

Comparative study: Nurses Attitude, Psychological Response and Practices Compliance with Infection Control Measures during COVID- 19 Outbreak

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Abstract

Nurses' attitude, psychological response, and compliance with infection control practices are the key to quality care and excellence in Covid-19 patient care; infection control remains one of the most cost-beneficial and requires full compliance of the whole nursing team. **The aim** of the study was to compare and examine the nurse's attitude, psychological response, and practices compliance with infection control measures during Covid- 19 outbreak. **Design:** Descriptive comparative research design. **Sample and Setting:** A convenient sample was used in the current study, which included all staff nurses (241 nurses) who working in isolation hospitals (Minia cardio-thoracic university hospital (114 nurses) and Minia fever hospital (127 nurses). **Tools:** Data was collected through the utilization of three tools as follow: Tool (1) Nursing attitude about Covid-19 outbreak consisted of two parts; Part I: Demographic data, Part (II): A self-administered structured attitude questionnaire; Tool (2): A self-administered structured psychological response questionnaire, and final Tool (3): An observation practice checklist. **Results:** The current study revealed that 71.7% of the studied nurses working in the Minia fever hospital compared to 86.0% of the studied nurses working in the Minia cardio-thoracic university hospital had a favorable attitude toward coronavirus patients, 26.8 % compared to 100.0% of them had undisturbed psychological responses respectively and 73.2% compared to 98.2% of them had compliance regarding infection prevention practice respectively with highly statistically significant differences which P-value < 0.007, 0.0001, and 0.0001 respectively. **Conclusion:** Nurses in both of the two isolation hospitals had a favorable attitude toward coronavirus patients, with undisturbed psychological responses, and they had compliance regarding infection prevention practice. **Recommendations:** Continuous education and training for all health sectors for increasing nurses' knowledge and awareness about all waves of the Covid -19 virus.

Keywords: COVID- 19 Outbreaks, Infection Control Measures, Nurses Attitude, Practices Compliance, Psychological Response.

Introduction

Nurses are the backbone of any health care system; a nursing job is one of the most exciting and in-demand jobs today and an integral part of the health care system; nurses' attitudes and psychological response towards their work stress directly affect patient outcomes. Similarly, during an outbreak, nurses' compliance with infection control and prevention measures play positive roles in improving the recovery rate, reducing the length of the hospital stay and mortality, and preventing in-hospital infection and occupational exposure. Nurses' attitude and psychological response associated with the level of practice of universal precautions by health care workers, the matter that may differ from one type of health

care worker to another and may be influenced by their different type of training (Vaz et al., 2010 & ANA 2014). Staff nurses are at risk of being exposed to infectious materials such as bodily fluids, infected medical supplies, devices, and equipment, contaminated environmental surfaces, or contaminated air; thus, they must work in a secure environment. (Al-Qahtani et al., 2020 & Center for Disease Control & Prevention, 2020).

Staff nurses may be exposed to infectious pathogens either directly or indirectly. Several viral outbreaks have occurred in the recent two decades, including the severe acute respiratory syndrome coronavirus (SARS-CoV) in 2002-2003 and H1N1 influenza in 2009. In 2012, the

Middle East respiratory syndrome coronavirus (MERS-CoV) was discovered for the first time in Saudi Arabia. According to the World Health Organization (WHO), viral diseases continue to emerge, posing a serious threat to public health and instilling fear and anxiety in nurses. Rials, such as body substances, contaminated medical supplies, devices, and equipment; contaminated environmental surfaces; or contaminated air, so that must work in contaminated environments (Cascella et al., 2020).

Psychological response to stress is a fact of everyday life. Stress is known as either a reaction or a stimulus. It is described as a connection between a person and the environment that the individual perceives as exhausting or surpassing his or her resources and harming his or her well-being, shown by worry, depression, and other psychological reactions. (Townsend, 2015). Many staff nurses exposed to it in their workplace when believing that they are receiving less support from their managers, officials, and colleagues than they would, stress results and a sense of negative feelings that can happen unexpectedly at any time (negative attitude, and disrupt the mind and body is reasonable which called a psychological response, so that Nurses attitude's and work stress while caring of Covid - 19 patient and play an important role in nursing practice compliance of infection control and prevention to achieve high quality of care (Puspitasari & Healthc, 2020).

During the COVID-19 pandemic, the **Centers for Disease Control and Prevention (CDC) (2020)** advises using extra infection prevention and control methods, in addition to normal procedures that are recommended as part of normal healthcare delivery to all patients. Additional procedures should be followed while caring for patients with suspected or confirmed SARS-CoV-2 infection. These practices are meant to apply to all patients, not only those with suspected or confirmed SARS-CoV-2 infection. The use of cloth face coverings or facemasks to cover a person's lips and nose to avoid the transmission of respiratory secretions when they speak, sneeze, or cough is referred to as source control.

Facemasks and cloth face coverings should not be worn by children under the age of two, anybody with respiratory problems, or anybody

unconscious, handicapped, or otherwise unable to remove the mask without help. The textile (cloth) covers used for source control are known as cloth face coverings. Facemasks, also known as surgical masks or process masks, are PPE that is often used for isolation but may not protect against splashes and sprays. A respirator is a face piece that covers the nose and mouth and is worn to limit the danger of breathing dangerous airborne particles (such as dust and infectious agents), gases, or vapors. The CDC/NIOSH certifies respirators, including those designed for use in healthcare (CDC; 2020).

Significance of the study:

On March 11, 2020, the **World Health Organization (2020)** labeled the new coronavirus (COVID-19) outbreak a worldwide pandemic owing to its fast worldwide spread. There have been almost 118,000 cases documented in 114 countries, with a total of 4291 deaths. Scholars have indicated that a person's degree of anxiety is connected to their level of knowledge and attitude. In April 2020, this assessment summarized knowledge, attitude, and practice among healthcare personnel, medical students, and communities in the United States, the United Kingdom, Italy, Jordan, and China during the COVID-19 pandemic. In general, the level of knowledge was favorable, and positive attitudes and acceptable practices were retained, according to the analysis. The use of extensive knowledge, as well as good attitudes and behaviors, may be able to limit the development of COVID-19.

Egypt is one of the biggest countries in the Arab region, with more than 100 million citizens. This high number of citizens could be associated with a great risk of spread and mortality, especially among old persons and those with chronic diseases. **The Egyptian ministry of health** was reported the statistical rate of Covid-19 infection among the Egyptian population from 14 April 2020 and 26 March 2020 that the total cases were 495 and 24 deaths to with a significant increase in the Covid-19 infection to reached 124891 and total deaths were 7069 death cases with a recovery rate reached to 106481. These efforts include political efforts by the governments, together with personal attitude, the psychological response, and practice compliance which depend on the awareness of the general public about the disease through different waves

of Covid-19 (**Egyptian ministry of health December 19, 2020**).

Infections in hospitals are a severe concern that endangers the health and safety of patients and medical personnel across the globe; COVID-19 emerged as a global threat, affecting 94 million people worldwide and causing about 2 million deaths as of January 2020. As the COVID-19 pandemic progresses, health care workers (HCWs) are the most important resources in providing care for the patients at the frontline in the battle against the disease. However, they are also at higher risk of becoming infected themselves, which could pose a big challenge for epidemic control and lead to the collapse of the healthcare system (**Barranco & Ventura, 2020**).

The prevalence of COVID-19 in health care workers was around 10%, and 29% of infections were due to accidental exposure to a patient at a non-COVID-19 facility, as reported by **Alajmi et al., (2020)**. Recent evidence also suggests that the risk of asymptomatic spread of COVID-19 to HCWs was presented (**Lee et al., 2020**). Workplace infection precautions are important elements to safeguard occupational health in healthcare; it will not do well if individual HCW does not follow them. Thus, implementing agreeable and acceptable workplace infection control guidelines and measures in healthcare settings during an infectious pandemic is necessary to protect HCW's health and reduce the risk of cross-transmission and infection in the workplace (**Kim & Hwang, 2020**).

Aim of the Study

The current study aimed to assess and compare nurse's attitude, psychological response, and practices compliance with infection control measures during Covid- 19 outbreak.

Research Questions:

- What is the type of attitude among staff nurses working in the Minia fever and Minia cardio-thoracic university hospital?
- What is the degree of nurse's work stress in isolation hospitals in both?
- What is the degree of nurse's practices compliance with infection control and prevention of COVID - 19 patients in isolation hospitals in both?
- Is there a relation between nurse's attitude,

work stress, and practices compliance with infection control and prevention measures for covid- 19 patients in both two isolation hospitals?

Subjects and methods

Research Design

A descriptive comparative research design will be utilized to fulfill the aim of this study; this design is used for non-randomized experiments, used when it is neither feasible nor ethical to randomize participants into groups for comparison.

Setting:

The setting was selected randomly, the study was being conducted in corona virus's isolation hospitals, Minia City, Egypt (Minia cardio-thoracic university hospital and Minia fever hospital). Minia fever hospital provides services for the care of fevers and endemic diseases and isolation of positive corona cases and included emergency department, hemodialysis positive B virus, HIV, immunology unit, positive isolation ward, isolation intensive care unit, tropical unit for typhoid, meningitis, and outpatient clinics for all cases. While Minia cardio-thoracic university hospital provides services for open heart, thoracic, cancer surgery, coronary care unit, Echo, stress ECG for a cardiac patient, endoscopy, isolation of positive corona cases, and included emergency department, open heart operation room, the award for suspected and also positive isolation ward, and isolation intensive care unit.

Subjects

A convenient sample is used in the current study. It includes all staff nurses who were working in coronavirus isolation hospitals (Minia cardio-thoracic university hospital- Minia fever hospital) during the period of data collection. Their total numbers were (241) nurses and are classified as follows: (Minia cardio-thoracic university hospital (114 nurses) and Minia fever hospital (127 nurses).

Data Collection Tools:

Data collected through the utilization of three tools as follow:

Tool (1) Nursing attitude about Covid-19 outbreak consisted of two parts

Part I: Demographic data that used to collect data about the demographic characteristic of the study participants it will be included (hospital type, age, gender, marital status, educational qualification, experience, job position, working area, and present of a family history of covid-19 patients).

Part (II): A self-administered structured attitude questionnaire: this tool was developed by the researchers based on the work of **Begum (2020) and Tadesse et al. (2020)** to assess nurses' attitudes about the Covid-19 outbreak. It consisted of 16 questions as the participant agree that COVID-19 will finally be successfully controlled, you think will probably get the illness, you are worried one of your family members may get an infectionetc. The attitude score was based on a five-point Likert scale ranging from 1 to 5 described as (strongly disagree= 1, disagree= 2, neutral= 3, agree= 4, and strongly agree= 5), (with a minimum score of 16 and the maximum score of 80) and divided as favorable attitude $\geq 60\%$ or unfavorable attitude $\leq 60\%$.

Tool (2) A self-administered structured psychological response questionnaire: this tool developed by the researchers based on the work of **Tesfaye (2020) and Tadesse et al. (2020)** to assess nurses' psychological response to the Covid-19 outbreak. It consisted of 16 questions as the participant found it difficult to fall asleep or kept sleeping or slept too much suddenly, felt tired or had little energy, feelings of fatigue after the outbreak,etc. The psychological response score was based on a five-point Likert scale ranging from 1 to 4 described as (not disturbed at all= 1, disturbed for few days = 2, disturbed for more than seven days = 3, and almost daily disturbance= 4, and strongly agree = 5), with a minimum score was 16 and a

maximum score was 64) and divided as having psychological disturbance $\geq 60\%$ or no psychological disturbance $\leq 60\%$.

Tool (3): An observation practice checklist: regarding protective measures developed by the researchers based on the work of **Labrague, Rosales, Tizon (2012) and Begum, (2020) and Tadesse, et al. (2020)** to assess the degree of nursing compliance regarding protective measures, consisted of 20 items as always removing protective equipment carefully, covering mouth when coughing and sneezing, wearing a mask regardless of the presence or absence of symptoms, etc. The practice compliance score was (compliance with protective measures =1 and non-compliance with protective measures =0) (with a minimum score was 0 and a maximum score was 20) and divided as compliance response $\geq 60\%$ or non-compliance response $\leq 60\%$.

Tools validity and reliability

The tools were tested by a team of five nursing administration and psychiatric and mental health nursing experts at Minia, University which affirmed its validity. Modifications to the tools were done based on the panel's evaluation of the content's appropriateness and item sequence accuracy. Cronbach's alpha test was used to determine the degree to which the items of the tools (tool I part two, II, III) test the same concept and correlate with one another. The internal consistency was 0.92, 0.92, and 0.95, respectively.

Pilot study:

After developing the tools and before beginning the initial data collection, 24 staff nurses participated in a pilot study. The pilot study aimed to test whether the study was feasible, as well as the order in which the items were presented and the preliminary tool's consistency and applicability. It was also used to measure the period it would take to complete the questionnaire, which came to 20 minutes, and

the pilot was included in the study. The process of the pilot study took two weeks (from 15/1 to 30/1) in January 2020.

Ethical consideration:

The ethical study committee of Minia University's faculty of nursing provided their initial approval in writing. The researchers met with the directors to introduce and discuss the study's aim, then met with the head nurses in each department to introduce and discuss the study's aim, as well as decide the best time to meet the study participants and collect data. Nurses were told that any details gathered would be kept private and would have no bearing on their professional evaluation.

Data collection procedure:

Official permissions were gained from Minia cardio-thoracic University's medical and nursing administration, as well as fever hospitals. Before collecting data, the dean of post-graduate studies and research at Minia University's Faculty of Nursing issued a formal letter, along with the ethical committee's approval, to the medical and nursing administrations, as well as the heads of the units, requesting their permission and assistance in conducting the study. The data required for the investigation was also included in the letters. In addition, each participant signed a permission form. The nature, goal, procedures, and expected advantages of the research were all described to the nurses prior to their participation. The researchers made it clear that participation is

entirely optional and that participants could quit at any moment for any reason.

Before distributing the questionnaires, the researchers met with the participants at a time established by the head of each department, introduced herself, and discussed the research aim as well as the components of the tools to the participants in the study environment. The researchers next distributed the data gathering tools to each participant at their workplace. The questionnaire form took roughly 20 minutes to complete. The researchers observed 4-6 nurses/shift/day in the morning and evening shift every Sunday and Monday / week. Data collection time took 6 months from the beginning of February up to July 2020, data were collected twice a week in the morning, evening shift.

Statistical design:

The Statistical Package for the Social Sciences (SPSS 25.0). At the coding and data entering phases, quality control was performed. For qualitative variables, descriptive statistics in the form of frequencies and percentages were used, whereas, for quantitative data, mean and standard deviation (SD) were used. The attitude of nurses regarding coronavirus illness 2019, psychological reactions, and infection prevention behavior were tested using a correlation coefficient test, with statistical significance set at P 0.05.

Results

Table (1): Percentage distribution of the demographic characteristics among the studied sample (n = 241)

Demographic characteristics	Hospital type				Test of significance	
	Minia fever hospital (n = 127)		Minia cardio-thoracic university hospital (n= 114)		X ²	P-value
	No.	%	No.	%		
Age/ years						
25- < 30	33	26.0	30	26.3	9.201	.065
30 - < 35	54	42.5	33	29.9		
35 - < 40	24	18.9	22	19.3		
40 - < 45	10	7.9	22	19.3		
45 - < 50	6	4.7	7	6.1		
Mean ± SD	32.5 ± 5.4		34.0 ± 6.9			
Gender						
Male	39	30.7	31	27.2	0.360	0.548
Female	88	69.3	83	72.8		
Marital status						
Single	33	26.0	34	29.8	3.756	0.289
Married	71	55.9	69	60.5		
Divorced	15	11.8	8	7.0		
Widow	8	6.3	3	2.6		
Qualification						
Diploma nursing	37	29.1	51	44.7	6.614	0.037*
Technical institute nursing	43	33.9	33	28.9		
Baccalaureate nursing	47	37.0	30	26.3		
Experience/years						
1- 10	61	48.0	37	32.5	8.543	0.014*
11- 20	56	44.1	57	50.0		
21- 30	10	7.9	20	17.5		
Mean ± SD	11.7 ± 5.9		13.7 ± 5.9			
Job position						
Staff nurses	100	78.7	100	87.7	3.431	.064
Head nurses	27	21.3	14	12.3		
Working area						
General	80	63.0	67	58.8	0.450	0.502
Critical	47	37.0	47	41.2		
Family history of COVID-19 patient						
Yes	58	45.7	73	64.0	8.167	0.004**
No	69	54.3	41	36.0		

* Statistically significance differences at < 0.05 ** Statistically significance differences at < 0.01

Table (1): shows that there were no significant differences between demographic characteristics among the studied sample working in the Minia fever hospital and university hospital except their qualification, experience, and Family history of COVID-19 patient.

Table (2): Frequency distribution of the studied sample regarding their attitude, psychological response, and infection prevention practice (n = 241)

Items	Hospital type				Test of significance	
	Minia fever hospital (n = 127)		Minia cardio-thoracic university hospital (n= 114)		X ²	P-value
	No.	%	No.	%		
Attitude						
Favorable	91	71.7	98	86.0	7.271	0.007**
Un-favorable	36	28.3	16	14.0		
Psychological response						
Having psychological disturbance	93	73.2	0	.0	35.533	0.0001**
No psychological disturbance	34	26.8	114	100.0		
Infection prevention practice						
Compliance	93	73.2	112	98.2	29.590	0.0001**
Non-compliance	34	26.8	2	1.8		

** Statistically significance differences at < 0.01

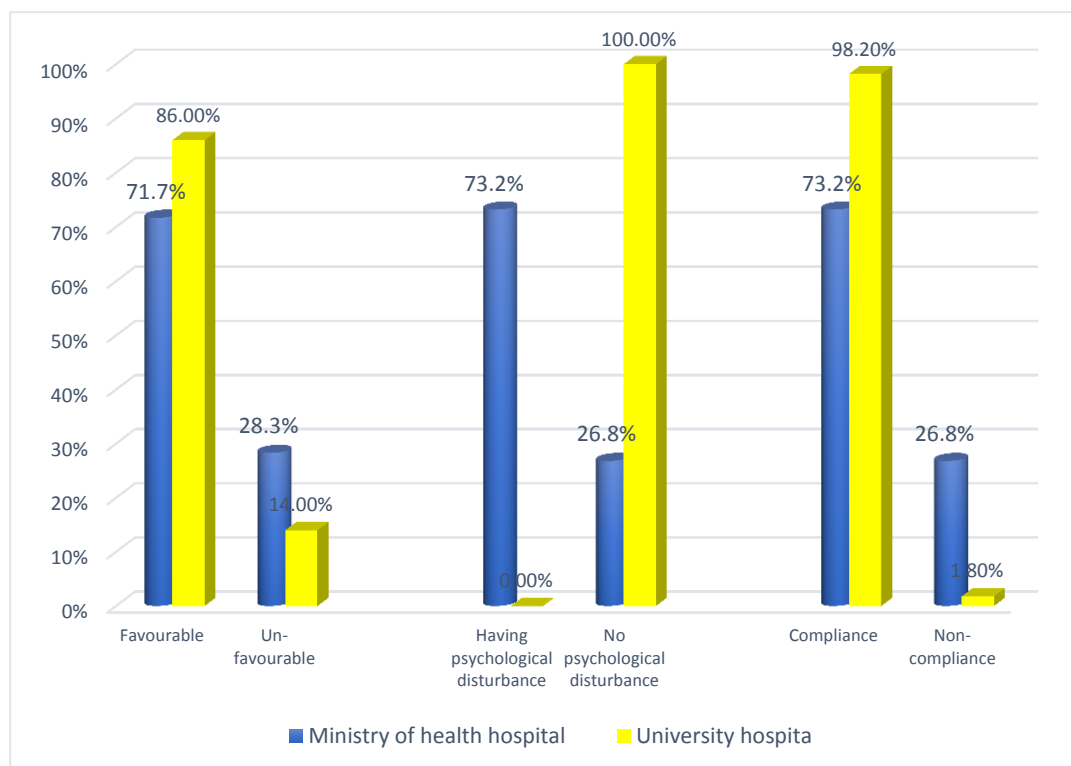
**Figure (1):** Percentage distribution of the studied sample regarding their attitude, Psychological response, and infection prevention practice (n = 241)

Table (2) & Figure (1): Illustrates that 71.7% of the studied nurses working in the Minia fever hospital compared to 86.0% of the studied nurses working in the Minia cardio-thoracic university hospital had a favorable attitude toward coronavirus disease 2019, 26.8 % compared to 100.0% of them had no psychological responses respectively and 73.2% compared to 98.2% of them had compliance in infection prevention practice respectively with highly statistically significant differences which P – vale < 0.007, 0.0001, and 0.0001 respectively.

Table (3a): correlation between selected demographic characteristics of the studied nurses in the Minia fever hospital and their total attitude of nurses toward coronavirus disease 2019, psychological responses, and infection prevention practice

		Minia fever hospital (n = 127)		
		Attitude	Psychological response	Infection prevention practice
Age	r	.103	.045	.053
	P-value	.249	.618	.554
Qualification	r	.254	.281	.356
	P-value	.004**	.001**	.0001**
Experience	r	-.011-	-.065-	-.122-
	P-value	.899	.469	.171
Attitude	r	1	.651	.536
	P-value		.0001**	.0001**
Psychological response	r	.651	1	.271
	P-value	.0001**		.002**
Infection prevention Practice	r	.536	.271	1
	P-value	.000**	.002**	

** correlation at < 0.01

Table (3a): shows that there were fair positive association between the studied nurses attitude who working in the Minia fever hospital and their qualification ($r = 0.254$ & P- value < 0.004), there were fair positive association between the studied nurses psychological response and their qualification and infection prevention practice ($r = 0.281$ & P- value < 0.001, $r = 0.271$ & P- value < 0.002 respectively) and there were fair positive association between the studied nurses infection prevention practice and their qualification and psychological response ($r = 0.356$ & P- value < 0.0001, $r = 0.271$ & P- value < 0.002 respectively).

Also, there were moderate positive association between the studied nurses' attitude who working in the Minia fever hospital and their psychological response and infection prevention practice ($r = 0.651$ & P- value < 0.0001, and $r = 0.536$ & P- value < 0.0001 respectively), there were moderate positive association between the studied nurses psychological response and their attitude ($r = 0.651$ & P- value < 0.0001) and there were moderate positive association between the studied nurses infection prevention practice and their attitude ($r = 0.536$ & P- value < 0.0001).

Table (3b): correlation between selected demographic characteristics of the studied nurses in the Minia cardio-thoracic university hospital and their total attitude of nurses toward coronavirus disease 2019, psychological responses, and infection prevention practice

		Minia cardio-thoracic university hospital (n= 114)		
		Attitude	Psychological response	Infection prevention practice
Age	r	-.305	.056	-.294
	P-value	.001**	.552	.002**
Qualification	r	.315	-.244	.137
	P-value	.001**	.009**	.146
Experience	r	-.371	.085	-.316
	P-value	.0001**	.371	.001**
Attitude	r		-.237	.423
	P-value		.011*	.0001**
Psychological response	r	-.237		-.115
	P-value	.011*		.222
Infection prevention Practice	r	.423	-.115	
	P-value	.0001**	.222	

Table (3b): presents that there were fair positive association between the studied nurses' attitude in the Minia cardio-thoracic university hospital and their qualification, and infection prevention practice ($r = 0.315$ & P - value < 0.001 , and $r = 0.423$ & P - value < 0.0001 respectively), and there were fair positive association between the studied nurses infection prevention practice and their attitude ($r = 0.423$ & P - value < 0.0001)

But, there were fair negative association between the studied nurses attitude in the Minia cardio-thoracic university hospital and their age, experience, psychological response toward coronavirus disease 2019 ($r = -0.305$ & P - value < 0.001 , $r = -0.371$ & P - value < 0.0001 , $r = -0.237$ & P - value < 0.0001 respectively), that there were fair negative association between the studied nurses psychological response who working in the Minia cardio-thoracic university hospital and their qualification, and their attitude toward coronavirus disease 2019 ($r = -0.244$ & P - value < 0.009 , $r = -0.237$ & P - value < 0.01 respectively), and there were fair negative association between the studied nurses infection prevention practice who working in the Minia cardio-thoracic university hospital and their age, and experience ($r = -0.294$ & P - value < 0.002 , $r = -0.316$ & P - value < 0.001 respectively).

Table (4): relation between the total attitude of the studied nurses toward coronavirus disease 2019 and their selective demographic characteristics (n = 241)

Demographic characteristics	Minia fever hospital (n = 127)					Minia cardio-thoracic university hospital (n= 114)			
	No.	Un-Favorable		Favorable		Un-Favorable		Favorable	
	No.	No.	%	No.	%	No.	%	No.	%
Gender									
Male	39	15	38.5	24	61.5	2	6.5	29	93.5
Female	88	21	23.9	67	76.1	14	16.9	69	83.1
X^2 (P-value)		2.835 (0.095) NS				2.029 (0.154) NS			
Marital status									
Single	33	15	45.5	18	54.5	7	20.6	27	79.4
Married	71	14	19.7	57	80.3	7	10.1	62	89.9
Divorced	15	4	26.7	11	73.3	1	12.5	7	87.5
Widow	8	3	37.5	5	62.5	1	33.3	2	66.7
X^2 (P-value)		7.708 (0.05)*				3.017 (0.389)NS			
Job position									
Staff nurses	100	36	36.0	64	64.0	14	14.0	86	86.0
Head nurses	27	0	.0	27	100.0	2	14.3	12	85.7
X^2 (P-value)		13.565 (0.0001)**				0.001 (0.977) NS			
Working area									
General	80	19	23.8	61	76.3	10	14.9	57	85.1
Critical	47	17	36.2	30	63.8	6	12.8	41	87.2
X^2 (P-value)		2.249 (0.134) NS				0.107 (0.744) NS			
Family history of COVID-19 patient									
Yes	58	18	31.0	40	69.0	9	12.3	64	87.7
No	69	18	26.1	51	73.9	7	17.1	34	82.9
X^2 (P-value)		0.380 (0.538) NS				0.490 (0.484) NS			

* Statistically significance differences at < 0.05 ** statistically significance differences at < 0.01

Table (4): Shows that 80.3% of married nurses who worked in the Minia fever hospital had a favorable attitude toward coronavirus 2019 disease, and 100.0% of head nurses who worked in the Minia fever hospital had a favorable attitude toward coronavirus 2019 disease with statistically significant differences which P -value < 0.05 , and 0.0001 respectively.

But there was no relation between a total attitude of the studied nurses who worked in the Minia cardio-thoracic university hospitals toward coronavirus disease 2019 and their selective demographic characteristics.

Table (5): Relation between total infection prevention practices of the studied nurses toward coronavirus disease 2019 and their selective demographic characteristics (n = 241)

Demographic characteristics	Minia fever hospital (n = 127)					Minia cardio-thoracic university hospital (n= 114)			
	No.	Compliance		Non-compliance		Compliance		Non-compliance	
	No.	No.	%	No.	%	No.	%	No.	%
Gender									
Male	39	17	43.6	22	56.4	0	0.0	31	100.0
Female	88	17	19.3	71	80.7	2	2.4	81	97.6
$X^2(P\text{-value})$		8.121 (0.004)**				0.760 (0.383) NS			
Marital status									
Single	33	12	36.4	21	63.6	0	0.0	34	100.0
Married	71	15	21.1	56	78.9	2	2.9	67	97.1
Divorced	15	5	33.3	10	66.7	0	.0	8	100.0
Widow	8	2	25.0	6	75.0	0	0.0	3	100.0
$X^2(P\text{-value})$		3.045 (0.385) NS				1.328 (0.723) NS			
Job position									
Staff nurses	100	34	34.0	66	66.0	1	1.0	99	99.0
Head nurses	27	0	.0	27	100.0	1	7.1	13	92.9
$X^2(P\text{-value})$		12.536 (0.0001)**				2.689 (0.101) NS			
Working area									
General	80	24	30.0	56	70.0	2	3.0	65	97.0
Critical	47	10	21.3	37	78.7	0	.0	47	100.0
$X^2(P\text{-value})$		1.149 (0.284) NS				1.428 (0.232) NS			
Family history of COVID-19 patient									
Yes	58	17	29.3	41	70.7	2	2.7	71	97.3
No	69	17	24.6	52	75.4	0	.0	41	100.0
$X^2(P\text{-value})$		0.351 (0.0554) NS				1.143 (0.285) NS			

** Statistically significance differences at < 0.01

Table (5): presents that 43.6% of male nurses who worked in the Minia fever hospital had compliance in infection prevention practices, and 34.0% of staff nurses who worked in the Minia fever hospital had compliance in infection prevention practices with statistically significant differences which P-value < 0.004, and 0.0001 respectively.

But, there was no relation between the total infection prevention practices of the studied nurses who worked in the Minia cardio-thoracic university hospitals toward coronavirus disease 2019 and their selective demographic characteristics.

Table (6): relation between the total psychological response of the studied nurses toward coronavirus disease 2019 and their selective demographic characteristics (n = 241)

Demographic characteristics	Ministry of health hospital (n = 127)					Test of significance	
	No.	Not disturbed		Almost daily disturbance		X^2	P-value
	No.	No.	%	No.	%		
Gender							
Male	39	15	38.5	24	61.5	3.923	0.048*
Female	88	19	21.6	69	78.4		
Marital status							
Single	33	12	36.4	21	63.6	7.183	0.066
Married	71	13	18.3	58	81.7		
Divorced	15	7	46.7	8	53.3		
Widow	8	2	25.0	6	75.0		
Job position							
Staff nurses	100	32	32.0	68	68.0	6.559	0.01*
Head nurses	27	2	7.4	25	92.6		
Working area							
General	80	27	33.8	53	66.3	5.370	0.02*
Critical	47	7	14.9	40	85.1		
Family history of COVID-19 patient							
Yes	58	20	34.5	38	65.5	3.238	.072
No	69	14	20.3	55	79.7		

* Statistically significant differences at < 0.05

Table (6): shows that 78.4% of female nurses who worked in the Minia fever hospital had almost daily disturbance toward coronavirus disease, 68.0% of staff nurses who worked in the Minia fever hospital had almost daily disturbance toward coronavirus disease and 85.0% of nurses who work in the critical area who in the Minia fever hospital had almost daily disturbance toward coronavirus disease with statistically significant differences which P -value < 0.048 , 0.01 , and 0.02 respectively.

Discussion

Covid-19 had an extremely infection rate and relatively high morbidity, nurses worries, fear from contact with suspected or confirmed cases have been reported (Lin,2020); the emergence and pandemic nature of COVID-19 had exacerbated fears worldwide, leading to stigma in some cases and cause major stress in the workplace and affect their attitudes negatively (Guan et al., 2020; Huang et al., 2020; Center for Disease Control and Prevention, 2020).

Many occupational stressors affect staff nurses in health care settings as working conditions (shift, weekend work, inadequate remuneration; more work hours; discrimination and safety at work environment; poor relationship at work; role conflict and ambiguity. All of these stressors had to affect negatively on nurses' attitudes (Mackay et al., 2013). Nurses' attitude, the psychological response, and practice compliance affected by Work stress that manifested by harmful emotional and physical reactions resulting from the interactions between the worker and his or her environment where the demands of the job exceed the worker's capabilities and resource

The finding of the current study revealed that there were no significant differences between demographic characteristics among the studied sample working in the Minia fever hospital and Minia cardio-thoracic university hospital except their qualification, experience, and Family history of COVID-19 patient. The finding of the current study presented that there were fair positive association between the studied nurses attitude who working in the Minia fever hospital and their qualification ($r = 0.254$ & P - value < 0.004), there were fair positive association between the studied nurses psychological response and their qualification and infection prevention practice ($r = 0.281$ & P - value < 0.001 , $r = 0.271$ & P - value < 0.002 respectively) and there were fair positive association between the studied nurses infection prevention practice and their qualification and

psychological response ($r = 0.356$ & P - value < 0.0001 , $r = 0.271$ & P - value < 0.002 respectively).

This explained as qualification, experience, and Family history of COVID-19 patient affected nurses attitudes as higher educational level, work experience and presence of a Covid 19 cases in their family create a genuine, therapeutic and trusting relationship with Covid -19 patient that was decreasing fear, anxiety, and reflected easiness and relaxed work environment that generate a positive attitude, undisturbed psychological response that also affected their practices.

The finding of the current study showed that 71.7% of the studied nurses working in the Minia fever hospital compared to 86.0% of the studied nurses working in the Minia cardio-thoracic university hospital had a favorable attitude toward coronavirus disease 2019, 26.8 % compared to 100.0% of them had no psychological responses respectively and 73.2% compared to 98.2% of them had compliance in infection prevention practice respectively with highly statistically significant differences which P – vale < 0.007 , 0.0001 , and 0.0001 respectively.

This might be related to the collaborative efforts made by the ministry of higher education and Ministry of Health, which is concerned with spreading health awareness among their nurses in hospitals about the Coronavirus in all its waves, as well as improving the conditions of its workers, increasing Compensation allowance for infection and improve their psychological empowerment by moral stimulation by launching the name of the White Army to appreciate their efforts, as well as putting this name on the currencies circulated as the Egyptian pound, all of these matters was a means of psychological empowerment and created enforce a positive attitude towards the job, importance of the nursing profession and undisturbed psychological response in the time of Covid-19 outbreak.

The finding of the current study presented that there were moderate positive association between the studied nurses attitude who working in the Minia fever hospital and their psychological response and infection prevention practice ($r = 0.651$ & P - value < 0.0001 , and $r = 0.536$ & P -value < 0.0001 respectively), there were moderate positive association between the studied nurses psychological response and their attitude ($r = 0.651$ & P - value < 0.0001) and there were moderate positive association between the studied nurses infection prevention practice and their attitude ($r = 0.536$ & P - value < 0.0001).

This might be related to fair knowledge about the COVID-19 pandemic resulting in less psychological distress, as manifested by an undisturbed psychological response (less fear, anxiety, and depression) and have a positive attitude; all of them had a direct association and effect on nurses' compliance with infection prevention and control practices. **Brooks et al. (2020)** supported that information and understanding of a disease epidemic might provide a feeling of relief, thus reducing the psychological distress that may be linked with it. Furthermore, **Wang et al. (2020)** backed up the reasoning, reporting that persons with sufficient information and understanding about the COVID-19 pandemic are less likely to incur psychological discomfort and have a positive attitude than others.

The current findings are consistent with those of **Okoro et al. (2020)**, who investigated the COVID-19 pandemic, psychological response to quarantine, and knowledge of the disease among inmates in a Nigerian detention center. They discovered that low levels of knowledge about COVID-19, high levels of psychological distress, and a relationship between high educational level and knowledge about the disease among inmates in a Nigerian detention center. The importance of having adequate knowledge about a disease epidemic on lowering the negative psychological impacts the sickness may have on those who are isolated is critical.

Moreover, the current study is agreed with other about Attitudes, and Practices of Nursing towards Novel Corona Virus (COVID 19) reported a moderate knowledge towards COVID-19, participants demonstrated an optimistic,

favorable attitude toward disease and good practice towards COVID-19.

Furthermore, the current study finding is according to the study of **Saladino, Algeri, and Auriemma; 2020** about Psychological and Social Impact of Covid-19: New Perspectives of Well-Being, and showed that the Covid-19 pandemic has had significant psychological and social effects on the population, and highlighted the impact on the psychological well-being of the most exposed groups, including children, college students, and health workers, who are more likely to develop anxiety, posttraumatic stress disorder, depression, and other symptoms of distress.

Also, the current study finding is according to the study of **El-Zoghby et al. (2020)** about the impact of the COVID-19 pandemic on mental health and social support among adult Egyptians, reported that fear, loss of freedom, financial stress, work stress, loneliness, uncertainty surrounding the disease, the strangeness of the disease, and inadequate information about the COVID-19 pandemic. In the same line with **Brooks et al. (2020)** studied the psychological impact of quarantine and how to reduce it: a rapid review of the evidence reported that during a disease epidemic or quarantine, patients are more vulnerable to anxiety, depression, and other signs of psychological distress. Similar to the study conducted by **Saadeh et al. (2020)** on the Knowledge, Attitudes, and Practices of COVID-19 among nurses in Lebanon, the majority (62%) reported knowing about COVID-19, and 90% feared infection for themselves and their family members because of occupational exposure. 84.6% of the nurses stated following infection prevention and control procedures. Restrictive supplies were limited in hospitals.

The latest research shows that **Saadeh et al. (2020)** had shown that the majority of nurses in Lebanon had sufficient knowledge about COVID-19, 62% declared being afraid of being infected, while 90% were afraid for their family members to being infected because of their occupational exposure. About 84.6% of nurses reported following infection prevention and control practices. Protective equipment was scarce in hospitals.

Additionally, the current study finding is further supported by **Mishra et al., (2016)** study, which shows that health care workers had a lower

level of psychological distress; and this was attributed to their high level of awareness, knowledge, and attitude during the outbreak. In a study that measured stress responses among health care personnel associated with the SARS epidemic, proper information and awareness about the illness were shown to reduce stress. People who have adequate information and knowledge about the COVID-19 pandemic are less likely to develop psychological distress and have a positive attitude (Wang et al., 2020)

The current results disagreed with the study of Islam (2020) about psychological responses during the COVID-19 outbreak among university students in Bangladesh revealed that many students experienced moderate to extremely severe depression (62.9%), anxiety (63.6%), and stress (58.6%). DAS were highly overlapping, consistent with prior studies of their co-occurrences.

The current study finding is presents that there were fair positive association between the studied nurses' attitude in the Minia cardio-thoracic university hospital and their qualification, and infection prevention practice ($r = 0.315$ & $P\text{-value} < 0.001$, and $r = 0.423$ & $P\text{-value} < 0.0001$ respectively), and there were fair positive association between the studied nurses infection prevention practice and their attitude ($r = 0.423$ & $P\text{-value} < 0.0001$)

But, there were fair negative association between the studied nurses attitude in the Minia cardio-thoracic university hospital and their age, experience, psychological response toward coronavirus disease 2019 ($r = -0.305$ & $P\text{-value} < 0.001$, $r = -0.371$ & $P\text{-value} < 0.0001$, $r = -0.237$ & $P\text{-value} < 0.0001$ respectively), that there were fair negative association between the studied nurses psychological response who working in the Minia cardio-thoracic university hospital and their qualification, and their attitude toward coronavirus disease 2019 ($r = -0.244$ & $P\text{-value} < 0.009$, $r = -0.237$ & $P\text{-value} < 0.01$ respectively), and there were fair negative association between the studied nurses infection prevention practice who working in the Minia cardio-thoracic university hospital and their age, and experience ($r = -0.294$ & $P\text{-value} < 0.002$, $r = -0.316$ & $P\text{-value} < 0.001$ respectively).

Nursing job attitude was among staff nurses may be affected by increasing the risk of Covid-

19 infection regardless of their age, experience, and psychological response after the decision that all general and Minia cardio-thoracic university hospitals used for Covid-19 patient isolation as a result of an increased number of Covid-19 infection among all population. Fear from transferring the infection to their relatives and family, furthermore the stress was occurring in the isolation periods in hospitals. The nursing attitude changed to be positive and undisturbed psychological response through the availability of Covid-19 vaccine and increase the chances for taking the vaccine, support from supervisor and nurse manager, clarity of organization policy, awareness of continuous and fast-changing of infection control instructions, updating health information about coronavirus is related to a mutation in the form of the Coronavirus and the emergence of successive waves of highly contagious and spreading corona, through using media like TV, newspaper, using internet web sites, messenger, WhatsApp, and other technologies.

This finding of the current study supported with Islam (2020) study of Psychological responses during the COVID-19 outbreak among university students in Bangladesh clarified that many students spend time on the internet (including on social media), online counseling, campaigns, during the quarantine another awareness programs that may be helpful to reduce the impact of COVID-19 on mental health in this population.

Wang et al. (2020) revealed that the immediate psychological responses and related variables during the first stage of the 2019 coronavirus illness (COVID-19) pandemic were shown to be inconsistent with the present research results. During the first phase of the COVID-19 outbreak in China, a majority of respondents rated the psychological impact as moderate to severe, and approximately one-third reported moderate to severe anxiety, and vulnerable groups were identified as having a lower level of psychological impact and having better mental health status.

The current study, which is supported by the findings of Rana, Mukhtar, and Mukhtar (2020), found that Pakistan healthcare workers who are exposed and in direct contact with confirmed and suspected COV outbreaks are

vulnerable to both high-risk infection and mental health problems. The availability of COVID-19 in Pakistan has meant a significant danger of infection, lack of equipment for protection against contagion, isolation, weariness, and loss of contact with family for medical professionals. Even more so, quarantine might create an atmosphere of collective hysteria, dread, and worry for healthcare staff working in hospitals, including inpatient and outpatient care, as well as huge tertiary care centers.

Also, **Zheng (2020)** claimed that the intensity is producing mental health difficulties which might have long-term consequences on the medical personnel's general well-being. These healthcare workers' unremitting stress might cause them to experience anxiety, fear, panic attacks, posttraumatic stress symptoms, psychological distress, stigma, and avoidance of contact, as well as depressive tendencies, disrupted sleep, and social isolation from family and friends. Adjustment issues among healthcare workers may arise if one experiences a role reversal from a healthcare provider to the COVID-19-suspected or verified patient. Lumping one group of people together is possibly an obstacle to healthcare professionals wanting to seek help.

The current study is mentioned that health care staff members received support from their managers and administration when facing any psychological disturbance as fear, anxiety, and depression; this explanation is contradicted with **Xiao (2020)**, study A novel approach of consultation in 2019 novel coronavirus (COVID-19)-related psychological and mental problems: was reported that most health professionals do not often seek or receive systematic mental health care in their work setting.

The finding of the current study showed that 78.4% of female nurses worked in the ministry of health, respectively. the hospital had almost daily disturbance toward coronavirus disease, 68.0% of staff nurses who worked in the Minia fever hospital had almost daily disturbance toward coronavirus disease, and 85.0% of nurses who work in the critical area who in the Minia fever hospital had almost daily disturbance toward coronavirus disease with statistically significant differences which P-value < 0.048, 0.01, and 0.02, respectively.

A finding from the current study was also found in a study from **Alim et al. (2015)** that was performed on the assessment of depression, anxiety, and stress in medical students from a public medical college in Bangladesh. Here, depression, anxiety, and stress were measured, and it was concluded that it is essential to deal with or prevent any psychiatric disease (54.3 percent). Seventy-one percent of students either reported depression, anxiety, or stress alone or in combination. When all three were together and at their peak (36.2 percent). The gender difference was not associated with sadness, anxiety, or stress. Depression and stress levels increased with age.

Additionally, the research published in China by **Luo, et al. (2010)** found that hospital infection control departments and relevant authorities should pay more attention to compliance with standard precautions by nurses. Strengthen and offer enough practical personal protective equipment to decrease hospital infections and safeguard patients and medical workers.

The current study finds agreement with **Xiao (2020)**, who discovered that Consultation on COVID-19-related psychological and mental issues should start, early in a crisis. This keeps staff functioning and preserves their mental health and job productivity during such stressful circumstances. Authorities and researchers should be aware of this and reform the nurse emergency psychological assistance system, psychological assistance training, and psychological assistance knowledge publicization in the future. Anxiety and despair increase because of frontline nurses, particularly those who are in the midst of epidemics, such as Wuhan, who are put under great psychological strain.

It was reported from some studies that isolation ward nurses had higher KAP scores than general ward nurses. Infectious illnesses increase the effort and danger of infection for nursing workers, which makes them experience more psychological strain. Additionally, the study on the Mental Health Survey of 230 medical staff in a tertiary infectious disease hospital for COVID-19 (**Huang et al., (2020)**) showed that non-frontline workers had lower confidence in defeating the virus compared to frontline HCWs **Zhang et al., (2020)** studied the knowledge,

attitude, and practice for COVID-19 in Henan, China).

Conclusion

Nurses in both isolation hospitals (Minia cardio-thoracic university hospital and Minia fever hospital) had a favorable attitude toward coronavirus disease 2019, with undisturbed psychological responses, and they had compliance with infection control and prevention practice. No significant differences between demographic characteristics among the studied sample working in the Minia fever hospital and Minia cardio-thoracic university hospital except their qualification, experience, and Family history of COVID-19 patient.

Recommendation

Increase the level of knowledge and awareness of Covid -19 for all stages and waves among all other isolation hospitals, which is a determinant factor for gaining positive attitude, the undisrupted psychological response, and improving the compliance for infection control for saving themselves, their family and relatives through the development of a targeted education and training strategy to enhance compliance with infection control procedures.

Continuous education and training for all health sectors for increasing nurses' knowledge and awareness about all waves of the Covid -19 virus.

Need further studies on nursing attitude, psychological response, and practice compliance with infection control and prevention that include all health sectors to generalize their results.

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