

Psychological impact and mental health effect of COVID-19 among Jordanian population

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Abstract

Background

During public health emergencies, the major efforts of policy makers are directed towards physical and medical consequences, and little is directed towards the psychological impact of these outbreaks.

Aim

To assess the psychological impact and mental health effects of the current pandemic of Corona virus (COVID 19) on the general population in Jordan.

Methodology

A cross-sectional study was conducted using an online survey directed towards the general population in Jordan during the period March 25th to April 2nd, 2020. Mental health effect was measured using the Arabic version of the Depression, Anxiety and Stress Scale (DASS-21), while the psychological impact was measured using questions from the Arabic version of the Impact of Event Scale-Revised (IES-R). Total number of respondents was 1946.

Results

The levels of depression, anxiety and stress as measured by DASS-21 questionnaire showed that 13% had severe depression, 10% had severe anxiety, and 6.3% had severe stress. There was more psychological impact compared with mental health effects on the study population, as more than quarter of the sample (26.7%) reported severe psychological impact (score >38).

Factors associated with higher psychological impact and mental health effects include younger age group, being female, childless, living in the remote areas, being a bachelor's degree student or graduate, having low monthly income and having physical symptoms in the 14 days prior to the study.

Conclusion

Findings of this study can inspire health projects at the national level to better deal with these psychological issues in response to the current or any future health emergencies in Jordan.

Keywords: Psychological impact, Depression, Anxiety, Stress, COVID-19, Jordan.

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1. Introduction

The recent coronavirus is considered the third strain of coronavirus that was found to cause severe respiratory symptoms in humans. Symptoms associated with COVID-19 can range from mild common cold symptoms to severe respiratory illness. They usually appear after a 2-14 days incubation period. They can include, but not limited to, cough, shortness of breath, fever, chills, myalgia, sore throat and new loss of taste or smell. Older adults and people who have severe underlying medical conditions like heart or lung disease or diabetes seem to be at higher risk for developing more serious complications from COVID-19 illness. (1) However we don't know much about the psychological impact of this disease and high-risk groups for these mental health issues.

This outbreak has been announced first in city of Wuhan of Hubei Province of China in late December 2019 when atypical pneumonia cases have been clustered in that city. Soon the disease had a rapid spread inside other cities in China, into neighbouring countries and subsequently globally. It has been declared as pandemic of Corona Virus Disease of 2019 (COVID-19) on March 11, 2020 by the WHO. The word pandemic usually implies excessive fears and psychological trauma to the general population. Anxiety during these stressful life events can have a double sword effect; as moderate levels of anxiety can lead to better vigilance and conformity with the precautionary measures as it was shown by a study performed in Hong Kong and Singapore during a previous SARS outbreak in 2003. (2,3). On the other hand, these fears if exaggerated and persisted for long duration or if not associated with good awareness and knowledge about the disease and the available preventive measures can negatively affect the psychological and consequently the physical

well-being of individuals as it was shown by several studies performed during previous community crisis worldwide and even during the current corona virus outbreak. (4-9) In addition, during these public health emergencies the major efforts of policy makers as well as health care systems are to deal with physical and medical consequences, and little is directed towards the psychological impact of these outbreaks. The authorities in Jordan had a great effort early on to prevent the transmission of the disease as the first COVID-19 patient has been diagnosed in Jordan. Hospital isolation for all confirmed cases was applied in addition to tracing and home isolation of all contact cases. They paused all travels abroad, banned gatherings and imposed a strict curfew at the national level with closure of schools, universities and business on March 20th. This curfew despite being essential from the medical point of view may have negative social and psychological consequences that can augment the consequences of the outbreak itself. This effect was shown by a study conducted among Jordanian population during this pandemic where 40% of participants experienced quarantine-related anxiety. (10)

The aim of this study is to assess the psychological impact and mental health effects of the current pandemic of Corona virus (COVID 19) among general population in Jordan. Finding these effects on the noninfected community is needed in order to understand the full scope of the psychological burden of such disease outbreaks, which can be attributed to the high transmissibility of the virus, fear of death, stigma of contracting the disease or guilt from transmitting the virus to others, (11) in addition to the psychological effects and social consequences of the lockdown itself and its economic burden. Similar studies were undertaken in different parts of the world, yet it is novel in Jordan.

2. Material and Methods

2.1 Study design and sampling

A cross-sectional study was conducted using an online survey (through google forms) that were distributed on social media platforms (Facebook, Whatsapp) during the period March 25th to April 2nd, 2020, in the second week of national lockdown, and almost three weeks after the first COVID-19 case has been declared in Jordan. It was directed towards the general population in Jordan, so any individual who lived in Jordan, had given a consent, and speaks Arabic was eligible to participate in the study. Participants were also asked to share the questionnaire with their relatives and friends, resulting in a snowball sampling technique. Total number of respondents was 1946.

2.2 Questionnaire

The questionnaire was prepared in Arabic language by the authors after reviewing the literature. It started with a brief introduction about the aim and importance of the study followed by questions about sociodemographic variables (age, gender, nationality, residence province, marital status, number of children, academic level, working status and monthly income). Unlike other questions in this section, enquiry about monthly income was optional to answer.

In the next section it enquired about having chronic medical illnesses, physical symptoms or medical service seeking in the prior 14 days. Physical symptoms included fever, dry cough, productive cough, malaise, myalgia and arthralgia, shortness of breath, chills or rigors, sore throat, headache, nausea or vomiting and rhinorrhoea.

There were questions regarding history of recent travel abroad within the 14 days preceding the questionnaire filling, direct or indirect contact history with COVID-19 suspect or confirmed patients, having a diagnosis of COVID-19 or quarantine.

The third section has enquired about knowledge regarding COVID-19 in terms of mode of transmission, incubation period, high-risk groups, complications and mortality rate. In addition, there was a question about the implemented preventive measures.

The final two sections assessed the psychological impact and mental health effects of the current COVID-19 outbreaks. The psychological impact was assessed using the Arabic version of the Impact of Event Scale-Revised (IES-R). The IES-R is a self-administered, 22-item questionnaire based on three clusters of symptoms (intrusion, avoidance, and hyperarousal) identified in the Diagnostic and Statistical Manual of Mental Disorders, third edition (DSM-III), as indicators of posttraumatic stress disorder (PTSD). (12) The total IES-R score was divided into 0–23 (normal), 24–32 (mild psychological impact), 33–36 (moderate psychological impact), and >37 (severe psychological impact). (13)

While the mental health effect was assessed using the Arabic version of the Depression, Anxiety and Stress Scale (DASS-21). The Depression Anxiety Stress Scale (DASS) is a widely used instrument developed by Lovibond and Lovibond (1995b) to measure anxiety, depression, and stress. This self-reported questionnaire has 42 items. Seven items with the highest loadings from each subscale of the original DASS were selected to develop the DASS-21. The depression subscale is characterized by hopelessness, self-deprecation, low positive affect, and devaluation of life; the anxiety subscale is related to physiological hyperstimulation and a subjective consciousness of anxious affect, and the stress subscale is a collection of items such as relaxation difficulties, tension, impatience, irritability, and restlessness. Therefore, the depression, anxiety, and stress subscales have common characteristics, including negative affect,

emotional distress, and changes in physiology in the hypothalamic–pituitary–adrenal axis. (14) The total depression subscale score was divided into normal (0–9), mild depression (10–12), moderate depression (13–20), severe depression (21–27), and extremely severe depression (28–42). The total anxiety subscale score was divided into normal (0–6), mild anxiety (7–9), moderate anxiety (10–14), severe anxiety (15–19), and extremely severe anxiety (20–42). The total stress subscale score was divided into normal (0–10), mild stress (11–18), moderate stress (19–26), severe stress (27–34), and extremely severe stress (35–42). The DASS was previously used in research related to SARS. (15)

2.3 Ethical Approval

Ethics approval was obtained from the Institutional Review Board of the Hashemite University.

2.4 Data Analysis

Data analysis was accomplished using SPSS

v25. One-way ANOVA and univariate analysis t-test with post-hoc LSD, and Independent-samples t-test were performed to compare the psychological impact and mental health effects among different variables.

3. Results

Total number of respondents was 1946, aged 12-74 years (mean age 26 years). Majority of the respondents were females (58%), thirty years old or younger (77%), living in cities (87.7%) in the central province of Jordan (86%), well-educated (75.6% were bachelor's degree students or postgraduates) and had low economic status (71.5 % had monthly income of 1000 JDs or below). More than a quarter had medical field of education (29.7%). Less than a third of the sample were married (28.5%) and almost one quarter had one or more children (25.7%). Almost two-thirds of the sample (65.4%) don't work or are housewives. (Table 1)

Table 1: Sociodemographic predictors of the degree of psychological impact and mental health effects

		No.	%	Impact of Event		Depression		Anxiety		Stress	
				p-value	95% CI	p-value	95% CI	p-value	95% CI	p-value	95% CI
Age category	30 years old or younger (Ref)	1503	77.2								
	30-50 years	378	19.4	0.064	-.0076-.2713	0.000	0.33-0.60	0.000	0.14-0.40	0.000	0.10-0.31
	50 years old or older	65	3.3	0.048	.0032-.6174	0.000	0.50-1.10	0.000	0.27-0.86	0.000	0.30-0.76
Gender	Male	813	41.8	0.000	-.49937-(-.28017)	0.000	-.392-(-0.177)	0.000	-0.489-(-0.284)	0.000	-0.396-(-0.236)
	Female	1133	58.2								
Nationality	Jordanian	1816	93.3	0.253		0.019	-0.476-(-0.043)	0.267		0.389	
	Other	130	6.7								
Province of Residence	North Province (Ref)	207	10.6								
	Middle Province	1677	86.2	0.644		0.455		0.803		0.215	
	South Province	62	3.2	0.934		0.371		0.900		0.946	
Living place	Peripheries (Ref)	15	0.8								
	Village	197	10.1	0.023	.1111-1.5113	0.216		0.027	0.08-1.33	0.205	
	Campus	27	1.4	0.515	-.5704-1.1371	0.344		0.333	-0.38 -1.12	0.300	
	City	1707	87.8	0.017	.1502-1.5061	0.084		0.005	0.26-1.47	0.054	
Marital status	Married (Ref)	555	28.5								

		No.	%	Impact of Event		Depression		Anxiety		Stress	
				p-value	95% CI	p-value	95% CI	p-value	95% CI	p-value	95% CI
	Single	1361	69.9	0.009	-.2944-(-.0430)	0.000	-0.60- (-0.36)	0.000	-0.38 – (-0.14)	0.000	
	Divorced	23	1.2	0.33	-.7613-.2559	0.048	-1.00- 0.00	0.114	-0.89 -0.10	0.565	
	Widow	7	0.4	0.063	-1.7331-.0459	0.168	-1.52- 0.26	0.082	-1.67 - 0.10	0.435	
Number of children	No children (Ref)	1098	56.4								
	1-2	210	10.8	0.445	-1.45-3.3	0.000	1.18-3.6	0.018	0.19-2.03	0.006	0.49-2.95
	3-5	247	12.7	0.023	0.35-4.8	0.000	2.88-5.14	0.000	0.82-2.54	0.000	1.21-3.5
	more than 5	42	2.2	0.346	-2.58-7.35	0.000	2.04-7.10	0.065	-0.11-3.72	0.007	0.98-6.11
Level of Education	Bachelor's degree (Ref)	1471	75.6								
	primary education	17	0.9	0.893	-0.6318 -0.5507	0.959	-0.59 - 0.56	0.867	-0.62 -0.52	0.859	-0.40 -0.48
	secondary education	221	11.4	0.026	0.0244- 0.3741	0.001	0.13-0.47	0.000	0.14-0.48	0.000	0.14-0.40
	college	108	5.5	0.241	-0.3862 -0.0971	0.008	0.09-0.56	0.067	-0.02 -0.45	0.164	-0.05 -0.31
	Master's degree or higher	129	6.6	0.052	-0.0543 -0.3909	0.000	0.18-0.62	0.100	-0.03 -0.39	0.038	0.01-0.34
Field of Education	Medical (Ref)	578	29.7								
	Engineering	373	19.2	0.081	-3.9 - 0.229	0.305		0.729		0.531	
	General sciences	214	11.0	0.120	-4.47 - 0.517	0.252		0.460		0.415	
	Human sciences	285	14.6	0.045	-4.56 – (-0.055)	0.118		0.345		0.302	
	None of the above	496	25.5	0.001	-5.09 – (-1.28)	0.164		0.947		0.233	
Working Status	Does not work (Ref)	1130	58.1								
	Works	673	34.6	0.404	-0.0678 -0.1684	0.000	0.25-0.48	0.006	0.04-0.27	0.000	0.11-0.29
	Housewife	143	7.3	0.055	-0.4257 -0.0048	0.004	0.09-0.51	0.387	-0.12 -0.30	0.282	-0.07 -0.25
Monthly income	<500JD (Ref)	619	31.8								
	500-1000JD	773	39.7	0.023	0.021- 0.2810	0.007	0.05-0.31	0.116	-0.03 -0.23	0.230	-0.04 -0.16
	1000-1500JD	230	11.8	0.023	0.0298 -0.4021	0.010	0.06-0.43	0.011	0.05-0.42	0.036	0.01-0.29
	1500-2000JD	111	5.7	0.000	0.3079- 0.8048	0.010	0.08-0.57	0.025	0.03-0.52	0.170	-0.06 -0.32
	>2000JD	115	5.9	0.000	0.2624- 0.7520	0.041	0.01-0.50	0.025	0.03-0.51	0.100	-0.03 -0.34
Total		1946	100.0								

Seven respondents had been diagnosed with COVID-19, and ninety-six respondents were recognized as high risk for disease acquisition because they came from abroad and therefore have been quarantined by authorities (forty-two) or had a history of direct or indirect contact with confirmed or suspected COVID-19 patients (fifty-four). 131 respondents (6.6%)

reported having chronic medical illnesses.

Three-quarters of the sample had good total knowledge score regarding COVID-19, as they had 15-18 out of 18 correct answers regarding the mode of Coronavirus transmission, prevention modalities, high-risk groups, and mortality rate. Majority of the sample (85%) adhere to at least 7 of 8 preventive measures. (Table 2)

Table 2: Knowledge about COVID-19 and utilization of preventive measures and their association with psychological impact and mental health effects

		No.	%	Impact of Event		Depression		Anxiety		Stress	
				p-value	95% CI	p-value	95% CI	p-value	95% CI	p-value	95% CI
Utilization of preventive measures	Low (Ref)	52	2.7								
	Moderate	239	12.3	0.733		0.142			0.433	0.690	
	High	1654	85.0	0.692		0.030			0.468	0.998	
	Missing	1	0.1								
Total knowledge category	Low (Ref)	26	1.3								
	Moderate	433	22.3	0.020	0.2861-1.2630	0.029	0.06-1.02	0.007	0.18-1.12	0.190	-0.12-0.62
	high	1487	76.4	0.017	0.1046-1.0618	0.019	0.09-1.03	0.007	0.17-1.09	0.178	-0.11-0.61
Total		1946	100.0								

The level of mental health effects as measured by DASS-21 questionnaire was less than the level of psychological impact of COVID-19 as measured by the IES-R score. Regarding the depression subscale; severe or extremely severe depression (score 21-42) was reported by 13% of the sample, 23.2% reported moderate depression (score 13-20) and 19.6% reported mild depression (score 10-12). For the anxiety subscale, almost 10% had severe or extremely severe anxiety (scores 15-42), 18.5% reported moderate anxiety (score 10-14), and 10.6% reported mild anxiety (score 7-9). For the stress subscale, 6.3% were found to have severe or extremely severe stress (score 27-42), moderate stress was reported by 10.8% of the sample (score 19-26) and mild stress was reported by 33.2% of the sample (score 11-18).

The psychological impact of COVID-19 which was measured by the IES-R score showed a mean score of 28.8. Minimal psychological impact (total score <24) was reported by 41% of the sample, 21% reported mild psychological

impact (score 24-33), 10% reported moderate psychological impact (score 33-38) and more than quarter of the sample (26.7%) reported severe psychological impact (score >38). So more than half of the sample (57.7%) had significant psychological impact (score >24)

Factors associated with increased psychological impact (higher IES-R scores) include age younger than 30 years, female gender, living in the peripheries, having a non-medical field of education, having a low knowledge score regarding COVID-19, having a monthly income <500 JD, and having physical symptoms in the last 14 days preceding the study.

Factors associated with higher mental health effects (higher total DASS as well as its subscales) include age younger than 30 years, female gender, being single, being a bachelor degree student or graduate, having no work, and having physical symptoms in the last 14 days preceding the study.

Having a monthly income <500 JDs and

having low knowledge scores regarding COVID-19 were associated with higher depression and anxiety levels.

Non-Jordanian residents had significantly higher levels of depression and total DASS scores (p values 0.007 and 0.033 respectively), while those living in the peripheries had higher anxiety scores compared with those living in villages or cities (p values 0.027 and 0.005 respectively).

Individuals who have consulted a physician for any medical problem in the past 14 days had higher anxiety and stress scores as well as

higher total DASS and IES-R scores (p values 0.001-0.012). However, those who have been admitted to hospital for any reason or quarantined by the authorities because they came from outside Jordan had no significantly increased levels of any of the above scores. Similarly, individuals who have been tested for COVID-19 and individuals who have been diagnosed with COVID-19 had no significantly increased levels of psychological impact or mental health effects. (Table 3)

Table3: Health services utilization and their association with psychological impact and mental health effects

		No.	%	Impact of Event		Depression		Anxiety		Stress	
				P-value	95% CI	P-value	95% CI	P-value	95% CI	P-value	95% CI
Received medical consultation in the past 14 days	No	1784	91.7	0.001	-0.57010-(-0.15330)	0.057	-0.387-0.005	0.002	-0.577-(-0.137)	0.012	-0.344-(-0.043)
	Yes	161	8.3								
	Missing	1	0.1								
Hospitalization in the past 14 days	No	1907	98.0	0.754		0.196		0.154		0.814	
	Yes	38	2.0								
	Missing	1	0.1								
Quarantined in the past 14 days	No	1903	97.8	0.757		0.367		0.898		0.271	
	Yes	42	2.2								
	Missing	1	0.1								
Has been tested for coronavirus in the past 14 days	No	1932	99.3	0.646		0.062		0.075		0.140	
	Yes	13	0.7								
	Missing	1	0.1								
Has been diagnosed with COVID-19 in the past 14 days	No	1938	99.6	0.666		0.2		0.050		0.382	
	Yes	7	0.4								
	Missing	1	0.1								
Total		1946	100.0								

Individuals with COPD had higher anxiety scores (p value 0.016), while having cardiovascular diseases, cancer, CKD or liver

diseases was not associated with increased levels of any of these scores. (Table 4)

Table 4: Chronic medical illnesses and their association with psychological impact and mental health effects.

		No.	%	Impact of Event		Depression		Anxiety		Stress	
				p-value	95% CI	p-value	95% CI	p-value	95% CI	p-value	95% CI
Known to have cancer	No	1941	99.7	0.659	0.511	0.386		0.492	1941	99.7	0.659
	Yes	4	0.2						4	0.2	
	Missing	1	0.1								
Known to have CVD	No	1891	97.2	0.634	0.326	0.37		0.851	1891	97.2	0.634
	Yes	54	2.8						54	2.8	
	Missing	1	0.1								
Known to have DM	No	1901	97.7	0.388	0.074	0.672		0.397	1901	97.7	0.388
	Yes	44	2.3						44	2.3	
	Missing	1	0.1								
Known to have COPD	No	1902	97.7	0.687	0.120	0.016	-1.038- (-0.110)	0.171	1902	97.7	0.687
	Yes	43	2.2						43	2.2	
	Missing	1	0.1								
Known to have chronic kidney or liver disease	No	1933	99.3	0.383	0.944	0.809		0.675	1933	99.3	0.383
	Yes	12	0.6						12	0.6	
	Missing	1	0.1								
Total		1946	100.0								

Individuals who had contact history with confirmed COVID-19 patients or used their objects had no increased levels of any of these scores, neither those with contact history with suspected COVID-19 patients.

There were no statistically significant differences in mental health effects among respondents based on their overall level of utilization of preventive measures taken collectively. However, those who use alcohol-based hand rubs were more likely to have anxiety (p value 0.026) and wearing masks was associated with higher IES-R score (p value

0.017). In contrary, those who avoid touching eyes and nose were less likely to have depression and stress (p values 0.004 and 0.023 respectively) and reported lower total DASS score (p value 0.009). Similarly, those who avoid crowded areas used to have lower IES-R scores (p value 0.014).

Individuals with specific physical symptoms (like cough, sore throat, myalgia, arthralgia, dyspnea, chills, fever) had higher psychological impact as well as depression, anxiety and stress. (Table 5)

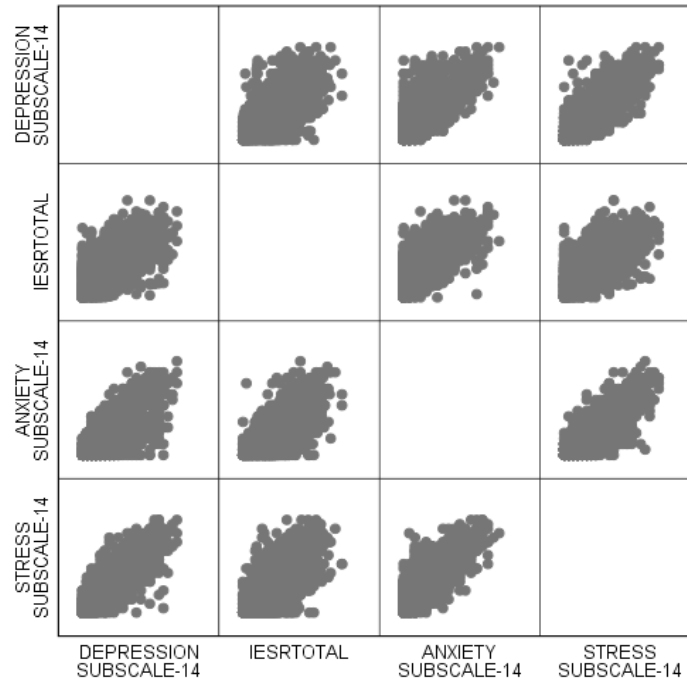
Table 5: Physical symptoms and their association with psychological impact and mental health effects

		No.	%	Impact of Event		Depression		Anxiety		Stress	
				p-value	95% CI	p-value	95% CI	p-value	95% CI	p-value	95% CI
History of travel in the past 14 days	No	1906	97.9	0.987		0.538		0.626		0.161	
	Yes	40	2.1								
	Missing	1	0.1								
History of fever in the past 14 days	No	1819	93.5	0.004	-0.58587- (-0.11623)	0.000	-.686- (-.198)	0.000	-0.991- (-0.467)	0.000	-0.593- (-0.187)
	Yes	126	6.5								
	Missing	1	0.1								
History of dry cough in the past 14 days	No	1767	90.8	0.005	-0.46595 - (-0.08503)	0.000	-0.569- (-0.195)	0.000	-0.91- (-0.482)	0.000	-0.445- (-0.158)
	Yes	178	9.1								
	Missing	1	0.1								
History of fatigue in the past 14 days	No	1518	78.0	0.000	-0.66527- (-0.39676)	0.000	-0.805 - (-0.530)	0.000	-1.015- (-0.730)	0.000	-0.658- (-0.440)
	Yes	427	21.9								
	Missing	1	0.1								
History of productive cough in the past 14 days	No	1544	79.3	0.021	-0.29566- (-0.02397)	0.042	-0.272- (-0.005)	0.000	-0.433- (-0.162)	0.007	-0.242- (-0.038)
	Yes	401	20.6								
	Missing	1	0.1								
History of dyspnea in the past 14 days	No	1710	87.9	0.000	-0.61103- (-0.27565)	0.000	-0.751- (-0.388)	0.000	-1.124- (-0.755)	0.000	-0.643- (-0.352)
	Yes	235	12.1								
	Missing	1	0.1								
History of arthralgias or myalgias in the past 14 days	No	1563	80.3	0.000	-0.56451- (-0.28370)	0.000	-0.518- (-0.236)	0.000	-0.759- (-0.469)	0.000	-0.500- (-0.275)
	Yes	382	19.6								
	Missing	1	0.1								
History of chills or rigors in the past 14 days	No	1714	88.1	0.000	-0.74194- (-0.39289)	0.000	-0.659- (-0.306)	0.000	-1.211- (-0.827)	0.000	-0.642- (-0.348)
	Yes	231	11.9								
	Missing	1	0.1								
History of sore throat in the past 14 days	No	1495	76.8	0.001	-0.34622- (-0.08593)	0.000	-0.365- (-0.110)	0.000	-0.541- (-0.273)	0.000	-0.279- (-0.083)
	Yes	450	23.1								
	Missing	1	0.1								
History of headache in the past 14 days	No	1081	55.5	0.000	-0.37016 - (-0.14903)	0.000	-0.520- (-0.302)	0.000	-0.637- (-0.423)	0.000	-0.453- (-0.286)
	Yes	864	44.4								

		No.	%	Impact of Event		Depression		Anxiety		Stress	
				p-value	95% CI	p-value	95% CI	p-value	95% CI	p-value	95% CI
	Missing	1	0.1								
History of nausea or vomiting in the past 14 days	No	1851	95.1	0.028	-0.54289 - (-0.03032)	0.000	-0.762- (-0.259)	0.000	-1.053- (-0.459)	0.002	-0.496- (-0.110)
	Yes	94	4.8								
	Missing	1	0.1								
History of rhinorrhea in the past 14 days	No	1401	72.0	0.091	-0.22811 – (-0.01692)	0.160	-0.207- (-0.034)	0.000	-0.393- (-0.149)	0.003	-0.234- (-0.050)
	Yes	544	28.0								
	Missing	1	0.1								
Total		1946	100.0								

The psychological impact was significantly related to depression ($r=0.59$, $P<0.001$, $n=1946$), also to anxiety ($r=0.639$, $P<0.001$, $n=1946$) and to stress ($r=0.627$, $P<0.001$, $n=1946$). There was also a significant association between stress and anxiety ($r=0.76$, $p<0.001$, $n=1046$), as well as between stress and depression ($r=0.807$, $p<0.001$,

$n=1946$), and between anxiety and depression ($r=0.692$, $p<0.001$, $n=1946$). These results indicate that as the psychological impact increases, so does the mental health effects. Also, as the stress increases, so does the depression and anxiety. (Graph 1)



Graph 1: The correlation between psychological impact and mental health effects among respondents

4. Discussion

Jordan is an upper middle-income country (16) with a relatively young population (62.9% are younger than 30) that has reached 10.8 million in 2020, according to the Jordanian department of statistics (17)

Significant psychological impact (mild, moderate, or severe) was reported by more than half of the sample, and severe psychological impact was reported by 26.7% of the sample, this is higher than reported by an Indian study performed during this outbreak where one-third of the sample reported significant psychological impact, (18) but lower than what was reported in a Chinese study where almost three quarters (75.5%) had significant psychological impact. (8) Factors that are thought to be protective psychologically among population in Jordan include the constant and continuous availability of educational materials about the disease through mass media, in addition to the daily formal reports about confirmed cases, deaths and the outbreak national situation in general. People in Jordan had much trusted these reports which were clear and transparent. This positive influence was shown even among respondents who have been diagnosed with COVID-19 or have been considered as high-risk individuals, as they have shown no statistical increase in the levels of mental health effects or psychological impact.

There was a lower mental health effect of this outbreak as reported by our sample compared with psychological impact, as 13% reported severe depression, 10% severe anxiety, and only 6.3% reported severe stress. This is similar to the results of the Chinese study, (8) and was logically explained as the IES-R scale is concerned with psychologically traumatic events, the COVID-19 outbreak in this case, while the DASS score doesn't refer to

any specific event. In addition, the medical knowledge about this outbreak is still evolving and every few weeks there is updated information about its mode of transmission, incubation period, complications and other related details leading to enhanced uncertainty and further increasing the psychological impact. (19)

In a study conducted in Jordan during the current pandemic, 38.4% of the sample reported anxiety during the quarantine, (10) which is comparable with our results (39.1% had anxiety). This is higher than baseline anxiety levels reported among Jordanian population (15-25%). (20-22) Baseline depression may be highly prevalent in Jordan; one study suggested a prevalence of depression of greater than 30% in 493 randomly selected female patients presenting to primary health care clinics, (23) yet, it is also lower than what was reported in our study (55.8% had mild, moderate, or severe depression). These differences might be attributed to the pandemic and its consequences.

Although 131 respondents (6.6%) reported having chronic medical illnesses, and therefore were considered as high risk for complications if contracted the disease, only those with COPD (43 individuals) showed higher anxiety scores, and this can be explained by the overlap between the symptoms of both conditions, mainly the presence of cough, so a patient who develops cough can be confused whether this symptom is due to his chronic illness or it is due to other intercurrent illness, most importantly COVID-19.

Individuals with specific physical symptoms (like cough, sore throat, myalgia, arthralgia, dyspnea, chills, fever) had higher psychological impact as well as depression, anxiety and stress. Therefore, people presenting to health care services with physical symptoms should

receive a proper psychological support with clear protocols whether they were proved to be positive for COVID-19 and hence would be hospitalized or negative and planned to be discharged home.

Government and health authorities need to provide accurate health information during the epidemic to reduce the impact of rumors. (24) Majority of the respondents had good knowledge regarding COVID-19, as three-quarters had 15-18 out of 18 correct answers regarding mode of Coronavirus transmission, prevention modalities, high-risk groups, and mortality rate. This can be attributed to the sustained promotion of health education and preventive strategies through mass media in Jordan. Individuals with low knowledge scores reported statistically significant higher levels of psychological impact, depression and anxiety. This result was shown also by other studies during the current and previous epidemics. (8,25). Similarly, respondents with medical field of education reported lower levels of psychological impact, as they are expected to have access to the most accurate and updated information regarding this evolving event. In contrary, this psychologically protective effect of having medical field of education was not shown by a similar Indian study performed during this epidemic. (18)

Adherence to the utilization of preventive measures can be associated with lower psychological impact of communicable diseases, as shown in the Chinese study during the COVID-19 outbreak. (8) In contrary, during the 2003 SARS-CoV epidemic, researchers found that higher uptake of preventive measures by respondents were associated with increased anxiety levels. (2) In our study, the reported utilization of preventive measures was high, as 85% of the respondents reported adherence to at least 7 of 8 effective measures.

Higher utilization of preventive measures, when taken collectively, did not affect the level of psychological impact or mental health effects of the respondents; however, those who use alcohol-base hand rubs were more likely to have anxiety and wearing masks was associated with increased psychological impact among respondents. In contrary, those who avoid touching eyes and nose were less likely to have depression and stress. Similarly, those who avoid crowded areas used to have lower psychological impact. Avoiding crowded areas and avoiding touching one's face or orifices don't need the use of special equipment or products, while using hand sanitizing products or face masks may augment the feeling of the seriousness of the situation among their users, particularly face masks whose use is mentally associated with sick individuals, in addition to the shortage of these products in Jordan in the early period of the outbreak, which can explain the increase in psychological impact.

Our findings have important implications that health authorities can utilize to identify high-risk groups based on sociodemographic information to provide constant support for mental and psychological well-being.

Females were found to have increased psychological impact and higher anxiety, depression and stress scores, the same was found by other studies during this outbreak (8,18), and consistent with a recent review study that confirmed the higher prevalence of depression among females. (26)

Those with low monthly income reported higher levels of psychological impact and mental health effects. This can be related to the economic consequences of the lockdown, with the uncertainty about its duration and hence for how long they can adapt to their vulnerable economic situation. This issue was shown by a later study

conducted in Jordan in April 2020 where more than a half (58.6%) of respondents who were employed before the crisis indicated to have lost their entire income, 17.1% reported their income was “much lower”, 9.4% reported a “slightly lower” income, leaving only 11.3% reporting that their income had been unaffected by the crisis. (27) The World Bank estimated the Jordanian economy to have contracted by 1.6% in 2020, with unemployment rising to 24.7% in the fourth quarter of 2020 and youth unemployment rates reaching an unprecedented 50%.(16)

Also, young respondents were shown to have higher psychological impact and mental health effects, this can be explained in part by the high probability that they are still students (which is a limitation in our study that no question indicated whether he is still student, but there is an indirect indicator that high percentage of them are still students, as almost half of the sample are 22 years old or younger (48.3%), and the majority of them (84.5%) reported their level of education as bachelor's degree, so they are definitely still undergraduates as in Jordan university attendance begins after the age of 18 and it takes a minimum 4 years to attain the bachelor degree), so they could have concerns regarding their academic achievements, and the online teaching that was implemented by Jordanian schools and universities short after the announcement of the lockdown, an issue that they were not used to be exposed to previously. Online teaching itself can have its psychological consequences as the student is supposed to bear more responsibilities regarding time management and the burden of more homework, in addition to the variations in their technical and psychological readiness to interact with their teachers online. Not all students are equipped with high-quality computers or smartphones to accommodate to the burden of online teaching, also more than 10 percent of

Jordanians cannot afford the high cost of internet access, mainly in rural areas according to the latest survey conducted by the Department of Statistics in 2017, which can be also a contributing issue to the higher psychological impact and negative mental health effects among respondents living in the peripheries.

Limitations in our study include adopting the snowballing sampling strategy, with no random selection of the sample. Second, since it has been conducted online this decreased the participation from individuals in peripheries and rural areas, elderly and others who may not have a good internet connection or find it difficult to deal with technology or fill questionnaires by themselves. On the other hand, young, educated and single population that live in cities of the central province of Jordan represented the majority of the respondents further compromising the generalizability of our findings.

5. Conclusion

Our study provides important findings regarding the psychological impact and mental health situation among the population in Jordan during the initial phase of COVID-19 outbreak; as around half of the sample had depression, stress and significant psychological impact, and one in four had anxiety.

These findings have important implications that health authorities can utilize to identify high-risk groups based on sociodemographic information to provide constant support for mental and psychological well-being. Factors associated with higher psychological impact and mental health effects include younger age group, being female, childless, living in remote areas, being a bachelor's degree student or graduate, having low monthly income and having physical symptoms.

This study can form the base for a coming prospective study on the same group of participants, as we have collected emails from

respondents who were willing to participate in future research, this can provide a piece of concrete evidence to enhance the need for a

specific and targeted mental and psychological health initiatives.

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تأثير الكوفيد-19 على الصحة النفسية والعقلية لعموم سكان في الأردن

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الملخص

الخلفية

خلال حالات الطوارئ الصحية العامة، يتم توجيه الجهود الرئيسة لواضعي السياسات نحو العواقب الجسدية والطبية، ولا يتم توجيه سوى القليل نحو التأثير النفسي لتلك للأمراض المتفشية.

الهدف

دراسة تأثير وباء فيروس كورونا المستجد (كوفيد-19) على الصحة النفسية والعقلية لعموم السكان في الأردن.

المنهجية

تم إجراء دراسة مقطعية باستخدام استبيان إلكتروني موجه إلى عامة السكان في الأردن خلال الفترة من (25) مارس إلى (2) أبريل (2020). تم قياس التأثير النفسي باستخدام النسخة العربية من مقياس الاكتئاب والقلق والتوتر (DASS-21)، بينما تم قياس التأثير على الصحة العقلية باستخدام أسئلة من النسخة العربية من تأثير مقياس الأحداث المُنفَج (IES-R)، وكان إجمالي عدد المستجيبين (1946).

النتائج

أظهرت مستويات الاكتئاب والقلق والتوتر -مثلما تم قياسها بواسطة استبيان (DASS-21)- أن (13%) يعانون من اكتئاب حاد، وأن (10%) لديهم قلق شديد، وأن (6.3%) يعانون من إجهاد شديد. وكان التأثير النفسي أكبر مقارنة بتأثيرات الصحة العقلية على مجتمع الدراسة؛ حيث أظهر أكثر من ربع العينة (26.7%) تأثيراً نفسياً شديداً (الدرجة > 38). إضافة إلى ذلك، تم ملاحظة أن العوامل المرتبطة بارتفاع التأثير النفسي، وتأثيرات الصحة العقلية، هي: الفئة العمرية الأصغر، فئة الإناث، عدم وجود أطفال، السكن في المناطق النائية، أن يكون طالباً أو خريجاً درجة البكالوريوس، ذوي الدخل الشهري المنخفض، إضافة إلى ظهور أعراض جسدية في الأيام الأربعة عشر السابقة للدراسة.

استنتاج

يمكن لنتائج هذه الدراسة أن تلهم المشاريع الصحية على المستوى الوطني للتعامل بشكل أفضل مع هذه القضايا النفسية استجابةً لحالات الطوارئ الصحية الحالية، أو المستقبلية في الأردن.

الكلمات الدالة: التأثير النفسي، الاكتئاب، القلق، الإجهاد، (كوفيد-19)، الأردن.