

Psychological Effects on Healthcare Workers in Syria During COVID-19

MHD Bahaa Aldin Alhaffar (✉ bhaa.alhafar@gmail.com)

Damascus University <https://orcid.org/0000-0002-9147-189X>

MHD Alaa Aldin Alhaffar

Damascus University

Chaza Kouchaji

Damascus University

Tamim Alsuliman

Sorbonne Universite

Research

Keywords: COVID-19, Syrian crisis, Psychological Distress, Anxiety, Sleep quality

Posted Date: March 3rd, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-260487/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

Abstract

Introduction:

Since the declaration of COVID-19 as a global pandemic, there has been a dramatic increase in the number of infected cases. Thus, the number of hospital admissions has peaked during a short period, which in return has created a huge burden on healthcare workers. The effect of this pandemic on HCWs can be more severe in war-torn countries. This research aims to explore the psychological effects of the current pandemic on healthcare providers in Syria and compare it with the situation of Syrian HCP outside Syria.

Materials and methods:

660 has participated in this cross-sectional study using an online questionnaire during two phases (two months apart). The first sample included 76 participants which were used for comparison only, and the second sample consisted of 584 participants (118 outside Syria, 466 inside Syria). The study included demographic, social, and workplace-related questions, as well as three scoring systems including The Pittsburgh, Sleep quality index (PSQI), Kessler Psychological Distress Scale (K10), and Generalized Anxiety Disorder (GAD 7).

Results:

72.4% of the first sample had poor sleep quality compared to 80% for the second sample, while over 40% of the first sample had scored well on the Kessler scale and 17% scored severe stress disorder, the second sample scored 29.8% and 27.9% on the same index retrospectively. Over 70% of the two samples scored mild on the generalized stress disorder index.

Both inside and outside Syria samples had very similar results on the three indices, and no significant difference was noticed between the sample inside Syria and the sample outside Syria for the Pittsburgh Sleep Quality Index ($P=0.900$), and for the Generalized Anxiety Disorder score ($P=0.798$), and no significant difference was noticed between the two samples for the Kessler Psychological Distress Scale ($P=0.231$).

Conclusion:

The current pandemic has imposed new concerns related to the preparedness of health systems worldwide but especially in countries with limited resources. Additionally, addressing mental health issues has become vital to ensure that healthcare systems are more effective.

Regions of low income and those suffering from armed conflict may benefit from the conclusions of this study to ameliorate the medical practice conditions in the setting of such pandemics as COVID-19.

Introduction

Since the announcement of coronavirus disease 2019 (COVID-19) as a global pandemic by the world health organization (WHO) on March 12th, 2020 (1), this dramatic and sudden increase has created a remarkable burden on health care facilities and health care workers (HCWs) from all specialties. HCWs were, sometimes, facing moral dilemmas when making decisions regarding patients admitted to medical facilities (2).

There have been reports from different countries about symptoms related to anxiety and depression related to the current pandemic, health care workers were among those at higher risk of such symptoms (3).

Few studies have been conducted to evaluate the psychological effects of the pandemics on workers in health care fields (2). This is particularly important when there is an increase in workload and stress related to the probability of infection (2), not to mention the lack of proper personal protection equipment (PPE) and the shortage in medical supplies that stroke almost all heavily damaged areas (4, 5).

The health care system in war-torn Syria is facing two main challenges. On one hand, the health issues related to the long-lasting conflict since 2011 (6), while on the other hand the current pandemic which created an additional burden on both the community, due to the quarantine measurements, and healthcare system due to the significant reduction of available resources and functional facilities(7, 8).

The situation in Syria can be considered as complicated, compared to other countries. Long-lasting conflict and economic collapse are among additional factors that affect efforts against the pandemic(9).

During the Syrian crisis, some researchers have tried to explore post-traumatic stress disorder (PTSD) illnesses or psychological support (10).

Despite the high risk of infection, health care workers are on the front line during the pandemic(11, 12), therefore, it is important to study the Psychological Effects on Healthcare Workers in a war-torn country. This study focuses on three main aspects related to mental health among HCWs in Syria during the current pandemic. Generalized anxiety disorder, sleep quality, and psychological distress, and compare it with the situation of Syrian HCP outside Syria.

Materials And Methods

Ethical approval:

Ethical approvals have been obtained from the higher committee for research at Damascus university.

Study Participants:

The study included 660 participants in two phases (phase one N=76, Phase two= 584). Participants were included in the study if they stated that they were health care workers, e.g nurses, medical doctors, medical residents, dentists, pharmacists, or laboratory doctors.

Participants were excluded from the study if they were medical students, don't work in the medical field. All study participants agreed to be a part of the study. Informed consent was collected from every participant on the first electronic page of the questionnaire.

A rigorous policy of full participation willingness was adopted, withdrawal from the study was accepted in any phase. Withdrawn individual questionnaires were excluded from the study immediately, as described before. (13)

Study Design:

This study is a cross-sectional observational study. It was conducted using online surveys (based on Google Forms) due to the restrictions which made it very difficult to conduct face-to-face data collection, the survey was published on social media platforms. The survey included demographical, social, and workplace-related information. Validated clinical questionnaires and scoring systems were used to evaluate levels of anxiety, sleep quality, and psychological distress. (14-16)

This study has two phases: the first questionnaire was published on February 14th, 2020, and the data collection was done in 1 week period, thus, before the announcement of the first COVID-19 case in Syria. 76 people participated in this phase and this group was used as a baseline comparison group.

The questionnaire was published again, in a second phase, on April 14th, 2020, thus two months after the first phase, and after the announcement of the first case of COVID-19 in Syria. In this phase, 584 HCWs participated in this survey.

The surveys were published on social media platforms known to contain or be followed by a large number of Syrian HCWs and groups that included them. It may also be referred to and disseminated by health care workers themselves. No identifying

information of participants was included in any of the surveys.

Demographic, social, and workplace-related information:

Demographic and social data collected from participants included age, location, marital status, profession, and department.

Work-related information was an evaluation of the work environment including direct or indirect interaction with COVID-19 patients, the psychological effect of interacting with a COVID-19 patient on the participant, the preparedness of the workplace to cut transmission chain of infection, providing the basic needs of the participant, daily work hours, and ability to diagnose and manage a COVID-19 patient.

The evaluation of providing the basic needs of the participant was based on a scale from 0 to 10 where 10 represented (excellent) and 0 represented (very bad). Whereas the evaluation of the preparedness of the workplace to prevent the transmission of infection was a yes/no question.

The Pittsburgh Sleep Quality Index (PSQI) (15):

The PSQI survey is used to evaluate the quality of sleep among older adults. It determines the quality of sleep by measuring seven aspects: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction over the last month. Each aspect is given a score between 0 and 3, so the total score will be ranging between 0 and 21. The higher the score, the lower the sleep quality (15).

Kessler Psychological Distress Scale (K10) (16):

The (k10) survey is used to evaluate distress based on questions related to symptoms of anxiety and depression that a person has suffered from during the last month. The survey consists of 10 questions, each question has five choices related to the frequency of a symptom, ranging from "none of the time" to "all the time". Scores will range from 10 to 50. The higher the score, the more likely it that the individual has a mental disorder (16).

GAD-7 (Generalized Anxiety Disorder-7) (14):

The GAD-7 questionnaire is used as a quick screening tool to detect the presence of a clinically significant anxiety disorder, especially in outpatient settings. The questionnaire consists of 7 questions related to anxiety each has a set of 4 answers related to the frequency of each symptom ranging from "not at all" to "nearly every day". A higher score means that the symptoms are increasing in severity. Scores above 10 require further assessment including diagnostic interviews and the examination of mental status (14).

Results

The data collection for the research was on two stages, the first stage collected data from medical staff before the announcement of any COVID-19 related cases in Syria, therefore, it can best describe the normal status of the Syrian medical staff, several questionnaires collected was (91), and 15 participants were excluded because they were not from medical staff, and the final number for the first sample was 76.

The second stage collected data after two months of the first phase, which can best describe the status of medical staff during the pandemic, 619 questionnaires were collected, and 35 were excluded, therefore, the final sample size was 584 participants. **(participant flow chart).**

The first sample consisted of 76 participants, (59.2%) of them had the age between 24-32, over 50% had direct contact with COVID-19 patients, and 36.6% of the sample were not sure about the diagnosis of COVID-19, moreover, 52.6% found that their workplace did not provide them with equipment to protect you from getting infected with COVID-19 (**Table N.1**).

Table N.1							
demographic variables for the research sample							
Variables		1st sample		Variables		1st sample	
		Count	N %			Count	N %
Age	less than 24	25	32.9%	Working hours (daily)	4-6	53	69.7%
	24-32	45	59.2%		6-8	11	14.5%
	33-40	3	3.9%		8-10	6	7.9%
	41-50	1	1.3%		10-12	6	7.9%
	more than 50	2	2.6%		Q1	yes	47
Social status	Single	59	77.6%		no	14	18.4%
	Married	16	21.1%		maybe	15	19.7%
	Other	1	1.3%	Q2	yes	46	60.5%
Direct or indirect contact with COVID-19 patients	yes	38	50.0%		no	17	22.4%
	no	11	14.5%		maybe	13	17.1%
	maybe	27	35.5%	Q3	yes	36	47.4%
Source of information about the pandemic	official sites	32	42.1%		no	40	52.6%
	social media	7	9.2%	Q4	yes	43	56.6%
	online courses	36	47.4%		no	33	43.4%
	From workplace	0	0.0%	Q5	yes	48	63.2%
	No information	1	1.3%		no	28	36.8%
Q1: stressful after WHO announced that COVID-19 is a global pandemic.							
Q2: Do you think that the announcement of COVID-19 cases has affected you psychologically.							
Q3: Does your workplace provide equipment to protect you from getting infected with COVID-19?							
Q4: Has your workplace made effective measures to guarantee sufficient distancing among people in the premises.							
Q5: Do you think you can diagnose/ manage COVID-19 patients according to tasks directed to you.							

The second sample consisted of 584 participants, 118 were Syrian medical staff working outside Syria, and 466 were working inside Syria. **Table N.2** represent the demographical data along for the second sample according to their workplace (inside, outside Syria), the main difference between the two groups was in working hours, (15.9%) of the medical staff inside Syria worked 10-12 hours daily, whereas only (5.1%) of the medical staff outside Syria worked 10-12 hours. Moreover, (43.3%) of the participant from inside Syria found that their workplace did not provide them with equipment to protect you from getting infected with COVID-19 comparing to (39.8%) from outside Syria. **Graph N.1** shows the occupation for the sample.

Table N.2

demographic variables for the research sample

Variables		inside Syria		outside Syria		Variables		inside Syria		outside Syria	
		Count	N %	Count	%			Count	N %	Count	N %
Age	less than 24	114	24.5%	14	11.9%	Working hours (daily)	4-6	211	45.3%	70	59.3%
	24-32	255	54.7%	60	50.8%		6-8	128	27.5%	31	26.3%
	33-40	57	12.2%	28	23.7%		8-10	53	11.4%	11	9.3%
	41-50	27	5.8%	7	5.9%		10-12	74	15.9%	6	5.1%
	more than 50	13	2.8%	9	7.6%	Q1	yes	269	57.7%	68	57.6%
Social status	Single	285	61.2%	89	75.4%		no	114	24.5%	24	20.3%
	Married	163	35.0%	21	17.8%		maybe	83	17.8%	26	22.0%
	Other	18	3.9%	8	6.8%	Q2	yes	259	55.6%	65	55.1%
Direct or indirect contact with COVID-19 patients	yes	191	41.0%	42	35.6%		no	107	23.0%	29	24.6%
	no	107	23.0%	33	28.0%		maybe	100	21.5%	24	20.3%
	maybe	168	36.1%	43	36.4%	Q3	yes	264	56.7%	71	60.2%
Source of information about the pandemic	official sites	234	50.2%	59	50.0%		no	202	43.3%	47	39.8%
	social media	79	17.0%	27	22.9%	Q4	yes	244	52.4%	68	57.6%
	online courses	84	18.0%	21	17.8%		no	222	47.6%	50	42.4%
	From workplace	63	13.5%	11	9.3%	Q5	yes	274	58.8%	60	50.8%
	No information	6	1.3%	0	0.0%		no	192	41.2%	58	49.2%

Q1: stressful after WHO announced that COVID-19 is a global pandemic.

Q2: Do you think that the announcement of cases in Syria has affected you psychologically.

Q3: Does your workplace provide equipment to protect you from getting infected with COVID-19?

Q4: Has your workplace made effective measures to guarantee sufficient distancing among people in the premises.

Q5: Do you think you can diagnose/ manage COVID-19 patients according to tasks directed to you.

72.4% of the first sample had poor sleep quality compared to 80% for the second sample, while over 40% of the first sample had scored well on the Kessler scale and 17% scored severe stress disorder, the second sample scored 29.8% and 27.9% on the same index respectively. Over 70% of the two samples scored mild on the generalized stress disorder index. **(Table N.3)**

Table N.3									
comparing between the outside and inside samples.									
		First sample*			Second sample**			Statistical test	
		Mean	SD	SE	Mean	SD	SE	P-value***	significant
Pittsburgh Sleep Quality Index		7.49	.43	3.75	7.65	.13	3.19	0.583	No significant difference
The Pittsburgh Sleep Quality Index score	normal	Counts and percentage	21	27.6%	Counts and percentage	117	20.0%		
	poor		55	72.4%		467	80.0%		
Kessler Psychological Distress		22.74	.95	8.31	24.66	.34	8.24	0.032	significant difference
Kessler Psychological Distress Scale	well	Counts and percentage	31	40.8%	Counts and percentage	174	29.8%		
	mild		18	23.7%		129	22.1%		
	moderate		14	18.4%		118	20.2%		
	severe		13	17.1%		163	27.9%		
Generalized Anxiety Disorder		6.79	.64	5.54	7.23	.21	5.00	0.264	No significant difference
Generalized Anxiety Disorder score	mild	Counts and percentage	54	71.1%	Counts and percentage	412	70.5%		
	moderate		14	18.4%		106	18.2%		
	severe		8	10.5%		66	11.3%		

* 1st sample: first stage of data collecting

** 2nd sample: second stage of data collecting

*** significant at P< 0.05.

No significant difference was noticed between the first and the second samples for the Pittsburgh Sleep Quality Index (P=0.583), and for the Generalized Anxiety Disorder score (P=0.264). on the other hand, a significant difference was noticed between the two samples for the Kessler Psychological Distress Scale (P=0.032). (Table N.3)

Both inside and outside Syria samples had very similar results on the three indices, and no significant difference was noticed between the sample inside Syria and the sample outside Syria for the Pittsburgh Sleep Quality Index (P=0.900), and for the Generalized Anxiety Disorder score (P=0.798), and no significant difference was noticed between the two samples for the Kessler Psychological Distress Scale (P=0.231). (Table N.4)

Table N.4									
comparing between the outside and inside samples.									
		2 nd sample						Statistical test	
		inside Syria			Outside Syria				
		Mean	SD	SE	Mean	SD	SE	P-value*	significant
Pittsburgh Sleep Quality Index		7.61	3.18	.15	7.77	3.25	.30	0.900	No significant difference
The Pittsburgh Sleep Quality Index score	normal	Counts and percentage	95	20.4%	Counts and percentage	22	18.6%		
	poor		371	79.6%		96	81.4%		
Kessler Psychological Distress		24.61	8.16	.38	24.85	8.60	.79	0.798	No significant difference
Kessler Psychological Distress Scale	well	Counts and percentage	134	28.8%	Counts and percentage	40	33.9%		
	mild		111	23.8%		18	15.3%		
	moderate		95	20.4%		23	19.5%		
	severe		126	27.0%		37	31.4%		
Generalized Anxiety Disorder		7.11	4.98	0.23	7.69	5.10	0.47	0.231	No significant difference
Generalized Anxiety Disorder score	mild	Counts and percentage	335	71.9%	Counts and percentage	77	65.3%		
	moderate		78	16.7%		28	23.7%		
	severe		53	11.4%		13	11.0%		

* significant at P< 0.05.

Univariate analysis was done for the different variables and the three indices for the second sample, **Table N.5** represents the results of the statistical test, statistically significant was found between age and Sleep Quality Index (P=0.020), and also GAD index had a significant relation with the announcement of COVID-19 cases in Syria (0.000). finally, both the Sleep Quality Index and Kessler Psychological Distress index had a significant relation with the equipment provided from the workplace to protect the staff from COVID-19 patients (0.039, 0.012 retrospectively).

Table N.5			
univariate analysis to test the effect of different variables on the research indices			
variables	Sleep Quality Index	Kessler Psychological Distress	Generalized Anxiety Disorder
Age	0.020*	.904	.369
Location*	0.951	.618	.438
Social status	0.355	.070	.495
Specialty	0.616	.474	.939
Contact with patients	.862	.202	.827
Q1	.177	.079	.000*
Q2	.039*	.012*	.522
Working hours	.150	.298	.300
* inside or outside Syria			
Q1: Do you think that the announcement of cases in Syria has affected you psychologically.			
Q2: Does your workplace provide equipment to protect you from getting infected with COVID-19?			

Spearman's correlation test was done to test if there is a significant correlation between the three indices, only one significant positive correlation was noticed between Kessler index and GAD index (correlation coefficient = 0.681, P-value = 0.000), a scatterplot represents the correlation between the two indices (**Graph N.2**).

Discussion

The relationship between the mental health of physicians and the quality of medical services has been highlighted (17). This has been directly connected to the prevalence of burnout syndrome and work-related stress (17). In a previous study among medical residents in Syria which is a war-torn County, there has been a significant prevalence of burnout due to the collapsed medical system and high workload (18). Thus, it is vitally important to focus on the mental and physical well-being of HCWs in any environment but more critically in fragile or hostile settings.

The Syrian healthcare system was ravaged by war. Causing the lack of preparedness and protection for the workers. In addition to the lack of diagnostic tools and the lack of availability of equipment. According to a report by the London School of Economics regarding Syria's response and healthcare capacity, the maximum number of COVID-19 cases that the Syrian healthcare system can properly treat is around 6500 patients (19). Thus, there has been a notable difference in terms of psychological distress between healthcare providers inside and outside Syria.

Many high-income countries are facing problems in providing adequate instruments and preparation of staff. This can easily predict the devastating results that many low- and middle-income countries will face during the pandemic (20). In war-torn countries with a fragile health system and very limited human resources, the problem will be more evident.

The results of our study would give an assumption on the situation in other low- and middle-income countries (21).

Most low- and middle-income countries suffer from the same shortages. for example, shortage of diagnostic and protective tools, intensive care unit beds, oxygen supply, infusion pumps, and mechanical ventilators. (22) These countries typically have overpopulated capitals and urban centers with a mediocre public transport system where social distancing becomes almost impossible. Also, due to the deteriorated economic status, morbidity rates in these countries are higher, thus, hospitals are already suffering affected turnover rate. This in return leads to a lack of capacity to receive new cases, especially during

pandemics when a significant number of cases are admitted to hospitals in a short period. All those reasons contribute to the accumulation of a heavy workload on HCWs in these countries (20)

Generalized anxiety disorder (GAD) had a significant relationship with the first announcement of COVID-19 cases in Syria. During the period between the declaration of the pandemic by the WHO and the diagnosis of the first case of COVID-19, there was a considerable amount of uncertainty and confusion about the ability of the healthcare system and the availability of equipment, especially that many facilities went out of service due to the armed conflict (23). It was still unclear whether the healthcare system was ready to manage COVID-19 and absorb the impact of the first wave of cases (7).

There were no adequate official statements regarding the plan or preparedness. It was a time where misinformation and fake news took control.

Some media made things may be worse, as it split very acutely, where different media tools were racing to spread news which made people even more confused, lost, and misinformed.

The panic wave stroke health care workers the most, since they were the first-line responders and had no clear idea of the capabilities of the health system. It was not clear what was the plan, after the announcement of the first case of COVID-19 in Syria, there was even more confusion and panic. A new wave of misinformation strokes the Syrian Society again. Some organizations expected a widespread of cases in Syria like many other countries and with the poor health system preparedness, the pressure was increasing on the medical staff (24), and it was decided that medical staff will have more continuous working hours. For that reason, it may be noted that the psychological distress and sleep quality index had a close relationship with the availability of equipment, as shown in results.

There was no difference in results between HCWs from inside and outside Syria concerning the rest of the measures. This could be because the sample size for professionals from outside Syria was not sufficient to reflect a statistically significant difference since there were only 118 participants, compared to 466 from inside Syria.

It may also be explained by the fact that approximately 5 million Syrian refugees fled to Lebanon, Turkey, Jordan, and other nearby countries (25). Therefore, staff members who answered the survey from outside Syria, are most likely to be in a nearby country, thus a country that is not significantly better in preparedness and equipment.

Another reason could be the relatively low number of confirmed cases in Syria compared to other countries with a higher number of cases. Nonetheless, the psychological effect was not different leading to the conclusion that the healthcare system and thus the healthcare workers are already emotionally exhausted due to the heavy burden during the ongoing war. Therefore, Syrian healthcare professionals have already the same psychological issues that other healthcare professionals in countries with many more cases have reached (19).

It is noted from the results that the outcomes of the first and second samples had no statistically significant differences in both PSQI and GAD scores. This can be explained by the fact that HCWs are already burned out due to the ongoing conflict since 2011. In addition to the possible significant effect of the further deterioration of social and economic status which was significant during the conflict but became worse during the lockdown (24).

This study has some limitations, the study design which is a cross-sectional study can predict a correlation between the variables but not causality, using three different scales. We opted for this to explore, in-depth, all possible mental well-being aspects. Having no timer may be considered a challenge. This was extensively discussed, thus, the mediocrity of internet connection in some areas forced avoiding such tools. Being an online-based questionnaire had may be provided high reachability. It may also be more adequately used in social distancing circumstances. However, within those limitations, this research can reflect the challenges of working as a healthcare provider in a war-torn country.

Conclusions

Within the limitation of this study, the results can give an overview of the current situation of the medical staff and HCP working in the Syrian health system.

The high workload was noticeable among the participants both during the first phase of the research and the second phase, the current pandemic further raised the psychological pressure on the healthcare providers working in the Syrian health system, and that was clear by the significant difference in Kessler Psychological Distress scale between the first and the second sample participated in the research. Moreover, higher results of anxiety were accompanied by higher levels of psychological disorder.

The results of this research can play a major role in any plan to provide psychological support for the Syrian healthcare providers.

Declarations

Acknowledgments:

The authors of this research would like to dedicate this work to the lives of the Syrian doctors and healthcare providers who died while faithfully performing their work despite the lack of protective equipment and governmental support. Also, the authors would like to thank all health workers in Syria, who are facing great danger for working in a very difficult situation in a war-torn country.

Ethics approval and consent to participate:

Approved on 05/02/2020, Ethical Committee Damascus University (Damascus University, Damascus, Syria; +963 113341864; manager@hcsr.gov.sy),

Consent for publication:

Not applicable

Availability of data and materials:

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests

Funding:

No sources of funding.

Authors contribution:

MBA: analyzed the data, wrote the results section, finalized the research.

MAA: designed the research, collected the data, wrote the manuscript, finalized the manuscript.

TS: helped writing the research manuscript.

CK: supervised the research, finalized the manuscript.

References

1. Li H, Liu SM, Yu XH, Tang SL, Tang CK. Coronavirus disease 2019 (COVID-19): current status and future perspectives. *Int J Antimicrob Agents*. 2020;55(5):105951.
2. Xiao H, Zhang Y, Kong D, Li S, Yang N. The Effects of Social Support on Sleep Quality of Medical Staff Treating Patients with Coronavirus Disease 2019 (COVID-19) in January and February 2020 in China. *Med Sci Monit*. 2020;26:e923549.
3. Greenberg N, Docherty M, Gnanapragasam S, Wessely S. Managing mental health challenges faced by healthcare workers during covid-19 pandemic. *BMJ*. 2020;368:m1211.
4. Rowan NJ, Laffey JG. Challenges and solutions for addressing critical shortage of supply chain for personal and protective equipment (PPE) arising from Coronavirus disease (COVID19) pandemic - Case study from the Republic of Ireland. *Sci Total Environ*. 2020;725:138532.
5. Ali Y, Alradhawi M, Shubber N, Abbas AR. Personal protective equipment in the response to the SARS-CoV-2 outbreak - A letter to the editor on "World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19)" (*Int J Surg* 2020; 76:71-6). *Int J Surg*. 2020;78:66-7.
6. Alhaffar BA, Alawabdi R, Barakat L, Kouchaji C. Oral health and socio-economic status among children during Syrian crisis: a cross-sectional study. *BMC Oral Health*. 2019;19(1):165.
7. Abbara A, Rayes D, Fahham O, Alhiraki OA, Khalil M, Alomar A, et al. Coronavirus 2019 and health systems affected by protracted conflict: The case of Syria. *Int J Infect Dis*. 2020;96:192-5.
8. Ekzayez A, Al-Khalil M, Jasiem M, Al Saleh R, Alzoubi Z, Meagher K, et al. COVID-19 response in northwest Syria: innovation and community engagement in a complex conflict. *J Public Health (Oxf)*. 2020.
9. McIntyre J. Syrian Civil War: a systematic review of trauma casualty epidemiology. *BMJ Mil Health*. 2020.
10. Jefee-Bahloul H, Barkil-Oteo A, Pless-Mulloli T, Fouad FM. Mental health in the Syrian crisis: beyond immediate relief. *Lancet*. 2015;386(10003):1531.
11. Alikhani R, Salimi A, Hormati A, Aminnejad R. Mental health advice for frontline healthcare providers caring for patients with COVID-19. *Can J Anaesth*. 2020.
12. Hu X, Huang W. Protecting the psychological well-being of healthcare providers affected by the COVID-19 outbreak: Implications for the psychological rescue work of international community. *Nurs Health Sci*. 2020.
13. Alsuliman T, Alasadi L, Mouki A, Alsaid B. Language of written medical educational materials for non-English speaking populations: an evaluation of a simplified bi-lingual approach. *BMC Med Educ*. 2019;19(1):418.
14. Jordan P, Shedden-Mora MC, Lowe B. Psychometric analysis of the Generalized Anxiety Disorder scale (GAD-7) in primary care using modern item response theory. *PLoS One*. 2017;12(8):e0182162.
15. Buysse DJ, Reynolds CF, 3rd, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Res*. 1989;28(2):193-213.
16. Andrews G, Slade T. Interpreting scores on the Kessler Psychological Distress Scale (K10). *Aust N Z J Public Health*. 2001;25(6):494-7.
17. Jiangjie Sun RS, Yuanyuan Jiang, Xiuyun Chen, Zhi Li, Zuqing Ma, Jiuchang Wei, Chengsen He, Liping Zhang. The relationship between psychological health and social support: Evidence from physicians in China. *Plos one*. 2020.
18. Alhaffar BA, Abbas G, Alhaffar AA. The prevalence of burnout syndrome among resident physicians in Syria. *J Occup Med Toxicol*. 2019;14:31.
19. Mazen Gharibah ZM. COVID-19 Pandemic: Syria's Response and Healthcare Capacity. *Conflict Research Programme, London School of Economics and Political Science*. 2020.
20. Bong CL, Brasher C, Chikumba E, McDougall R, Mellin-Olsen J, Enright A. The COVID-19 Pandemic: Effects on Low and Middle-Income Countries. *Anesth Analg*. 2020.

21. World Bank Country and Lending Groups 2020 [Available from: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups?fbclid=IwAR3iG5QmF7_vcX4tG3XfYWzU7ctc2d-ynTltnb_c9qaKnYAgnB5-ZM3nSG8].
22. Shuchman M. Low- and middle-income countries face up to COVID-19. Nat Med. 2020.
23. Haar RJ RC, Singh S. Determining the scope of attacks on health in four governorates of Syria in 2016: Results of a field surveillance program. PLoS med. 2016;15(4).
24. D'Souza A. Syria Reports First Case of COVID-19, UOSSM Expects Parabolic Jump In Cases: UOSSM; 2020 [Available from: https://reliefweb.int/report/syrian-arab-republic/syria-reports-first-case-covid-19-uossm-expects-parabolic-jump-cases?fbclid=IwAR2sOUYKMZFc1xnAn52s_krGzpKrijMlZR9etEVo9riQt39cL0HKqKJ8Xtqo].
25. Kassem, II. Refugees besieged: The lurking threat of COVID-19 in Syrian war refugee camps. Travel Med Infect Dis. 2020:101736.

Figures

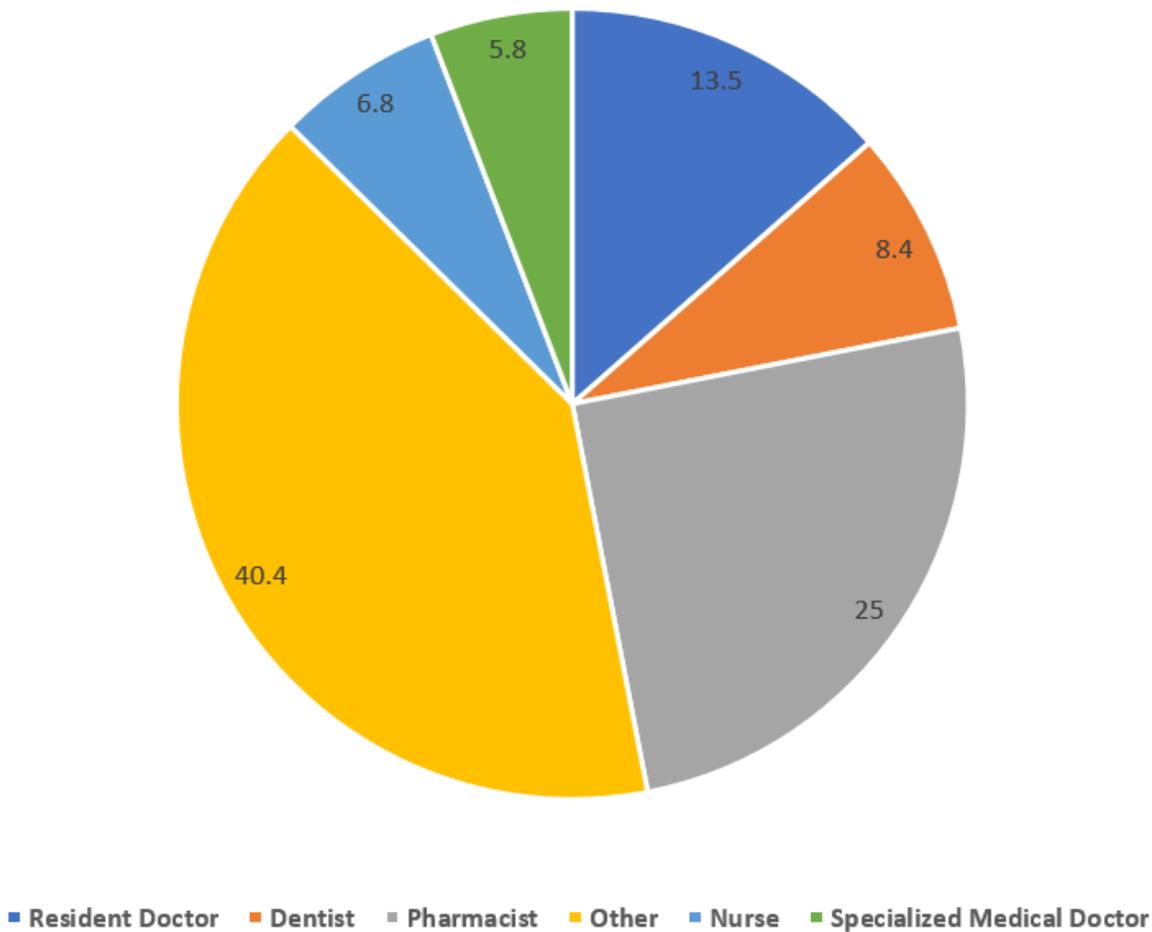


Figure 1

Graph N.1 - Occupation for the 2nd sample.

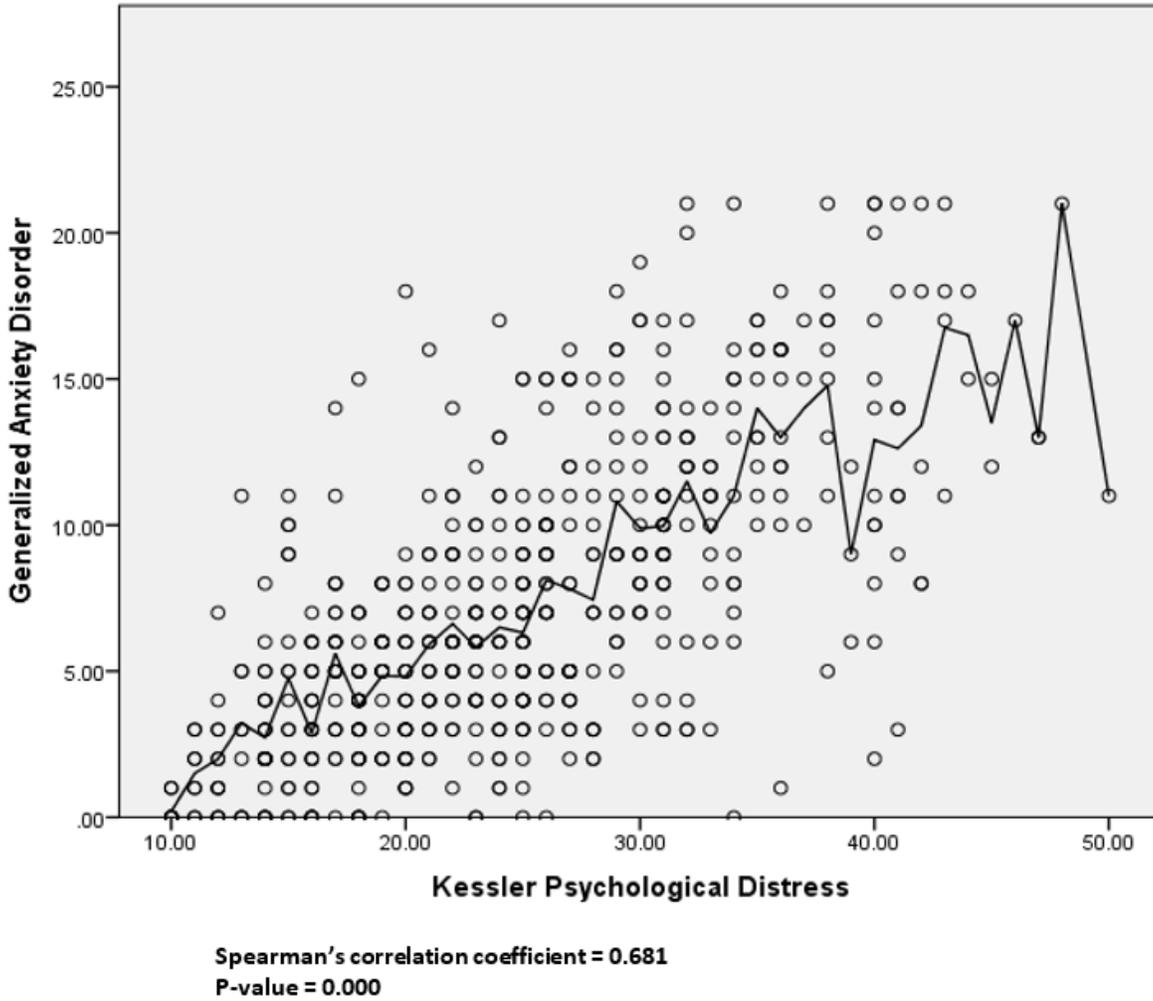


Figure 2

Graph N.2 – scatterplot represents the correlation between Kessler index and GAD index.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [additionalandSupplementary.docx](#)