RESEARCH ARTICLE

Prevalence of Stress Among Health Professionals During COVID-19 Pandemic in The UAE: A Cross-sectional Study

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Received: 12th January, 2023; Revised: 23th March, 2023; Accepted: 21st May, 2023; Available Online: 25th June, 2023

ABSTRACT

A cross-sectional study was conducted among full-time health professionals of both genders who agreed to participate and sign the consent form. A self-administered, standardized, work-related stress (WSQ) and perceived stress (PSS-10) questionnaire were used. In addition, information on socio-demography, general health, and work characteristics was obtained. Data was analyzed by SPSS version 27. The Chi-square test and logistic analysis were used.

Results: The prevalence of moderate/high stress was 90%. The greatest prevalence of high stress was found among older compared to younger professionals [8.6 vs.7.5%, p=0.004], females compared to males [8.1 vs.7.8%, p=0.006], specialist/ consultant compared to nurses and medical practitioners [9.7, 8, 2.6%; p=0.01]. Working > 48 hours/ week compared to ≤ 48 hours/week [8.6 vs. 6.3%, p=0.005], have chronic disease compared to No chronic disease [8.2 vs. 7.8%, p=0.04]. The percentage of stress in the following work domains: low influence at work; work interference with leisure time; items in "Indistinct Organization and Conflicts" and "Demands and commitments" were: 13, 70.3, 12.1 and 16.3%, respectively. Logistic analyses showed that gender and age significantly predict a high-stress level.

Conclusion: The present study showed a high prevalence (90%) of moderate- to high-stress levels. Age and gender were significant predictors of high-stress levels among healthcare professionals. The most frequent work-related stress factor was work interference with leisure time (70.3%).

Keywords: Prevalence, Stress, Work, Health professionals, COVID-19, UAE.

International Journal of Pharmaceutical Quality Assurance (2023); DOI: 10.25258/ijpqa.14.2.13

How to cite this article: Budihal SLK, Sharbatti SA. Prevalence of Stress Among Health Professionals During COVID-19 Pandemic in The UAE: A Cross-sectional Study. International Journal of Pharmaceutical Quality Assurance. 2023;14(2):316-322.

Source of support: Nil.

Conflict of interest: None

INTRODUCTION

Stress is an individual's response to threatening situations. It can be witnessed as a "change in behavior or mental disturbance derived from any situation, condition, thought, or state, resulting in frustration, anger, nervousness, and anxiety".[1]

The emergence of COVID-19 has placed enormous strain on the health system and healthcare professionals worldwide. It is challenging to manage a condition with unfamiliar etiology, inconsistent clinical signs, and a risk of death.[2] Health professionals work under constant pressure and often make crucial decisions in fear for themselves and their families.[3] In addition, the healthcare workers faced, at least at the beginning of the pandemic, an acute shortage of trained staffing, and a lack of emotional support, leaving them vulnerable to anxiety, depression, fear of being infected, and workload stress due to the sudden increase of COVID-19 cases, and high job demands.[4]

It is understood from the literature that healthcare professionals need to be calm with no stressors affecting their judgment ability. But pandemic is an event that has placed extreme stress on healthcare workers (HCWs).[5] A study showed that depression was more among females, those with chronic diseases, those with suspected or confirmed COVID-19 infection, and those who reported having insufficient personal protective equipment.[6]

Work stress directly affects whether an individual perceives a situation as stressful or not. Factors like high work demand, low-control situations, and effort-reward imbalance related to working conditions were reported.[7] This perception of stress can also be affected by the socio-demographic characteristics of workers that vary from context to context.[8]

A commonly used tool to measure stress is the "Perceived Stress Scale," which measures how a particular situation is regarded as stressful for an individual and determines an individual's response to uncontrollable, unpredictable, and undesirable situations.[9]

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Factors related to the job itself, like the job requirements, were found to be related to stress in a study done in Italy among 1379 HCWs during the COVID-19 pandemic.[10] The previous study noted that nurses working in the frontline suffered from pandemic stress more than non-frontline nurses. In all studies about COVID-19, fear of infection was the primary stressor. Along the same line, researchers found that work environments, like long shifts, are directly associated with stress.[11] The WHO suggested that stress is often made worse when employees feel they have little support from supervisors and colleagues and where they have little control over work or how they can cope with its demands and pressures.[12]

Data is limited for the stress level among healthcare professionals in the UAE. This study assessed the work-related stress in healthcare professionals of the UAE during the ongoing pandemic.

MATERIALS AND METHODS

Study Design

This study employed a cross-sectional design

Study Population

Doctors and nurses working in healthcare facilities across the UAE

Inclusion and Exclusion Criteria

Workers aged 20 years and above; Those working minimum of 8 hours per day, five days per week or more (Full time) from the past year; Both genders who have been working in the UAE as doctors or nurses for at least one year and who sign consent forms were eligible to participate. The study excluded part-time doctors and nurses.

Sample Size Calculation

the following equation was used to calculate the sample size $n= Z^2 pq/ L^2$. In which "p" denotes population proportion, "q" equals 1 – p, while the Z value at the 95% confidence limit is taken as a significance level. The population proportion value was estimated based on a previous study in the Kingdom of Saudi Arabia.[13]

Duration of study

The study was conducted from January to May 2021.

Site

The study included doctors and nurses working in healthcare facilities connected to the Gulf Medical University, primary health centers, and preventive departments

Study Instrument and Validation Procedure

The present study used the "Work Stress Questionnaire (WSQ)", which is a standardized questionnaire, to measure the work-related stress domains,[14] and the "Perceived Stress Scale (PSS-10)", which is another standardized questionnaire to assess the general stress among the study participants.[9] The WSQ is composed of 21 items that cover four major domains (sources) of work-related stress, namely "Influence at work" (four items); "Perceived stress due to indistinct organization and conflicts (7 items); "Perceived stress due to individual demands and commitment" (7 items); and "Work to leisure time interference" (3 items). A scoring system was used for each domain that ranges from 1 for lower stress -to 4 for the highest stress-inducing situation related to the domain. The PSS-10 questionnaire includes 10 items that measure how a situation is regarded as stressful for an individual. The answer to each item is a 5-points Likert scale coded as zero for never; Almost never=1; Sometimes=2, Fairly often=3; Very often=4. The total scores are interpreted as having low stress (0-13), moderate stress (14–26), and high perceived stress (27–40). In addition, to the standardized questionnaires, we have included sections on socio-demographic characteristics, Occupational history, and General health characteristics of participants.

Ethical Issues

The Institutional Review Board (IRB) approved the study. Participants signed informed consent before including them in the research. The consent form included information about the participants' right to accept or refuse participation in the study. Data were analyzed by group, and there was no link between participants as a person, and the results, and only the research team and IRB Committee members may have had access to the data. Respondents' anonymity was maintained by ensuring no information was obtained that revealed their identity.

Methodology

After obtaining approval from the Gulf Medical University-IRB, the questions were transferred to google forms because of the ongoing pandemic. For participants who cannot be approached, Google Forms were sent out online; the objective and a brief description of the purpose of the research were included in the consent form, which was in the first section, and only those who accepted to participate (by selecting the "accept" option) answered the questionnaire. Eligible participants were provided with a brief description of the purpose of this research and were asked to sign informed consent forms if they agreed to participate.

Data Analysis

Data analysis was done using the SPSS, version 27. Analysis was performed. Descriptive and inferential statistics were performed. The Chi-square and Fishers' Exact tests were used to test the associations between variables. Logistic regression analysis was used to test for predictors of stress.

RESULTS

The study included 239 participants. 134 (56.1%) were in the age group of 20 to 40 years, whereas 105 (43.9%) were 40 to 65 years. The highest percentage of the participants were married (91.2%), had bachelor's degrees (56.1%), and were females (51.9%). Regarding the nationality of the participants, 187 (78.2%) were from Southeast Asians, 44 (18.4%) were from the Middle East, and 8 (3.3%) were European. Regarding the living situation, most participants lived with family 212 (88.7%).

Table 1 shows the distribution of participants by occupational characteristics. The highest percentage of participants were specialists or consultants (47.3%). Most

Table 1: Distribution of participants by occupational characteristics

Variable	*Groups*	*Frequency*	*Percentage*
Occupation	Medical practitioner	38	15.9
	Nursing professional	88	36.8
	Specialist/ Consultant	113	47.3
Salary (AED/Month)	≥10000	146	61.1
	<10000	93	38.9
Number of hours worked per shift	≥ 8	224	93.7
	<8	15	6.3
Number of hours worked per week	≤ 48	175	73.2
	>48	64	26.8
Duration of current job (years)	<10	203	84.9
	≥10	36	15.1
Satisfaction with current salary	No	98	41.0
	Yes	141	59.0

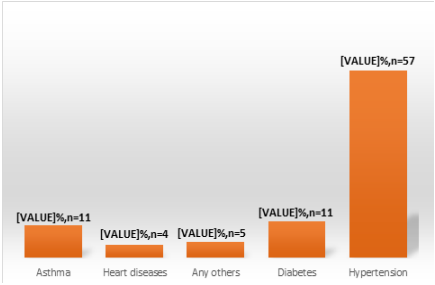

Figure. 1: Distribution of participants by the history of having chronic diseases

respondents (61%) earned more than 10000 AED per month, and most of them were satisfied with their current salary (59%). Most participants worked more than 8 hours per shift and 48 hours or less per week.

Figure 1 shows the distribution of participants by their history of having chronic diseases. The most common chronic problem was hypertension which was reported by 23.8%. On asking participants whether they are getting support from their family on sickness, most of them (78.2%) reported being supported by their family.

Figure 2 shows the prevalence of various levels of stress (based on PSSS-10). It can be seen that most participants had moderate (82%) stress levels, and in 8%, the stress was high.

Table 2 shows the prevalence of WRS across various work domains. The prevalence of stress linked to the low/very-low influence at work was 13%, while in 70.3% of participants, WRS was related to work interference with leisure time. In 12.1 and 16.3% of respondents, WRS was linked to the indistinct organization and conflicts, and individual demands and commitments (being stressful /very stressful), respectively.

Table 3 shows the association between perceived stress scale level and socio-demographic and health variables. Moderate and high-stress levels were more frequently seen among younger age participants and females. Significant

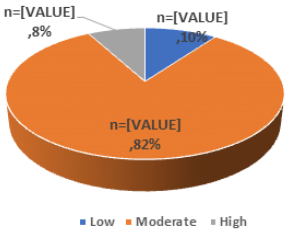

Figure 2: The prevalence of various levels of stress (based on PSSS-10)

Table 2: Prevalence of work-related stress across domains

Domain	*Group*	*Frequency*	*%*
Influence at work	High/Moderate influence	208	87
	Low/Very-low influence	31	13
Work to leisure time interference	No interference/ seldom interference	71	29
	Rather often interference/Always interference	168	70.3
Indistinct organization and conflicts	Not stressful/Less stressful	210	87
	Stressful /Very stressful	29	12.1
Individual demands and commitments	Not stressful/Less stressful	200	83.7
	Stressful/Very stressful	39	16.3

associations were observed between stress and age, gender, and history of chronic diseases.

Table 4 shows the association between perceived stress scale level and occupational characteristics. Significant associations were found between stress levels and type of occupation and working hours per week

Table 5 shows predictors of high perceived stress level. The table shows that age and gender significantly predict high-stress levels. Younger health professionals have a 3.3 times higher risk of stress than older health professionals. Also, females have 5.3 times higher risk than males.

DISCUSSION

Prevalence of Work Stress

The present study showed that 90% of healthcare professionals had moderate/high stress levels. This finding is supported by a previous study among nurses in Dubai, which revealed that 95% of the study sample experienced different amounts of stress due to their work.[15] In our result, the prevalence of high-stress levels was about 8% lower than that reported in a study among Canadian gynecologic oncologists, which was 26%,[16] and among healthcare professionals in Jordan (27%).[17]

Analysis of various sources of work-related stress using WSQ domains showed that the commonest source of stress for most participants (70.3%), was the interference of job with Leisure time. Few studies reported the relevance of leisure as a

Table 3: Association between perceived stress scale level and socio-demographic and health variables

Variable	*Subcategories*	*Perceived stress scale level*						*P*
		Low		*Moderate*		*High*		
		No	*%*	*No*	*%*	*No*	*%*	
Age (Years)	<40	6	4.5	118	88.1	10	7.5	0.004
	>40	18	17.1	78	74.3	9	8.6	
Gender	Male	19	16.5	87	75.7	9	7.8	0.006
	Females	5	4.0	109	87.9	10	8.1	
Nationality (WHO Regions)	Southeast Asian	15	8.0	156	83.4	16	8.6	0.129
	Other regions	9	17.3	40	76.9	3	5.8	
Marital Status	Married	22	10.1	178	81.7	18	8.3	0.844
	Single/divorced	2	9.5	18	85.7	1	4.8	
Have children	Yes	20	10.4	156	81.3	16	8.3	0.825
	No	4	8.5	40	85.1	3	6.4	
Education Level	Undergraduate	11	8.2	115	85.8	8	6.0	0.216
	Postgraduate	13	12.4	81	77.1	11	10.5	
Living condition	Alone	2	7.4	22	81.5	3	11.1	0.743
	With family	22	10.4	174	82.1	16	7.5	
Duration of stay in the UAE (years)	≥10	18	9.9	151	83.4	12	6.6	0.402
	<10	6	10.3	45	77.6	7	12.1	
History of chronic Diseases	Yes	14	16.5	64	75.3	7	8.2	0.046
	No	10	6.5	132	85.7	12	7.8	
Support from family when sick	Yes	17	9.1	156	83.4	14	7.5	0.847
	No	7	29.2	40	20.4	5	26.3	

Table 4: Association between perceived stress scale and occupational characteristics

Variable	*Subcategories*	*Perceived stress scale level*						*P*
		Low		*Moderate*		*High*		
		No	*%*	*No*	*%*	*No*	*%*	
Occupation	Medical practitioner	0	0.0	37	97.4	1	2.6	0.014
	Nursing professional	6	6.8	75	85.2	7	8.0	
	Specialist/Consultant	18	15.9	84	74.3	11	9.7	
Income (AED/Month)	≥10000	20	13.7	116	79.5	10	6.8	0.053
	<10000	4	4.3	80	86	9	9.7	
Duration of hours worked/shift	≥ 8	21	9,4	185	82.6	18	8	0.415
	<8	3	20	11	73.3	1	6.7	
Duration of hours worked/week	≤ 48	24	13.7	136	77.7	15	8.6	0.005
	>48	0	0	60	93.8	4	6.3	
Satisfaction with Current salary	No	8	8.2	80	81.6	10	10.2	0.439
	Yes	16	11.3	116	82.3	9	6.4	

key life domain for most people.[18] Researchers suggested that leisure helps to recover from stress or negative experience in other life domains.[19]

The present results also showed that 16.3 and 12.1% of participants perceived high stress due to individual demands and commitments and due to indistinct organization and conflicts.

This result agrees with another study done in Sweden which showed that 10 and 25% of the study group reported high perceived stress owing to indistinct organization and conflicts and due to individual demands and commitment, respectively.[20] The prevalence of work stress in our results is higher than in previous studies among health professionals that were conducted in KSA (66%),[13] and Ethiopia (48.6%).[21]

Difference in Work-related Stress among Health Professional Groups

The present data showed that the prevalence of "high perceived stress" was higher among specialists/consultants compared to

Table 5: Predictors of high perceived stress level

Perceived Stress Scale		*Crude*			*Adjusted*		
Variable	*Group*	*OR*	*CI*	*P*	*OR*	*CI*	*P*
Age (years)	≤40	4.5	1.7 -11.6	0.003	3.3	1.1-10.8	0.049
	>40	1	--	--	1	--	--
Gender	Male	1	--	--	1	--	--
	Female	4.8	1.7-13.1	0.003	5.3	1.4-20.1	0.014
Occupation	Medical practitioner/Consultant	1	--	--	1	--	--
	Nursing professional	1.85	0.7- 4.9	0.211	--	--	--
Income (AED/Month)	≥ 10000	1	--	--	1	--	--
	<10000	3.6	1.2-10.7	0.026	3.9	0.6-25.5	0.148
History of chronic diseases	Yes	2.9	1.3- 6.8	0.017	1.6	0.7-4.3	0.340
	No	1	--	--	1	--	--

other occupation groups. This finding differs from a study in Jordan, with the highest stress among general practitioners followed by specialists.[17] Our findings also differ from a study in Taiwan which found that nurses had the highest prevalence of stress and burnout compared to other professions (66% among nurses compared to 38.6% among physicians).[22] It should be noted here that the logistic regression analysis done in this study did not show any difference between various health professional groups.

Age

This study found a higher risk for perceived stress among younger age group participants. This finding agrees with a study that was done among health professionals in Northwest Ethiopia.[21] The previous study found that the risk of stress among age group 25–29 years and 30–34 years was 3 and 2.3 times higher than in the age group ≥ 35 years. Our finding is also supported by Salam *et al.* study,[13] which reported higher mean age (years) for stress compared to non-stressed health professionals (38.37 vs. 41.25).

Researchers suggested that training young healthcare professionals can reduce their stress and help in improving the perceived control of their job.[23] A study including healthcare professionals in Dubai reported an inconsistent trend in the relationship between age and stress with a higher mean total stress score among the age group 40-50 years, followed by age group of ≤ 40 years old and followed by the age group ≥ 50 years old.[24]

Gender

It is stated that men and women react differently to stressful situations, and even though both experience work stress, women are more likely to report psychological stress than men.[25] In this study, a significantly higher prevalence of perceived stress was reported by female participants. Also, females had 5.3 times higher risk for stress compared to male participants.

A study done by Gebeyehu and Zeleke[21] found a higher prevalence of stress among female health professionals (53 vs 44.9%). Salam *et al.* study from KSA, found no significant increase in risk related to gender.[13] A study including health professionals in Dubai found that the mean stress level was higher among females than males.[24]

Our results also agree with Boran *et al.* study, which found a higher prevalence of stress among female health professionals compared to males (33 vs 23%).[17] It has been suggested that females have to fulfill a number of roles, being professionals, wives, and mothers.[24]

Nationality

The prevalence of high stress was more among professionals from Southeast Asian countries than those from other WHO regions. However, the association between nationality and stress was not significant A previous study showed a significant association between nationality and work adaptation.[26] It seems that among the studied sample, the effect of nationality was not an important variable in determining stress levels. Previous studies from KSA[13] and UAE[24] reported significant associations between nationality and stress.

Income

The current study showed that high stress is more prevalent among low-income participants and that health professionals making < 10,000 dirhams are 3.9 times more likely to experience high perceived stress. However, the relationship was insignificant when adjusting for the confounding effect of other variables in the multiple logistic analysis model. A study from Ethiopia[21] showed that the likelihood of having work-related stress was higher among respondents earning the least salary (<174 USD).

Our finding disagrees with Salam *et al.* study,[13,] which reported a consistent increase in the likelihood of having job stress with increased income above 10,000 SAR. It seems that in the previous study, the benefit of increased income, beyond a certain level was ameliorated by extra work demands and stresses.

Satisfaction with Current Salary

Low salary has been a significant concern for the health sector in retaining a skilled workforce. Policymakers are now concentrating on maintaining the healthcare workforce, as it is known that 'no health force equates to no health.[27] Low

income is a significant factor in job dissatisfaction among healthcare workers.

In this study, the percentage of high stress was higher among participants who were unsatisfied with their salaries, representing 41% of respondents. This finding agrees with reported data from India, where 34% of included healthcare providers were dissatisfied with their salaries.[28] The previous study highlighted the importance of job satisfaction and rewards in motivating healthcare workers and reducing turnover. A study from the Western Province of China showed that income significantly predicted job satisfaction.[27]

Working Environment

The present study investigated various aspects of working environments in the four work-related stress domains. It has been suggested that working environment variables are crucial to prevent work stress. In our study, the major domains of stress were the interference of job with leisure time (70.3%) followed by, individual demands and commitments (16.3%), influence at work (13%), and indistinct organization and conflicts (12.1%).

Our data is supported by a study from Nigeria,[29] which showed that "Work-home interference and social life factors" were reported as stress factors by 55% of doctors, the demands of jobs and patients' expectations factors, including "Low appreciation of work" and "unrealistic expectation of others about the role" was reported by 40.7%.

Another important factor in relation to work is the working hours. In this study, high working hours were significantly associated with stress. This is supported by another study from Korea that included 3,332 young adult employees. The study found that stress had increased 1.46, 2.25 and 2.55 times among groups working 41–50, 51–60, and over 60 hours per week compared to those working 31–40 hours per week.[30]

Psychological Effects

In this study, the psychological burden induced by the pandemic was measured using the perceived stress scale.[9] Our study indicates that 90% of health professionals have moderate-to-high stress levels. The results of our study indicated the need for health promotion strategies to support doctors and nurses in every way possible. Funding longitudinal research in the same field is necessary. More studies need to be planned to research the pandemic's long-term effects on healthcare workers' mental health status. There is a lack of data available regarding the same and the coping strategies.

The study has some limitations: We cannot generalize the findings of this study because of the non-random approach used to recruit the sampled participants.

CONCLUSION

The present study showed a high prevalence (90%) of moderate- to high-stress levels. Age (being younger than 40 years old) and gender (being female) were significant predictors of high-stress levels among healthcare professionals. Among work-related factors, the most frequent factor was work interference with leisure time (70.3%) followed by "Demands and commitments" (16.3%); low influence at work (13%) and "Indistinct organization and conflicts" (12.1%).

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