e Participants with governmental health insurance were the reference group.

^f Participants with no chronic physical problems were the reference group.

^g Participants with no mental health problems were the reference group.

^h Participants with family history of chronic physical problems were the reference group.

ⁱ Participants with no family history of mental health problems were the reference group.

^j Non-smoker participants were the reference group.

identified between total QOL score and any of the remaining demographic variables. See [Table 6](#).

4. Discussion

To the best of our knowledge, this cross-sectional study is one of the first studies to assess the immediate psychological responses of the national lockdown implemented in Jordan during the COVID-19 pandemic on a sample of Jordanian adults. Given that the pandemic is not yet over, there is a need for conducting research which provides evidence that may assist governments and healthcare systems in maintaining the psychological well-being of people worldwide [4]. The current study offers valuable insight into the immediate psychological responses of the national lockdown implemented during the COVID-19 pandemic on the general population in Jordan. Our study established the prevalence of the psychological responses and identified the groups of individuals who are at high risk of suffering from these responses. Further, the findings of the current study may be more informative in case a new pandemic emerges in the future.

According to the most recent report released by the Jordanian Department of Statistics [22], the majority of the Jordanian population (52.1%) are aged between 20 and 64 years, while 44.2% are aged under 19 years and only 3.7% are aged 65 years or over. The current study recruited participants aged between 18 and 65 years. About 71.8% of the Jordanian population have health insurance, and the majority (55.2%) have governmental health insurance [22]. The demographic characteristics of our study sample also supported this, as 88.9% ($n = 454$) of the participants had health insurance, and most of them (51.3%, $n = 262$) had governmental health insurance. The majority of the participants were educated, as 66.3% ($n = 339$) of the participants held an undergraduate degree and 39.2% ($n = 200$) were students. The majority of the participants were non-smokers (52.6%, $n = 269$), which may be explained by the fact that the sample was predominantly female. The evidence indicates that the smoking rate among females in Jordan is low (10.9%) in comparison to the smoking rate among males [34]. In this study, there were significant differences in depression, coping skills, and total QOL scores between smoker and nonsmoker participants. This finding is inconsistent with the findings of another study which found no significant association between smoking and psychological distress [21]. However, the same study revealed that "increased smoking" over the preceding four weeks was associated with increased psychological distress [21]. In our study, we do not know if the participants who reported being smokers (42.4%) had started smoking or increased their smoking during the COVID-19 pandemic, which highlights the need for further research. Most of the participants reported not suffering from any chronic physical or mental health problems, which may be attributed to the fact that the majority of the participants were students, single, and of young age (i.e., the mean age of the participants was 30 years).

In our study, the majority of the participants (65%) were suffering from depressive symptoms, including mild, moderate, and severe depression levels. This finding may be attributed to the fact that most of the participants were female. Further, this finding is consistent with previous studies which were conducted during the COVID-19 lockdown and which reported that females experienced higher levels of depression than did males [4, 19, 20, 35]. The results of our study also indicated that female participants had significantly higher levels of depression and lower levels of QOL than male participants. One possible explanation is that during the lockdown, women were forced to stay at home, spend most of their time with others, and provide more care than usual to others due to the closure of childcare centers, schools, and universities, therefore placing them at higher risk of psychological distress and suicidal behaviors [16, 36]. It is well known that it is usually the responsibility of women to take care of others (e.g., their families and children) and household chores [36]. Another possible explanation is that Arab women usually prioritize their children and families' needs over their own health, often leading to them being so busy that they do not have enough time to

take care of themselves [37, 38]. Putting others first may impact women's psychological well-being and QOL, as they may feel worried and afraid about their children and family members contracting COVID-19. Previous studies have reported varying rates of the prevalence of depressive symptoms among the general populations in different countries during the COVID-19 lockdown, with a rate of 30.3% reported in China [4], 31% in Greece [19], 33.3% in Bangladesh [35], and 57.3% in Cyprus [20]. These prevalence rates are lower than the prevalence rate reported in the current study. This variation in the prevalence rates may be attributed to differences in socioeconomic status, healthcare systems, and geographical regions between different countries [35, 39], as well as the use of different methodologies in different studies [19, 39].

In this study, participants with mental health problems (12.3%) had higher depression and coping skills scores and lower total QOL scores than did participants with no mental health problems. This may be explained by the fact that the outbreak of COVID-19 pandemic may have aggravated relapse or intensified existing mental illnesses among people with mental health problems [40]. This finding stresses the need to provide extra support for people with mental illnesses by facilitating access to mental health services, such as medication home delivery services and telehealth services, in order to prevent severe relapses of mental illness and suicidal behaviors during this pandemic. Moreover, in our study, participants with chronic physical problems (27.2%) were more likely to have higher depression symptoms and coping skills scores and lower total QOL scores as compared to participants with no chronic physical problems. This may be explained by the fact that individuals with health problems may perceive their health to be poor and therefore may be more prone to contracting COVID-19 than healthy individuals [4]. These results are consistent with previous studies which have shown having chronic physical problems [4] and having mental health problems [6, 20, 41] to be associated with increased psychological distress and reduced QOL. In this study, 30.3% of the participants were employed, and being employed was significantly associated with higher levels of depression and coping skills. After becoming required to work from home during the lockdown, many employees faced worries about financial instability, salary reduction, job loss, and others financial issues [20]. Solomou and colleagues [20] found that 48% of adults had significant financial concerns and 66.7% experienced significant changes in their QOL during the COVID-19 lockdown. The evidence indicates that other lockdown stressors, including economic recession and crisis, job loss, unemployment, and poverty, are associated with greater psychological distress and increased suicidal behaviors during the COVID-19 pandemic [13, 14, 15, 16]. There is a need for future studies which investigate other factors that were not assessed in this study and which may impact depression and coping skills, such as income level or socioeconomic status. Previous studies have reported that being a student is associated with higher levels of depression during the COVID-19 pandemic [4, 9, 19, 20], due to the changes in living arrangements and the transition to distance learning that resulted from the closure of colleges and universities [4, 20]. Another recent study conducted on undergraduate students in Jordan revealed that 74.1% of the sample experienced depression symptoms during the COVID-19 lockdown [42]. Meanwhile, our study found that students experienced lower levels of depression than employed, unemployed, or retired participants, which is inconsistent with the aforementioned study potentially due to the use of different measures among different populations and age groups. Our finding may be explained by the fact that students have access to the internet and thus may not be as impacted as employed, unemployed, and retired participants by the lockdown. However, the factor of internet access was not assessed in this study, and further research is therefore needed to examine the associations of internet access and use with psychological status among the general population during the COVID-19 pandemic.

Exploring the coping strategies used by the general population during the COVID-19 pandemic is essential [18]. This current study assessed the coping skills used by a sample of Jordanian adults to cope with the impacts of the COVID-19 outbreak during the lockdown. In line with other

studies, the findings of this study have confirmed that religion plays an integral role in helping people cope with the COVID-19 pandemic [43, 44, 45]. Religion was the most frequently reported coping skill by our study participants. This may be explained by the fact that in Arab cultures, relying on faith in Allah (God) and practicing religious activities such as making supplication to God and praying are common strategies for dealing with affliction. Most of the Jordanian population are Muslim [46]. The Islamic faith is considered a way of life, as it teaches people how to deal with all aspects of their lives, including physical, psychological, social, and spiritual aspects [47]. Further, our study findings showed that Jordanians generally used several coping skills, such as acceptance, planning, and others, to deal with the immediate impacts of the COVID-19 outbreak during the lockdown. Our findings also revealed that the coping skills used by the participants during the lockdown were positively associated with their depression levels. This relationship means that participants who had depression symptoms may have used coping skills in order to cope with their depressive symptoms during the COVID-19 lockdown. This latter statement needs further research to assess the change in coping skills and the effect of using coping skills on depression symptoms. Due to this study being cross-sectional, we were unable to assess the causal relationship between coping skills and depression symptoms during the lockdown among our sample.

Quality of life (QOL) is a common term used in healthcare and is considered an important outcome measure for any disease [48, 49]. Previous studies have indicated that the COVID-19 pandemic has affected people's health-related quality of life [4, 18, 20, 50]. This current study assessed QOL among a sample of Jordanian adults during the COVID-19 lockdown. The total QOL mean score among all of the participants was 73.21 (SD = 16.17), with 40.7% of the participants describing their QOL during the COVID-19 lockdown as being neither poor nor good. This finding may be attributed to the fact that the concept of QOL has multidimensional aspects and broad meanings, which contributes to different perspectives on QOL among individuals [48, 49]. Another possible explanation is that at the time this study was conducted, the outbreak of COVID-19 was not considered as severe as it is now, and the participants were not well-informed about the severity of COVID-19. Our finding is consistent with the findings reported by Zhang and Ma [18] during the COVID-19 lockdown and by Lau et al. [51] during the SARS epidemic. About half of the participants (47.6%) also reported feeling satisfied with their health, which may be explained by the fact that most of the participants were not suffering from any chronic physical or mental health problems. Interestingly, although the participants in this study reported using different coping skills to deal with the COVID-19 pandemic during the lockdown, total QOL score was found to have an insignificant relationship with coping skills score among our sample. This may be explained by the fact that Arab culture is more focused on the family and community's needs than on the individual's needs, and hence, Arab people may prioritize their families and communities' needs over their own [52, 53]. During the lockdown, people in Jordan were restricted from visiting or directly interacting with others outside their households. Thus, at the time this study was conducted, the participants were trying to cope with having to stay at home all day by spending time with and caring for their families rather than interacting with their friends, relatives, and larger communities. Similar findings were reported in a study conducted in China [18].

The present study has some limitations. First, using an online survey and snowball sampling methods may have led to selection bias, as only people who have access to the internet and the study link have a chance to participate in this study. Second, the short period of time allocated to data collection may have affected the sample size. Third, utilizing a cross-sectional design did not provide causal inferences between the study variables. Given the preliminary nature of the current study, there is an urgent need for future studies which aim to provide a more in-depth understanding of the psychological impacts of the COVID-19 pandemic on different populations and representative study samples. For example, there is a need for a qualitative phenomenological study which explores

the unique psychological experiences of Jordanian adults during the COVID-19 pandemic. In addition, there may be other factors not assessed in the present study which may have triggered the participants' depression symptoms and use of coping skills, such as income level, living arrangements, smoking habits, access to the internet, the use of social media, and fear of contracting COVID-19. Future studies which examine these factors and their associations with the psychological status among the general population during the COVID-19 pandemic are highly recommended. We cannot determine whether depression symptoms or the use of coping skills were provoked by the pandemic, as we did not measure the participants' levels of depression, coping skills, or QOL prior to the COVID-19 pandemic and therefore cannot determine if there was an increase or decrease from prior levels. Further, given the cross-sectional nature of this study, our findings need to be verified by future studies which use tools that are more specific to the COVID-19 pandemic and longitudinal designs in order to determine how these levels may change over time among different populations. Despite these limitations, this study informs the current literature with important evidence on the immediate psychological responses of the lockdown implemented in Jordan during the COVID-19 pandemic on a sample of Jordanian adults.

In conclusion, our study established the prevalence of the psychological responses experienced by Jordanian adults during the COVID-19 lockdown and identified the groups of individuals who are at high risk of suffering from these responses. These findings may be used by public health authorities in the development of preventive psychological programs and campaigns targeting at-risk groups. Further, the majority of the participants in this study were students, who may have relied greatly on the internet and social media and smartphone applications during this unprecedented time. Therefore, our findings may be used to guide healthcare leaders and institutions in the development of online education programs aimed at providing psychological support and interventions, as well as up-to-date COVID-19 information, for people, particularly vulnerable groups [4]. As the COVID-19 pandemic continues to spread, our findings can be used to guide further research in aim of better understanding the full psychological impacts of the COVID-19 pandemic on the general population.

Declarations

Author contribution statement

Yasmin Al-Shannaq, Anas A. Mohammad: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Mohammed Aldalaykeh: Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Data will be made available on request.

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The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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