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Evaluation of Anxiety in the Non-Medical Workforce Under Exposure and Non-Exposure to the COVID-19 Virus

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Abstract

Introduction: *A healthy and productive workforce is one of the basic components of any organization's effectiveness. Mental health is likewise regarded as one of the main aspects of health and well-being. The recent outbreak of the new coronavirus (COVID-19) has provoked a great deal of stress and anxiety in the communities. Accordingly, this study strived to evaluate the level of related anxiety in the non-medical personnel under circumstances of exposure and non-exposure to the new coronavirus (COVID-19), respectively.*

Methods: *In this descriptive cross-sectional study, 198 non-medical workforces serving in hospitals and health centers of Jahrom city who were exposed or not exposed to this condition, were included in the study by census sampling in 2020. Data collection tools in this study comprised demographic information questionnaire and Coronavirus Disease Anxiety Scale questionnaire (CDAS), respectively. Data analysis was conducted via the SPSS software version 21 and descriptive and inferential statistical tests.*

Results: *Among the 198 participating administrative staff, 51% were male, and the majority were married. 52.5% of the participants had an employment background of fewer than ten years. Only 4.5% of the participants had a history of travel during the pandemic, and 9.6% of the participants had a family background of the disease. The average score of anxiety in administrative staff during the new coronavirus pandemic (COVID-19) in Jahrom city was 14.46%. The average score of psychological symptoms (42.63%) was higher than physical symptoms (10.94%) in administrative staff. Anxiety scores were significantly higher in females compared to the male participant ($p < 0.05$). Moreover, the highest average anxiety score belonged to the administrative personnel with fewer than five years of*

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experience, and contract personnel had the highest anxiety score ($p < 0.05$). Among demographic variables, gender and age were associated with anxiety, respectively ($p < 0.05$)

Conclusion: *COVID-19 disease can provoke mental health issues and undermines the well-being of the health care system workforce along with reducing the quality of health care services. Thus, the anxiety and fear of individuals stemming from this pandemic should not be disregarded but instead, should be acknowledged and heeded by their surroundings, communities, and governments.*

Keywords*: Anxiety, Non-medical personnel, Coronavirus, COVID-19.*

I. Introduction

A new member of the coronavirus genus has been recently identified that causes acute respiratory syndrome in humans (1). The first infected case with clinical symptoms including fever, cough, and shortness of breath (2) was reported on December 12, 2019, in Wuhan, China (1). This virus maintains low pathogenicity and high transmissibility (4). The World Health Organization issued a statement on January 30, 2020, following the rise in the number of new cases and the breakout of the virus globally. The statement declared the new coronavirus as the sixth cause of public health emergency worldwide in history, threatening not only China but all the countries alike. Consequently, health workers, governments, and the public must act together to halt the breakout of the new coronavirus (5). The time interval between an individual's exposure to the virus and the onset of clinical symptoms is designated as the incubation period or latent period of the virus. Various health organizations throughout the world have stated different incubation periods for COVID-19, respectively. The World Health Organization (WHO) has estimated the incubation period to be between 2-10 days, the Chinese National Health Commission has announced the period to be between 10-14 days, and the US Centers for Disease Control and Prevention has determined the incubation period to last between 2-14 days (6). The mortality rate resulting from the COVID-19 virus is high, and it has become a major public health concern worldwide. Prevention is currently the most reliable means to reduce infection (7). Due to the lack of vaccines, non-pharmacological interventions are the only alternative to prevent the disease, which significantly alters the daily habits of the body, mental conditions, social and economic statuses, respectively (8). The current high prevalence appears to be moderately associated with impediments in diagnosis and inadequate methods of infection control (9). Coronavirus disease has now reached the status of a pandemic. While this pandemic is spreading rapidly throughout the world, it is provoking fear and anxiety in the public, particularly among certain groups, including the elderly, caregivers, health care providers, and individuals with a history of underlying medical conditions. As a result, more interventions are necessary, principally for certain groups who are at high risk of severe and constant emotional distress (10). The prevalence of emotional damage caused by the spread of infectious diseases is very significant in society. The breakout of coronavirus has likewise caused confusion, changed individuals' living conditions, and brought overwhelming emotional aftermaths such as anxiety (11). Anxiety beyond the physical consequences of the disease (12), the negative perception of disease diagnosis, and notoriety of both the disease and the infected individuals among the communities (13) have been only a few of the consequences linked to the infectious diseases. Overall, the

spread of infectious diseases can heighten anxiety, which in turn has unpleasant results on the mental state of individuals (14). The discussion of psychological aftermaths this viral disease leaves on mental health, including anxiety is important for individuals at different levels of society, given the fact that the global pandemic status of COVID-19 effects, or rather, paralyzes almost all major economic, political, social, and even military aspects of countries in the world (15). Therefore, in the current critical situation, recognizing and obtaining the level of anxiety that might jeopardize mental health at different levels of non-medical personnel underexposure and non-exposure to the COVID-19 patients is crucial to be in line with the appropriate psychological strategies and techniques to halt the anxiety and maintain the mental health of these at-risk individuals. In sum, this study aimed to evaluate the level of anxiety in non-medical personnel underexposure and non-exposure to the new coronavirus (COVID-19), respectively, in hospitals and health centers of Jahrom city in 2020.

II. Method

In this descriptive cross-sectional study, 198 non-medical personnel serving in hospitals and health centers of Jahrom city who had been exposed or not exposed to this disease, were involved by census sampling in 2020. The study commenced after obtaining the official letter of introduction from the Vice Chancellor for Research of Jahrom University of Medical Sciences and acquiring the code of ethics (IR.JUMS.REC.1399.046.) In this study, the researchers referred to the health centers of Jahrom city and after obtaining permission from the directorate of hospitals and health centers, began to investigate and distribute questionnaires. The inclusion criteria for this study included age over 18 years, consent for participation, non-medical workforce employment status in the administrative departments of the university, hospitals, and health centers of Jahrom city with the employment types alternating between an internship, contract, partnership, outsourcing, and official. On the other hand, the exclusion criteria for this study included dissent to participate in the study and inadequate completion of questionnaires. Data collection tools in this study comprised the Demographic Information Questionnaire and the Corona Disease Anxiety Scale (CDAS), respectively. Demographic data in this study included age, gender, marital status, literacy and qualification levels, occupation, place of residence, employment history, number of individuals partaking a residence with the subject, history of domestic or foreign travel in the past month, COVID-19 diagnosis, and ultimately, employment type. The CDAS questionnaire was employed to evaluate anxiety provoked by the prevalence of COVID-19 in Iran. The final version of this tool has 18 items and two operating components. Items one to nine assess psychological symptoms, while items ten to 18 assess physical symptoms. This instrument was enumerated in a 4-point Likert scale (never = 0, sometimes = 1, often= 2 and always = 3). Accordingly, the highest and lowest scores that the respondents were provided in this questionnaire were between 0 and 54, respectively. High scores in this questionnaire designate a higher level of anxiety in individuals. The reliability of this tool was obtained via Cronbach's alpha method, which revealed (alpha = 879%) for the first factor, (alpha = 861%) for the second factor, and (alpha = 919%) for the complete questionnaire. The questionnaire's questions were presented to five expert psychologists to evaluate the content validity. The psychologists examined the degree to which the items were conceptual, whether or not the questionnaire covered all the required aspects of the subject, along with the appearance of the questionnaire. 18 out of 23 items were

approved (16). Data analysis was conducted via SPSS statistical software version 21, descriptive statistical tests (frequency, average, percentage), and inferential statistical tests (ANCOVA, extra-group variance) at a significant level of $p < 0.05$.

III. Results

51% of the 198 participating administrative personnel were male, and the majority were married, aged under 40, with a bachelor's degree. 52.5% of the subjects had fewer than ten years of employment background, and 48.5% of subjects had contractual employment. Only 4.5% of subjects had a history of travel during the COVID-19 pandemic. Meanwhile, 9.6% of them had a family history of the disease (Table 1).

Table 1. Description of the demographic characteristics of the administrative personnel participating in the study.

Variable		Frequency	Percent	Variable		Frequency	Percent
Gender	Female	97	49.0%	**Marital status**	Single	20	10.1%
	Male	101	51.0%		Married	168	84.8%
Age	Less than 30	38	19.2%	**Address**	Villa	96	48.5%
	30 to 40 years	101	51.0%		Apartment	102	51.5%
	41 to 50 years	49	24.7%	**Number of household members**	Two	26	13.1%
	Over 50 years	10	5.1%		Three	69	34.8%
Years of service	Less than 5 years	41	20.7%		Four	86	43.4%
	5 to 10 years	63	31.8%		Five and more	17	8.6%
	11 to 15 years	41	20.7%	**Travel history**	No	189	95.5%
	Over 15 years	53	26.8%		Yes	9	4.5%
Education	Diploma	68	34.3%		No	179	90.4%

	Associate Degree	15	7.6%	**History of Coronavirus disease**	Yes	19	9.6%
	Bachelor	85	42.9%				
	MA	26	13.1%				
	PHD	4	2.0%				
Employment status	Official	63	31.8%				
	outsourcing	11	5.6%				
	partnership	27	13.6%				
	contract	96	48.5%				
	internship	1	0.5%				

Table 2 displays the average anxiety score in administrative personnel as a raw score based on the scale of the questionnaire and the converted score as a percentage. The average anxiety score in administrative personnel during the new coronavirus pandemic (COVID-19) in Jahrom city was estimated to be 14.46%. A lower score indicates less anxiety. Moreover, the average score of psychological symptoms (42.63%) was higher than physical symptoms (10.94%) in administrative personnel (Table 2).

Table 2. Average anxiety score in administrative personnel during the New coronavirus pandemic (COVID-19).

	Average raw score	**Average score of 100**
Anxiety	14.46	26.79
Psychological Symptoms	11.51	42.63
Physical Symptoms	2.95	10.94

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The results of the statistical analysis in Table 3 revealed that the anxiety scores and psychological symptoms were significantly higher in females compared to the males ($p < 0.05$). Also, the highest average anxiety score was observed in administrative personnel with fewer than five years of employment background. The highest anxiety score referred to the personnel with contract employment types ($p < 0.05$).

Furthermore, the highest score for physical symptoms of anxiety was reported in administrative personnel with an employment background of over 15 years. Yet, the highest average score for psychological symptoms of anxiety was observed in personnel with fewer than five years of employment background, along with the interns ($p < 0.05$).

Table 3. Average anxiety scores of administrative personnel in terms of demographic characteristics

Variable		Anxiety		P	Psychological Symptoms		P	Physical Symptoms		p
		Standard deviation	Mean		Standard deviation	Mean		Standard deviation	Mean	
Gender	Female	8.56	16.15	0.009	5.82	12.90	0.001	3.64	3.26	0.276
	Male	9.04	12.84		5.90	10.18		4.00	2.66	
Age	Less than 30	10.34	16.66	0.287	7.48	13.32	0.111	3.83	3.34	0.913
	30 to 40 years	8.65	14.27		5.59	11.39		4.00	2.88	
	41 to 50 years	8.02	13.80		5.32	10.92		3.36	2.88	
	Over 50 years	10.21	11.40		6.05	8.80		4.67	2.60	

Years of service	Less than 5 years	9.62	17.49	0.010	6.97	13.78	0.018	3.56	3.71	0.013
	5 to 10 years	7.17	12.03		5.52	10.10		2.40	1.94	
	11 to 15 years	7.22	13.39		4.54	10.95		3.50	2.44	
	Over 15 years	10.64	15.85		6.32	11.87		5.15	3.98	
Education	Diploma	9.17	14.26	0.376	6.60	11.54	0.293	3.42	2.72	0.522
	Associate Degree	10.63	12.27		6.82	9.27		4.24	3.00	
	Bachelor	8.48	15.69		5.33	12.32		4.10	3.38	
	MA	9.01	12.88		5.80	10.35		3.97	2.54	
	PhD	6.55	10.25		6.13	9.75		.58	.50	
Employment status	Official	8.54	15.16	0.010	5.44	12.13	0.002	3.88	3.03	0.224
	outsourcing	13.62	18.73		7.63	13.64		6.52	5.09	
	partnership	7.44	9.11		4.83	7.26		3.21	1.85	
	contract	8.52	14.99		6.05	12.02		3.52	2.97	

	internship	.	18.00		.	15.00		.	3.00	
Marital status	Single	9.69	16.20	0.374	6.66	12.60	0.497	4.45	3.60	0.354
	Married	8.74	14.10		5.87	11.30		3.70	2.80	
Address	Villa	9.10	14.92	0.492	5.58	11.61	0.813	4.34	3.30	0.216
	Apartment	8.81	14.04		6.40	11.41		3.27	2.63	
Number of household members	Two	9.66	15.00	0.232	7.01	11.58	0.058	3.55	3.42	0.846
	Three	8.66	15.78		5.69	12.68		3.81	3.10	
	Four	9.01	12.99		5.65	10.26		4.15	2.73	
	Five and more	8.22	15.76		6.52	13.00		2.63	2.76	
Travel history	No	8.94	14.27	0.161	6.03	11.40	0.247	3.81	2.87	0.144
	Yes	8.44	18.56		5.21	13.78		3.87	4.78	
History of Coronavirus disease	No	8.65	14.23	0.268	5.85	11.37	0.330	3.68	2.86	0.289
	Yes	11.39	16.63		7.38	12.79		5.08	3.84	

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Multiple regression analysis determined that 8.5% of the variance in administrative personnel's anxiety estimations is due to demographic variables, while the rest is because of the other variables. According to Table 4, it can be inferred that the model is significant (p-value <0.05). Beta coefficients revealed that the gender and age variables were associated with anxiety (p <0.05) among the demographic variables, and these variables acted as predictors of the anxiety in the studied administrative personnel. The effect of gender (β = -0.176) and age (β = -0.210) are significant on the anxiety of administrative personnel, respectively.

Table 4. Predicting the anxiety of the studied administrative personnel based on demographic variables

P-value	T	B	P	F	R^2	R	**Independent Variable**
0.001	4.445		0.047	1.742	0.85	0.292	**Fixed variable**
0.015	-2.465	-0.176					Gender
0.041	-2.056	-0.210					**Age**
0.192	1.310	0.137					**Years of service**
0.388	-0.865	-0.077					**Education**
0.430	-0.790	-0.068					**Employment status**
0.758	0.309	0.023					**Marital status**

IV. Discussion

Coronavirus is globally regarded as a major threat to physical and mental health, hence affecting the communities' daily behavior, provoking negative emotions, and intense fear in people's lives. A review of previous studies on the prevalence of this disease reveals the existence of extensive psychological consequences around the world and the fact that this pandemic has influenced mental health at the individual, interpersonal, and social levels. Psychological aftermaths of the rapid onset and outbreak of the disease have changed people's living conditions and while conceiving devastating psychological concerns such as anxiety, depression, and despair. Accordingly, this study was conducted to investigate the anxiety level in non-medical personnel under the exposure and non-exposure to the

new coronavirus in administrative (non-medical) personnel of universities, hospitals, and health centers in Jahrom city. The results of this study determined that the average anxiety score in administrative personnel during the new coronavirus pandemic (COVID-19) in Jahrom city was 14.46%. Benjamin et al. (2020) conducted a study to investigate the psychological impact of COVID-19 on health care workers in Singapore. 470 medical and non-medical personnel participated in this study. The results of anxiety assessment in both the medical and non-medical workforce revealed that non-medical staff experience far severe anxiety than medical personnel during the COVID-19 pandemic (17). A study of the SARS epidemic in Hong Kong confirmed that the average anxiety among workers, health-care providers, and nurses was higher than the administrative and office personnel (18).

The results of the present study revealed that the anxiety rate was higher in females than males. Consistent with this study, the Maaravi study confirmed that women are more anxious about the COVID-19 pandemic than men (19). In another study conducted by Wang et al. to examine immediate psychological responses and correlation factors in the first stage of the 2019 COVID-19 epidemic, the results showed that being a woman was associated with higher psychological aftermaths and higher levels of stress, anxiety, and depression (20). This means that women may be more susceptible to stressful circumstances, and, as a result, women and men may need to be treated differently. The average score for psychological symptoms in administrative personnel (42.63%) was higher than physical symptoms (10.94%) in the results of the present study that is consistent with the results of a study by Su et al., which revealed that the onset of psychiatric symptoms was associated with younger age and less family support (21). Lack of social support leads to more anxiety and depression, particularly in high-risk work conditions (22). Rajkumar concluded in a study that anxiety and health concerns are the most common psychological reactions resulting from COVID-19 anxiety (23). When anxiety strikes a broader population, it can lead to panic disorders and resource depletion along with inconveniences in the daily activities, avoidance of community presence, and self-medication. Anxiety can be influenced by rumors, different lifestyles, and unwanted diets. All of these may undermine mental health. Consequently, dealing with mental health concerns in epidemic conditions is quite important (24). Therefore, identifying these psychological implications in vulnerable individuals of the community and providing appropriate and efficient psychotherapy programs and protocols maintains the mental health of individuals from all backgrounds of the society in the ongoing high-risk situation where the mental health of all members in a community is jeopardized, affected by COVID-19 pandemic.

V. Conclusion

COVID-19 disease can intensify mental health issues (anxiety) of non-medical personnel in health care systems, and increase staff medical costs, along with economic and psychological concerns. Therefore, anxiety and fear of individuals must not be disregarded but instead acknowledged and heeded by those surrounding them, communities, and governments.

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Conflict of interest

The author(s) state that there is no conflict of interest in the present study.

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