Psychological Problems and Fear of COVID-19 Pandemic among Nurses and General Population: A Comparative Study

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Abstract

COVID-19 is a source of stress with incredible impact, both for people and social public gatherings. Various people may experience various levels of psychological emergency, particularly those at the center of the incident. This study aimed to compare the level of psychological problems (depression, anxiety, and stress) and fear among nurses and general population as a result of COVID -19 pandemic. A cross-sectional study design was utilized in this study. A probability sample of 132 nurses working in Sharkia Governorate hospitals and 268 individuals from general population participated in this study by using an anonymous online questionnaire. Three tools were completed by the participants in this study were a socio-demographic data sheet, the Depression, Anxiety, and Stress Scale-21, and fear of CoronaVirus-19 Scale. Results revealed that nearly one quarter of the studied nurses' group had moderate level of depression, anxiety and stress. However, more than one quarter of the studied general population had extremely severe level of depression and anxiety as well as severe level of stress. Severe level of fear of COVID-19 was experienced among one quarter of participants from nurses and general population. The study concluded that was statistically significant positive correlations were found between fear of COVID-19, depression, stress, and anxiety in both groups. Therefore, it is recommended to develop and implement psychological interventions for improving mental health and psychological resilience during the pandemic COVID-19 of both nurses and general population.

Key words: Psychological problems, fear, COVID-19, depression, anxiety, stress

Introduction

COVID-19 is a new respiratory infection outbreak that started in China in December 2019 **(Wang et al., 2020a).** It is of major international concern and has been classified by the World Health Organization (WHO) as a Public Health Emergency of International Concern (PHEIC) and considered as a very high threat at the international level **(Han et al., 2020).**

COVID-19 can possibly lead to critical respiratory tract infection among the infected people and is usually transmitted from an individual to another via nasal droplets, hands,

surface contacts, and saliva**.** Its incubation period varies from 4 to 14 days. The affected individual usually presents with upper respiratory tract infection (RTI), dry cough, high fever, and dyspnea **(Ahmed et al., 2020)**.

Because of the rapid spread of COVID-19, strong infection, lethality in serious cases, and lack of specific medication, it represents a great threat to human health and life. It also has great influence on the mental health of the overall population, leading to different levels of emotional problem **(Gao et al., 2020).** As the epidemic continues, general population gradually suffers various levels of psychological problems, such as fear of infection, depression, nervousness, anxiety, inattention, and sleep problems **(Xiang et al., 2020).**

Lack of knowledge concerning the virus incubation period, its way of transmission, treatment and safety measures stimulate feelings of anxiety and fear. Moreover, the locked-down state which obligate general population to become homebound leads to negative mental health outcomes such as anxiety and uncertainty regarding the future **(Li et al., 2020).**The residents also experience disappointment, monotony, and irritability because of the locked-down state **(Ho et al., 2020).**

The COVID-19 pandemic has influenced various parts of human life as shutting down of schools, open places and companies, modifications in work schedules, family organization, resulting in feelings of abandonment and helplessness. Moreover, it can intensify feeling of insecurity due to the financial and social consequences of this catastrophic event **(Ornell et al., 2020).**

Although social media assists in maintaining more communications between individuals at times of physical disconnection, it is also considered to be an important source of incorrect information and rumors adding to the pressure the individuals experience during the recent pandemic. The hourly reports on losses of life and the increasing numbers of infected individuals can be unbearable, especially for people susceptible to mental health problems. Furthermore, the lockdown has already caused severe losses in businesses and shut down of many industries. The tremendous hit on the economy has indirect influence on the population health by causing financial stress and insecurity **(Mohanty, 2020).**

Alongside the people with COVID-19, the family members and close contacts experience psychological problems as they have been isolated, or quarantined, which increase feelings of guilt, and anxiety among those individuals as a result of the consequences of the infection, seclusion and stigma on their family members and friends **(Wang et al., 2020b).**

The individuals who lose their loved ones as a result of the pandemic suffer from resentment and anger sensation. Additionally, they also feel guilt, stigma or shame for their family members who are ill and/or isolated. Moreover, family members and close contacts may experience depression and post-traumatic stress disorder (PTSD) (**Goyal et al., 2020**). On the other hand, the children who have been quarantined or secluded during the pandemic are at higher risk of

developing adjustment disorder, acute stress disorder, and grief **(Shah et al., 2020).**

Nurses who are at the core of the event display greater fear, anxiety, anger and sadness. They are anxious about being infected because of close contact with patients, unfamiliarity with unusual procedures and working environments, physical discomfort and annoyance caused by specific protection. Facing the complaints and death of seriously ill patients, long-term separation from their families, and endangering their lives to be with patients every day, etc., all these factors produce different psychological response among medical personnel **(Xu, & Zhang, 2020).**

When observing the patient in a very critical condition, and even if nurse has done all what he/she can do, but still unable to keep his life, he/she feels self-defeating psychologically, and believes that he/she is not a skillful nurse, which result in strong feelings of guilt and self-blame. Dealing with specific infectious diseases is a critical challenge for medical personnel, particularly nurses, who are at greater risk of death at any time, which coupled with lack of sleep, stressful work, high degree of cooperation, little freedom, and heavy responsibility **(Huang & Liu, 2020).**

Therefore, it is necessary for mental health nurses to deliver essential support to those exposed and those who provide care to the affected individuals. Specific effort must be directed toward vulnerable individuals, who include the sick and infected patients, their families, and friends, individuals with preexisting physical/mental illnesses, and last but not least, healthcare and assistance workforces, particularly nurses and doctors who are working directly with sick or quarantined people **(Shigemura et al., 2020).**

Significance of the study:

COVID-19 caused severe stress and panic feelings among the general population. Because of the uncertainty and shortage of knowledge about COVID-19, its rapid transmission and communicable nature and its significant threat to life security, COVID-19 is making the people, especially nervous and in a state of great stresses **(Wang et al., 2020a)**. In fact, the corona virus has influenced nearly each part of our lives from work, to school, to sports, to what we do and where we eat. All these alterations being forced upon us can stimulate our feeling of anxiety. Confronting these serious circumstances, every person is at a greater risk of developing psychological problem and mental health symptoms such as; depression, loneliness, and anxiety **(Stankovska et al., 2020).**

A very recent study among healthcare professionals in China, found a high incidence of stress disorders and anxiety among first line health care providers with higher incidence of anxiety among nurses than physicians **(Huang et al., (2020)**. Nurses have been reported to suffer from stress related to sleep deprivation, separation from family, and too much responsibility related to health care system demand and staff deficiencies **(Huang & Liu, 2020).**

Globally, there are 105,586 infected persons reported in March 8, 2020 **(Shah et al., 2020)**. In Egypt, the number of infected persons was 5,268 at 29th of

April and this number reached 22,082 by the end of May according to the Ministry of Health (2020).

Aim of the Study

This study aimed to compare the level of psychological problems (depression, anxiety, and stress) and fear among nurses and general population as a result of COVID -19 pandemic.

Research Questions

Q1- What is the level of psychological problems (stress, anxiety, & depression) experienced by nurses and general population as a result of COVID-19 pandemic?

Q2- What is the level of fear experienced by nurses and general population as a result of COVID -19 pandemic?

Q3- Is there a relationship between psychological problems (anxiety, depression, & stress) and fear amongst nurses and general population?

Research Design

A cross-sectional study design was utilized in this study.

Subjects and Methods:

Subjects and sample size

A probability sample of 132 nurses (bedside nurses, head nurses, internship students) and 268 individuals from general population participated in this study. The researchers sent an online questionnaire to them (from April 14 to May 9, 2020). Participants younger than 18 years were excluded.

Research Setting

A snowball sampling technique was utilized in this study. The online self-reported questionnaire link was first sent to nurses working in Sharkia Governorate hospitals and internship students through Whatsapp and face-book, and they were encouraged to pass it on to others.

Tools for Data Collection

The online self-reported questionnaire included the following 3 sections:

1- Socio-Demographic data sheet:

It was designed by the researchers and it includes personal data, such as; age, sex, age, marital status, and residence.

2- Depression, Anxiety and Stress Scale - 21 Items (DASS-21):

The Depression, Anxiety and Stress Scale - 21 was developed by Lovibond and Lovibond (1995). It is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. Each of the three DASS-21 scales contains 7 items. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/ agitated, irritable/over-reactive and impatient.

Scoring system:

Each item is scored on a Likert scale of 4-point ranging from 0 "Did not apply to me at all" to 3 "Applied to me very

much or most of the time". Scores on the DASS-21 were multiplied by 2 to calculate the final score. The total depression scale score was divided into normal (0-9), mild depression (10–13), moderate depression (14–20), severe depression (21–27), and extremely severe depression (28–42). The total anxiety scale score was divided into normal (0–7), mild anxiety (8–9), moderate anxiety (10–14), severe anxiety (15–19), and extremely severe anxiety (20–42). The total stress scale score was divided into normal (0–14), mild stress (15-18), moderate stress (19–25), severe stress (26–33), and extremely severe stress (34–42).

3-Fear of Coronavirus-19 Scale (FCV-19S):

It was developed by Ahorsu et al. (2020) to complement the clinical efforts in preventing the spread and treating of COVID-19 cases. The Fear of COVID-19 scale is a seven-item scale, it has robust psychometric properties. It is reliable and valid in assessing fear of COVID-19 among the general population and is also useful in allaying COVID-19 fears among individuals.

Scoring system

The participants designate their level of agreement with the items using a five-item Likert-type scale extended from 1"strongly disagree" to 5 "strongly agree". A total score is calculated by addition up each item score (ranging from 7 to 35). With increasing score, the fear of coronavirus-19 increased. The scoring system developed based on quartile for the current study as follows:

Low fear: 7- < 15
Mild fear: 15- <22
Moderate fear: 22- <29
Severe fear: 29 - 35

Content Validity and Reliability

Depression, anxiety and stress scale (DASS) and Fear of Coronavirus-19 Scale (FCV-19S) were translated by the researchers who used and followed the back translation procedure for verifying the translation of the tools. (1) The researchers translated the instruments (English formats) into Arabic language, (2) rendered the same English formats to bilingual experts for verification of the translation of the Arabic formats. (3) The resulting versions were translated back into the original language by other bilingual experts who were blind to the original, and (4) minor discrepancies in the content were found and necessary modifications were done.

Content validity of the tools was evaluated by a panel of three experts in the field of Psychiatric Nursing, at the Faculty of Nursing. Zagazig University, who reviewed the tools for clearness, applicability, relevance, comprehensiveness, understanding, agreed that it's valid, relevant with the aim of the study and easy to implement. Their recommendations and suggestions were taken into consideration. Reliability of the tools was assessed by Cronbach's alpha test in the statistical Package for Social Science (SPSS), (V.20). They showed a high level of reliability in the current study as follows: depression (.836), anxiety (.794), stress (.896), and fear (.831).

Administrative and Ethical Considerations

All subjects provided informed consent electronically prior to registration. The informed consent page presented two options (Yes/ No). Only subjects who chose "Yes" were taken to the questionnaire page, and they were informed that they have the right to quit the process at any stage of the study without giving any reason.

Statistical analysis

All data were collected, tabulated and statistically analyzed using SPSS, version 20.0 for windows (SPSS Inc., Chicago, IL, USA 2011). Quantitative data were expressed as the mean±SD & range, and qualitative data were expressed as absolute frequencies (numbers)& relative frequencies (percentages).T-test was used to compare between two groups of normally distributed variables. Mann Whitney U test was used to compare between two groups of non-normally distributed variables. Percent of categorical variables were compared using Chi-square test or Fisher's exact test when appropriate. Spearman's rank correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicates direct correlation and (-) sign indicates inverse correlation, also values near to 1 indicate strong correlation and values near 0 indicate weak correlation.

All tests were two sided. p-value < 0.05 was considered statistically significant (S), and p-value ≥ 0.05 was considered statistically insignificant (NS).

Results

Table (1): Distribution of socio demographic characteristics of the studied sample (400)

Items	Studied groups				χ^2	p-value
	Nurses group (n=132)		General population group (n=268)			
	No	%	No	%		
Age in years Mean ±SD Median(range)	24.6±3.3 23(18-38)		23.3±7.6 21(18-57)		2.5	0.013
Sex						
Male	29	22.0	68	25.4	0.56	0.46
Female	103	**78.0**	200	**74.6**		
Marital status						
Single	73	**55.3**	225	**84.0**	38.2	0.0001
Married	59	44.7	43	16.0		
Residence						
Urban	27	20.5	138	**51.5**	35.1	0.0001
Rural	105	**79.5**	130	48.5		

χ^2 (Chi square) test significant at $p<0.05$

Table (1) displays the socio demographic characteristics of the studied groups. It shows that more than three quarters of the nurses' group were female (78%), from rural area (79.5%), more than half of them were single (55.3%) and the Mean ±SD of their age was 24.6±3.3 years. However the mean age of the general population group was 23.3±7.6 years, about three quarters of them were female (74.6%), majority of them were single (84%), and more than half of them were from urban area (51.5%). There were statistically significant difference between the two groups in relation to marital status and residence ($p<0.05$).

Table (2): Comparison of Psychological Problems (Depression, Anxiety & Stress) and Fear Level between Nurses and General Population Studied Groups (400)

Items	Studied groups				χ^2	p-value
	Nurses group(n=132)		General population group (n=268)			
	No	%	No	%		
Depression						
Normal	51	38.6	63	23.5		
Mild	12	9.1	34	12.7		
Moderate	34	**25.8**	56	20.9	21.5	**0.0001**
Severe	21	15.9	39	14.6		
Extremely severe	14	10.6	76	**28.4**		
Anxiety						
Normal	56	42.4	96	35.8		
Mild	15	11.4	16	6.0		
Moderate	31	**23.5**	64	**23.9**	9.3	0.054
Severe	11	8.3	24	9.0		
Extremely severe	19	14.4	68	**25.4**		
Stress						
Normal	71	53.8	104	38.8		
Mild	10	7.6	41	15.3		**0.016**
Moderate	20	**15.2**	33	12.3	12.2	
Severe	18	13.6	51	**19.0**		
Extremely severe	13	9.8	39	14.6		
Fear						
Low fear	33	25.0	84	31.3		
Mild fear	39	29.5	69	25.7	1.19	0.23
Moderate fear	28	21.2	50	18.7		
Severe fear	32	**24.2**	65	**24.3**		

Table (2) reveals that about one quarter of the studied nurses group has moderate level of depression and anxiety (25.8% & 23.5% respectively), while about one third of general population group has extremely severe level of depression (28.4%) and one quarter of them has extremely severe level of anxiety (25.4%). The level of stress was moderate in more than one tenth (15.2%) of nurses' group and was severe in about one fifth (19.0%) of general population group. The level of fear was severe in about one quarter of the two studied groups (24.2%, & 24.3% respectively). There was a statistically significant difference between the two studied groups in relation to depression and stress ($p<0.05$).

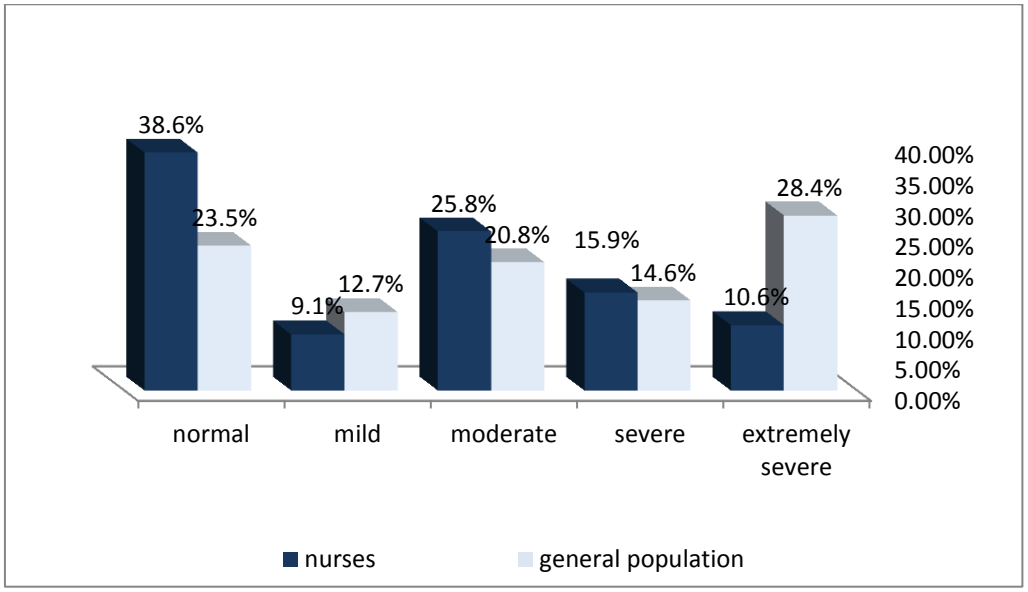

Figure (1): Comparison of Depression Level among Studied Nurses' Group and General Population Individuals about Cov-19 Viruses' Corona Pandemic.

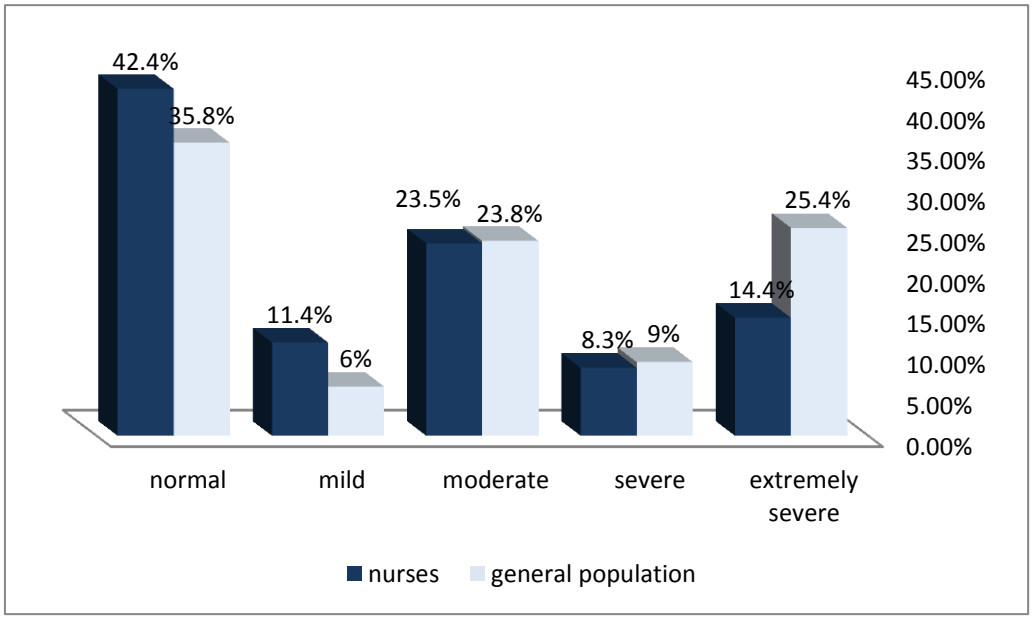

Figure (2): Comparison of Anxiety Level among Studied Nurses' Group and General Population Individuals about Cov-19 Viruses' Corona Pandemic.

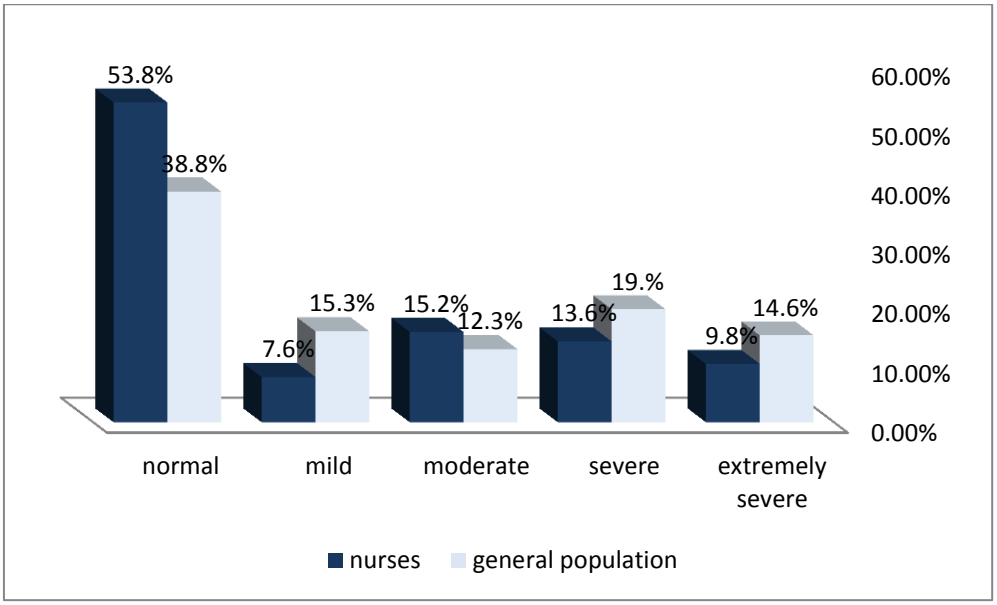

Figure (3): Comparison of Stress Level among Studied Nurses' Group and General Population Individuals about Cov-19 Viruses' Corona Pandemic.

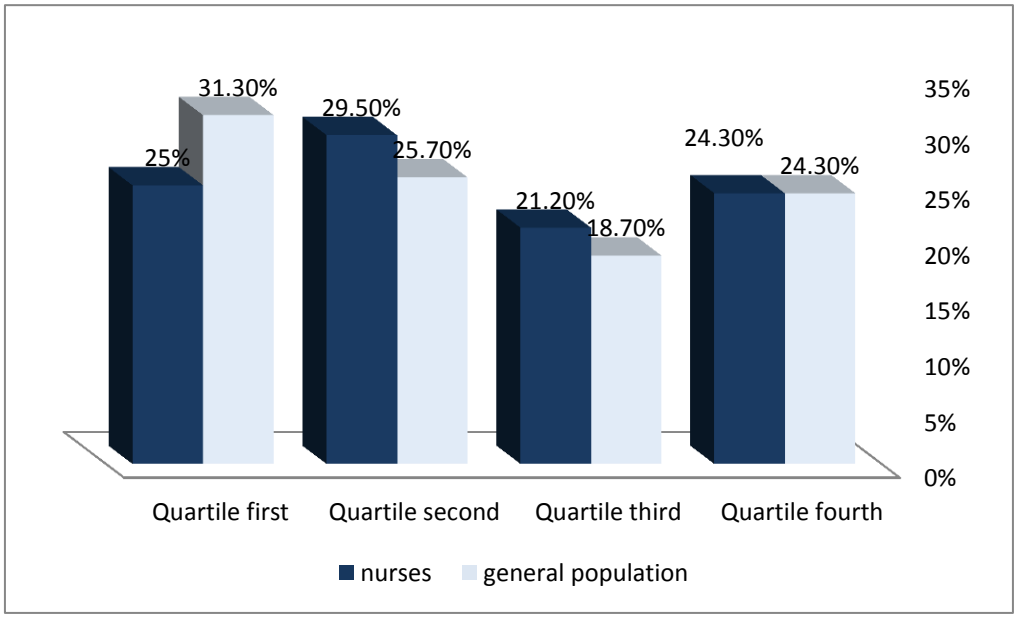

Figure (4): Comparison of Fear Quartile among Studied Nurses' Group and General Population Individuals about Cov-19 Viruses' Corona Pandemic.

Table (3): Comparison of the Relation between Gender and Studied Variables in Both Studied Groups

	Gender	Nurses group (N=132)		general population group (n=268)		U	P
		N	Mean	N	Mean		
Depression	Male	29	12.9±8.9	68	15.8±10.6	1.15	0.25
	Female	103	15.3±10.5	200	20.2±11.4	3.5	**0.0001**
U		0.93		2.7			
P-value		0.35		0.007			
Anxiety	Male	29	5.8±6.5	68	9.2±7.4	2.4	**0.016**
	Female	103	11.8±8.6	200	14.3±10.1	1.9	0.057
U		4		3.7			
P-value		**0.0001**		**0.0001**			
Stress	Male	29	10.9±8.3	68	15.2±10	1.88	0.060
	Female	103	18.3±11	200	20.9±11.2	2.1	**0.039**
U		3.02		3.5			
P-value		**0.002**		**0.0001**			
Fear	Male	29	14.6±4.4	68	16.7±5.6	1.57	0.117
	Female	103	19.8±6.2	200	18.3±5.8	1.99	**0.047**
U		4		2.1			
P-value		**0.0001**		**0.038**			

U=Mann-Whitney u Test

In comparing the studied nurses and the general population groups, table (3) shows that there was a statistically significant difference between female in the nurses' group and female in the general population group regarding; depression (p=0.0001), stress (p=0.039) and fear (p=0.047). The same table also reveals that, female in general population group had higher scores of depression, anxiety and stress than male and the differences were statistically significant ($p<0.05$). While male in the same group had higher score of anxiety than male in nurses group and the difference was statistically significant at p= 0.016. Comparing between both genders of the nurses group, females had higher score of anxiety and stress than male and the differences were statistically significant at $p<0.05$.

Table (4): Comparison of the Relation between Marital Status and Studied Variables in the both Studied Groups.

Marital status		Nurses group (N=132)		General population group (n=268)		u-test	p
		N	Mean	N	Mean		
Depression	Single	73	16.1±10.2	225	20.2±11.6	2.6	**0.008**
	Married	59	13.1±9.9	43	13.1±8	0.27	0.79
U		1.69		3.7			
P-value		0.09		**0.0001**			
Anxiety	Single	73	11.1±9	225	13.84±10	2.1	0.035
	Married	59	9.8±7.8	43	8.7±6.6	0.4	0.69
U		0.77		3.1			
P-value		0.44		**0.002**			
Stress	Single	73	18.2±11.1	225	20.3±11.3	1.39	0.16
	Married	59	14.8±10.4	43	15.1±9.3	0.29	0.77
U		1.84		2.8			
P-value		0.064		**0.005**			
Fear	Single	73	19±5.4	225	17.8±5.7	1.84	0.065
	Married	59	18.3±7.1	43	18.4±6.1	0.44	0.66
U		1.3		0.34			
P-value		0.18		0.73			

U=Mann-Whitney u Test

This table indicates that there was a statistically significant difference in depression between the two studied groups in relation to marital status (p= 0.008) as single individuals in the general population group had higher score of depression than those in nurses' group. In comparing marital status within the general population group, the same table (4) shows that single individuals had higher score in depression, anxiety and stress than married ones and the difference was statistically significant ($p<0.05$), while in nurses' group there weren't any significant differences between single and married in relation to depression, anxiety, stress and fear.

Table (5): Comparison of the Relation between Studied Variables in both Studied Groups

Residence		Nurses group (N=132)		General population group f(n=268)		U test	p
		N	Mean	N	Mean		
Depression	Urban	27	15.1±11.4	138	19.2±11.2	1.7	0.09
	Rural	105	14.7±9.9	130	18.9±11.6	2.7	**0.007**
U		0.03		0.3			
P-value		0.98		0.76			
Anxiety	Urban	27	11.2±8.5	138	12.5±9.5	0.56	0.58
	Rural	105	10.3±8.5	130	13.5±10	2.5	**0.013**
U		0.61		0.82			
P-value		0.54		0.41			
Stress	Urban	27	15.9±10.3	138	18.75±10.9	1.2	0.23
	Rural	105	16.9±11	130	20.2±11.5	2.35	**0.019**
U		0.25		0.99			
P-value		0.81		0.32			
Fear	Urban	27	20.2±7.5	138	18.2±5.9	1.3	0.18
	Rural	105	18.3±5.8	130	17.6±5.6	0.76	0.45
U		1.2		0.38			
P-value		0.23		0.7			

U=Mann-Whitney u Test

Table (5) displays that there were statistically significant differences between individuals from rural and urban areas in the studied nurses and general population groups in relation to depression (p= 0.007), anxiety (p= 0.013), and stress (p= 0.019). It is evident that individuals from rural areas in the general population group had higher score in depression, anxiety, and stress than those in the studied nurses' group. The same table (5) also reveals that there weren't any significant differences between individuals from urban and rural areas within the same group (nurses & general population).

Table (6): Correlations Matrix of Depression, Anxiety, Stress , Fear, Age among Studied Nurses' Group (n=132):

Items		Age	Depression	Anxiety	Stress
Depression	R	-.122			
	P	.164			
Anxiety	R	-.123	.685**		
	P	.161	.000		
Stress	R	-.15	.764**	.825**	
	P	.087	.0001	.0001	.
Fear	R	-.153	.284**	.424**	.393**
	P	.079	.001	.0001	.0001

**. Correlation is significant at the 0.01 level (r) Correlation Coefficient

According to the above table, depression has statistically significant positive correlations with anxiety, stress and fear. Also, anxiety has statistically significant positive correlations with stress and fear. Moreover, fear was statistically significantly positively correlated with stress.

Table (7): Correlations Matrix of Depression, Anxiety, Stress, Fear, Age among Studied General Population Group (n=268):

Items		Age	Depression	Anxiety	Stress
Depression	R	-.124*			
	P	.043	.		
Anxiety	R	-.24**	.593**		
	P	.0001	.0001	.	
Stress	R	-.191**	.646**	.684**	
	P	.002	.0001	.0001	.
Fear	R	-.02	.188**	.286**	.285**
	P	0.747	0.002	.0001	.0001

*. Correlation is significant at the 0.05 level (2-tailed). (r) Correlation Coefficient
**. Correlation is significant at the 0.01 level (2-tailed).

Table (7) indicates that age has statistically significant negative correlations with depression, anxiety and stress. Regarding depression, it has statistically significant positive correlations with anxiety, stress and fear. Furthermore, anxiety has statistically significantly positive correlations with stress and fear at ($p<0.01$). Fear also has a statistically significantly positive correlation with stress at ($p<0.01$).

Discussion

Experience from the 2003 outbreak of severe acute respiratory syndrome (SARS) and early COVID-19 reports show that health care workers including nurses are experiencing considerable anxiety, stress, and fear **(Lai, et al., 2020)**. The outbreak of COVID-19 and its pandemic nature has produced prevalent fear, concern, and anxiety **(Ahorsu et al., 2020).** Fear and terror about COVID-19 can produce experiences of stigmatization and social rejection of definite patients, survivors, their families, and others associated with the disease leading to an increased risk of developing psychological health difficulties such as adjustment disorder and depression **(Zhang & Ma, 2020).** Therefore the current study aimed to compare the level of psychological problems (depression, anxiety, &stress) and fear between nurses and general population as a result of COVID-19 pandemic.

The current study results revealed that more than three quarters of nurses' group were female, from rural area, more than half of them were married and the Mean ±SD of their age was 24.6±3.3 years. This may be due to the traditional habits in Egyptian rural areas where females get married at early age. However, the mean age of the general population group was 23.3±7.6 years, about three quarters of them were female, majority of them were single, and more than half of them were from urban area. This may be related to that most of them were still in college i.e., not yet graduated.

There are statistically significant differences between the two groups in relation to marital status and residence. This may be related to that the online questionnaire was primarily distributed among nurses working in Sharkia Governorate hospitals and among students in Zagazig University and it was difficult to control those demographic variables among the two groups.

In comparing the previous results with those of a study conducted by **El-Zoghby, Soltan, and Salama (2020)** in Egypt about the effect of the COVID-19 Pandemic on mental health and social support among adult Egyptians found that the age of their sample ranged from 18 to 30 years, about two-thirds of them were female, married and most of them were living in urban areas.

The current study revealed that, about one quarter of the studied nurses had moderate level of depression and anxiety as well as more than tenth had moderate level of stress and this answer the first research question. This can be interpreted by the fact that nurses have extended work shifts and closer contact with patients, which can easily lead to fatigue and strain. Many specialists may feel unprepared to perform the clinical intervention of patients infected with the new virus, about which little is known, and for which there aren't yet well-established clinical protocols or treatments.

However, the current study revealed that, more than one quarter of the studied general population group had extremely severe level of depression and anxiety and slightly less than fifth had severe level of stress. There were statistically significant differences between nurses

and general population groups in relation to depression, anxiety and stress, and this answer the first research question. This may be related to different measures being taken during the pandemic to reduce virus spread such as social distancing, lockdowns and self-isolation. Many Egyptian television channels also present news broadcasts and pandemic related programs. At the same time, the social media contain more contents about the pandemic.

The reason for lower level of stress, anxiety, and depression among nurses than general population in current study might be due to raised awareness among nurses which increase their attention to take defensive measures and the needed measures in case of supposed infection, consequently decreased the sense of stress, anxiety, and depression.

This result goes on line with that of a study conducted by **Zhu et al. (2020)** in China which found that due to pandemic COVID-19, high levels of anxiety, stress and depression have already been observed in the general population. Also, emerging findings from China suggest that more than 25 % of the general population experienced moderate to severe levels of stress- or anxiety-related symptoms in response to COVID-19 **(Qiu et al., 2020; Wang et al., 2020a).**

As well, the previous result is consistent with that of a study conducted in Egypt, by **El-Zoghby et al. (2020),** who found lower psychological impact of COVID-19 in those working in medical field. Additionally, **Mishra et al., (2016)** showed that health care personnel usually have improved awareness, with promising attitude throughout pandemics and low levels of anxiety**.**

On disagreement with the current study results, a survey of 1257 nurses and physicians caring for patients with the disease in China found that those health care providers (41.5% of respondents) had significantly more depression, anxiety, insomnia and distress than providers who did not care directly for the infected patients **(Lai, et al., 2019). Recently,** an extensive study determined that 0.9% of university students exhibited severe symptoms of anxiety, 2.7% moderate symptoms and 21.3% mild symptoms **(Cao et al., 2020).**

The current study result revealed that there were statistically significant differences between females in the nurses' group and females in the general population group regarding depression and stress with increasing mean score in general population group more than nurses' group. This result may be related to lockdowns and self-isolation which may have contributed to increasing stress and depression.

The current study finding revealed that females in general population group had higher score of depression, anxiety and stress than males. This may be related to the fact that, incidence of depression and anxiety among females is twice more than males **(Salk, Hyde, & Abramson, 2017; McLean, et al., 2011).** Also, this finding corresponds to that of a previously extensive epidemiological study which found that women were at higher risk of depression **(Lim, 2018)**.

In comparing between both genders of the nursing staff group, females had higher score of anxiety and stress than males and the difference was statistically significant. This may be attributed to that the burden is more for female nurses as they have many roles such as caring for family members in addition to their job. Moreover, many nurses follow up the death of many nurses and physicians in social media as a result of COVID-19.

These results agreed with those of **Xiao et al. (2020),** study in China, who found higher levels of anxiety in women and nurses compared to men and physicians, respectively. As well, **Wang et al. (2020a)**, in their very recent study, revealed that variables such as occupation, education and gender have been found to affect the development of anxiety and depression symptoms during the pandemic. They added that anxiety disorder has been seen at three-fold higher levels in women than in men during the COVID-19 pandemic.

Another recent study, conducted in Turkey, by **Özdin and BayrakÖzdin (2020)** found that, depression, anxiety and health anxiety levels were higher in women, showing that the psychiatric impact during the COVID-19 pandemic may be greater for women. As well, another study examining the prevalence and predictors of post-traumatic stress symptoms (PTSS) during the COVID-19 outbreak in China carried out by **Liu et al. (2020)** found that, women detailed significantly higher PTSS in the spaces of re-experiencing, negative cognition or mood changes, and hyper-arousal. According to the authors, the contrasts found may be due to the reality that in neural systems related with fear and excitement reactions, women appear more reactivity than men, and more prominent differential conditioned skin conductance reactions to aversive stimuli.

As well, numerous individuals, in China, at starting of the COVID-19 pandemic, gone to a variety of hospital departments in an infectious but asymptomatic state, spread the disease unknowingly directly through aerosolized droplets or indirectly through skin contact with handled surfaces. These features of corona virus infectivity include a considerable risk of exposure for medical specialists, independent of their hospital department, work title or building area; hence, any worker–whether doctor or nurse, specialist or generalist–was at impressive risk. The resulting stress due to infection hazard concerns in this manner has an indiscriminately impact on large numbers of staff **(Kang et al., 2020).**

Regarding marital status, the current study result showed significant difference in depression between the two studied groups, as single individuals in general population group had higher score of depression than those in nurses' group. Similarly, single individuals in general population group had higher score in depression, anxiety and stress than married ones and the differences were statistically significant. This may be interpreted as single individuals as part of the family have many concerns and anxiety about their families. In Egypt, especially in rural areas, single individuals live with their parents till their marriage as most of the studied sample lived in rural areas. Additionally, lockdown and self-isolation at the

beginning of COVID-19 pandemic increased stress and anxiety among single individuals as a result of spending more time on social media which may distribute contradicted information about corona virus.

The previous results contradicted with those of **El-Zoghby et al. (2020),** in Egypt, who found a significant relationship between being a married person in the period of the Covid-19 pandemic and the increased financial and home stresses.

The current study displayed that there were significant differences between individuals from rural areas in nurses and general population groups in relation to depression, anxiety, and stress. It is evident that individuals from rural areas in general population group had higher score in depression, anxiety, and stress. This may be related to that population in rural areas had lower income and most of them had private jobs. As a result of curfew from 5.00p.m. till 6 a.m. and fear from being infected with COVID-19 added depression, anxiety, and stress amongst those individuals.

However, this previous result contradicted with that of **Chen et al. (2020)**, who found that COVID-19 may have a greater psychological impact on individuals living in urban areas. As well, **Taylor (2019)**, who further stated that COVID-19 is a viral agent primarily transmitted by droplets or direct contact, clarified that such viruses may be more and more easily transmitted in urban and central areas with denser human populations. Individuals residing in urban areas may also have a higher chance of accessing to communication and information. Similarly, **Özdin and BayrakÖzdin (2020)** found higher levels of depression among people living in urban areas.

The current study result revealed that, among general population group, age had statistically significant negative correlations with depression, anxiety and stress. This means that with lower age there were increasing depression, anxiety, and stress levels among studied population. This may be attributed to that, the youngest part of the studied sample in this study was mostly university students, who may experience these symptoms due to the additional stress they are experiencingas a result of the need to adapt to the new online educational environment, without face-to-face classes.

This study result agreed with that of a study conducted in Spain by **Ozamiz-Etxebarria et al. (2020),** who found that higher mean levels of stress, anxiety, and depression in the 18-25-year age bracket, followed by the 26-60-year bracket. Finally, they detected that, the mean levels of symptoms in the three dimensions were lowest in individuals aged 61 years old and older.

Regarding the fear of COVID-19, the results of current study revealed that severe fear was experienced among one quarter of participants from the two studied groups and this answers the second research question. This may be related to the fact that COVID-19 is human-to-human transmissible associated with high morbidity, and potentially fatal may heighten personal perception of danger. Additionally, predictable supply shortage and increasing inflows of suspected and actual COVID-19 cases

contribute to the health care workers' pressure and concerns. As well, dubious or even false information on factors related to the transmission of virus, the incubation period, its geographical reach, the number of infected persons, and the actual mortality rate have led to insecurity and fear in the population

This study result was consistent with that of **El-Zoghby et al. (2020),** who found that COVID-19 made more than half of the participants feel horrified and apprehensive. Moreover, other studies in both India and China had revealed a sense of general public panic over the pandemic **(Roy et al., 2020; Zhang & Ma, 2020)**.

Furthermore, **Taylor (2019)** research and clinical observations indicated that, during times of pandemic many people exhibit fear and anxiety-related distress responses that include the following: fear of becoming infected, fear of coming into contact with potentially contaminated objects or surfaces, fear of foreigners who might be carrying infection related xenophobia, fear of the socio-economic consequences of the pandemic (e.g., job loss), compulsive inspection and reassurance-seeking regarding potential pandemic-related threats, and traumatic stress symptoms about the pandemic (e.g., nightmares, intrusive thoughts).

Moreover, in a recent Canadian study among 1354 adults reported that one-third of participants were worried about COVID-19 **(Angus Reid Institute, 2020).** Similarly, another study from Germany reported that individuals (n=1242) were greatly concerned about COVID-19 **(Gerhold, 2020)**. In an online poll of 808 U.S. adults, it was reported that 56 percent of participants were concerned about the spread of COVID-19 in the U.S., or very concerned about it **(Aubrey, 2020).** Another U.S. study reported that participants were also more concerned about COVID-19 than they were about seasonal influenza (37% vs. 27% very concerned) **(Morning Consult, 2020).**

The current study result showed that there was a statistical significant difference between females in the nurses' group and females in the general population group regarding fear. Females in nurses' group and general population group had higher score of fear than males and the difference was statistically significant. These results may be interpreted as fear among female nurses was generated from the possibility of transmitting infection from hospital to their families as they are responsible for caring of their kids. This can lead them to separate themselves from their family, which may change their routine and narrow down their social support network. This result is consistent with that of a study conducted in Spain by Broche-Pérez et al. (2020),which revealed that fear of COVID-19 was more severe in the female group than in the male group. Several recent studies revealed greater psychological vulnerability in women compared to men during the COVID-19 pandemic (Liu et al., 2020; Rossi et al., 2020; Wang et al., 2020a).

Females experienced more fear than males During COVID-19, which may be due to many variables, some of them can be immediate and others have long-term consequences. Fear may result from anticipating the adverse effect of the disease on the health of one's close

family and friend. On the other hand, closures of schools and daycare centers has enormously increased child care needs, which have a mainly significant effect on working mothers **(Alon et al., 2020).**

The current study result revealed that among nurses and general population groups, statistically significant positive correlations were found between the fear of COVID-19, depression, stress, and anxiety and this answers the third research question.

This study result agreed with that of **Harper et al. (2020),** study conducted in the United Kingdom using the same scale (FCV-19S) of the current study which found positive relationships between fear and DSM-based anxiety and depression measures. In addition, another study carried out by **Shigemura et al. (2020)**, in Japan, found that fear increases anxiety and stress levels in healthy individuals and intensifies the symptoms of those with pre-existing psychiatric disorders. They added that COVID-19 pandemic has implications for other spheres: family organization, school closures, companies and public places, work routine changes, isolation, resulting in feelings of helplessness and abandonment. In a recent study conducted in Turkey, revealed that there were significant positive correlations between COVID-19 fear, depression, anxiety, and stress (**Satici et al., 2020)**.

Conclusion

Based on the findings of this study, it can be concluded that, nearly one quarter of the studied nurses group had moderate level of depression and anxiety and more than tenth had moderate level of stress. However, in general population more than one quarter of studied sample had extremely severe depression and anxiety and less than fifth had severe stress. Severe fear of COVID-19 was experienced among almost one quarter of participants from nurses and general population. Statistically significant positive correlations were found among the fear of COVID-19, depression, anxiety, and stress in both studied groups.

Recommendations

- Somatic symptoms among nurses such as insomnia, anxiety, anger, rumination, decreased concentration, depression and energy loss during the pandemic are suggested to be assessed and managed by the mental health professionals in hospitals or other healthcare settings.
- Continue monitoring of psychological reactions among women during the outbreak.Design evidenced intervention strategies with special focus on the most vulnerable population.
- Develop and implement psychological interventions for improving mental health and psychological resilience during the pandemic COVID-19 of both nurses and general population.

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