

Preventive Program about COVID 19 for Nurses

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Abstract

Background: Covid-19 has become a global health threat that affected public health. **Aim:** Evaluate the effect of preventive program about COVID 19 for nurses. **Design:** A quasi experimental research design. **Setting:** This study was conducted at 25% of the total Health Administrations in Qalyobia Governorate. **Sample:** All nurses in the selected Health Administrations (n= 130). **Tools: I):** A structured interviewing questionnaire to assess: a): Socio-demographic characteristics of the studied nurses. b): Health status of the studied nurses during last six months. c): Nurses' knowledge about COVID 19. **II):** Likert scale to assess nurses' attitude toward prevention of COVID 19. **III):** An observational checklist to observe a): Nurses' practices regarding prevention of COVID 19. b): The environmental safety of MCH centers. **Results:** 50.8% of the studied nurses had good total knowledge score about COVID 19 and its prevention at pre-program implementation then increased to 93.8% at post program implementation, 30.8% of the studied nurses had positive total attitude score related COVID 19 and its prevention at pre-program implementation compared to 83.8% at post program implementation, 26.2% of the studied nurses had satisfactory total practices level toward prevention of COVID 19 at pre-program implementation then increased to 88.5% at post program implementation. **Conclusion:** Preventive program about COVID 19 succeeded to improve knowledge, attitude and practices of nurses regarding Covid-19. **Recommendations:** Periodic health educational programs for nurses should be made to improve nurses' knowledge, attitude and practices regarding prevention of COVID 19.

Keywords: COVID 19, Nurses, Preventive Program.

Introduction

Nurses are the backbone of any health system. Many nurses are on the frontline in the battle against Covid-19 because of their direct association with COVID19 patients. Due to its contagious nature, fatality and no proper medicine, it is a risk to the health and life of nurses and has an impact on their psychological health. Governments and health care systems including nurses all over the world are rapidly responding to the COVID-19 pandemic. According to the world health organization, there are about 43.5 million health care workers all over the

world; half of them are nurses so they are the front lines of this pandemic (**World Health Organization (WHO), 2021**).

A new coronavirus appeared in Wuhan, China at the start of December 2019 and has already infected hundreds of people in nearly a dozen countries. The first suspected cases were officially reported to the WHO on 31 December 2019, with the illness appearing just over three weeks earlier on 8 December 2019. In the middle of December 2020, about 71.351.965 confirmed cases worldwide and 1.612.372 deaths. About

Preventive Program about COVID 19 for Nurses

900000 confirmed cases of nurses and 260 deaths of nurses have been documented globally on 09 May 2020 (WHO a, 2020). Also, approximately 6.7 million fatalities and over 664 million confirmed cases have been documented globally on 22 January 2023. This showed that over 12,000 fatalities and approximately 1.9 million new cases on 22 January 2023 representing a drop of 25% from the prior 28 days (WHO, 2023).

The main transmission routes of COVID-19 are airborne droplets, direct contact with an infected individual and direct contact with surfaces and/or objects contaminated by body fluids of an infected person (Khurshid et al., 2020). The virus has an incubation period of up to 14 days in infected individuals either with symptoms or Asymptomatic (without signs of the infection). The symptoms include fever, cough, shortness of breath, fatigue, muscle or body aches, headache, loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting and diarrhea. Individuals at highest risk for severe disease and death include elderly people (aged over 60 years), regardless of whether having a medical problem or not, those with comorbidity of chronic illnesses such as hypertension, diabetes and cardiovascular disease, people with weakened immune system, seriously overweight and the pregnant women (Barua, 2020).

The ability of COVID-19 to cause severe complications in a relatively short span of time in infected individuals with devastating repercussions ranging from acute pneumonia, respiratory distress syndrome, heart failure, sepsis, septic shock, cytokine storm, Acute Kidney Injury (AKI), acidosis, coagulopathy, rhabdomyolysis, hyponatremia and multi-organ dysfunction

are the most common complication in COVID-19 (Madabhavi et al., 2020).

Community Health Nurse (CHN) plays an important role in improving quality of life among primary health care nurses by providing support and minimizing the burden among the nurses (Kandula & Wake, 2021). In response to the declaration of global pandemic, CHNs were responsible to seek information about COVID-19 and practice protective measures to curb the transmission of COVID-19 that include hand hygiene, Personal Protective Equipment (PPE), crowd avoidance, social distancing, proper etiquette when coughing and sneezing and raising public awareness about COVID 19 (Rahman et al., 2021).

Prevention programs provide services, strategies and activities to the nurses who are at a high risk of having COVID 19 which is comprehensively structured to reduce individual or environmental risk factors, increase the ability of CHN to improve knowledge and change behavior to prevent or reduce the risk of infection. Attending preventive programs is important to upgrade the Knowledge, Attitude and Practice (KAP) of nurses. The higher levels of information were associated with more positive attitudes towards COVID-19 preventive practices (Zhong et al., 2020).

Significance of the study:

The coronavirus is considered pandemic in Egypt as part of ongoing worldwide coronavirus pandemic. In Egypt it has been proclaimed its first case of COVID-19 on 14 February 2020 and then the preventive measures have been asserted by Egyptian government. On 25 March 2020, Egypt has to start limited lockdown measures as nasopharyngeal swabs, clinical evaluation and screening procedures. In Egypt,

according to reports made to the WHO, there were 515,609 confirmed cases of COVID-19 between 3 January 2020 and 27 January 2023, along with 24,805 fatalities. A total of 101,357,078 vaccination doses have been given as of 21 January 2023. The prevention and control of this disease are the major challenges that every country faces (WHO, 2023).

Aim of the study

The aim of this study was to evaluate the effect of preventive program about COVID 19 for nurses.

Research hypothesis:

Preventive program will improve the nurses' performance about COVID 19.

Subjects and Method

Research design:

A quasi-experimental research design (to demonstrate causality between an intervention and an outcome) was used in this study.

Setting:

The study was carried out at 25% of the total Health Administrations (11) in Qalyobia Governorate which included 3 Health Administrations were chosen randomly; Kafr Shokr, Tokh and Kaha Health Administration, all MCH centers from each Health Administration were included in this study which were five MCH Centers from all the chosen Health Administrations.

Sampling:

A convenience sample of nurses working at the previously mentioned settings were included in this study which included 130 nurses after excluding 22 nurses according to these criteria:

- **Inclusion criteria:** Agree to participate, working for six months or more.

- **Exclusion criteria:** Pregnancy and suffering from any chronic diseases.

Tools of data collection:

Three tools were used for data collection:

Tool I: A structured interviewing Questionnaire: which consisted of three parts adopted from Saha et al., (2020) & Elpasiony et al., (2021) and was modified by the researchers:

Part 1: It included socio-demographic characteristics of the studied nurses such as (age, educational level, marital status, residence, monthly income).

Part II: It was concerned with health status of the studied nurses during last six months and consisted of sex items such as (respiratory system problems, digestive system problems, eyes problems, ear problems, skin problems, bones and nerves problems) as reported.

Part III: It was concerned with the studied nurses' knowledge about COVID 19 which included 10 closed ended questions (multiple choice type) about (definition, modes of transmission, incubation period, high risk group, signs and symptoms, diagnostic methods, complications, preventive methods, preventive methods when contact with a person suffering from COVID 19 and self-isolation measures in the house).

Scoring system: The nurses' answers regarding knowledge assessment was assigned two points for every correct complete answer, one point for every correct incomplete answer and zero score if incorrect answer or don't know. These scores were summed up and the total divided by the total number of items giving a mean score for the part. The scores were converted into percent score. The total

Preventive Program about COVID 19 for Nurses

scoring system in knowledge part was classified as the following:

Total scores of knowledge = 20

- **Good** if total score was $\geq 75\%$ (≥ 15 points).
- **Average** if total score was 50% to less than 75% (10 – 14 points).
- **Poor** if total score was less than 50% (< 10 points).

* N.B: Source of knowledge question was not included in scoring system of knowledge.

Tool II: Likert scale: It was used to assess attitude of nurses toward prevention of COVID 19 adopted from **Hua et al., (2020)** and was modified by the researchers. The questionnaire was measured on a Likert type scale of (Agree, uncertain and disagree). It was translated into Arabic by the researchers which included 20 items.

Scoring system: Attitude scale score was calculated as (2) scores for agree, (1) scores for uncertain and (0) for disagree. These scores were summed up and the total divided by the total number of items giving a mean score for the part. The scores were converted into percent score. The total scoring system of attitude part was classified as the following:

The total attitude scores = 40

- **Positive** when the score was $\geq 60\%$ (≥ 24 points).
- **Negative** when the score was $< 60\%$ (< 24 points).

Tool III: An observational checklist that consisted of two parts:

The first part: Was concerned with observation of the nurses' practices regarding prevention of COVID 19 adopted from **(WHO b, 2020)** and was modified by the researchers and included 4 items such as

(hand washing that consisted of 12 items, PPE that consisted of 16 items, respiratory health practices that consisted of 4 items and dealing with others that consisted of 2 items).

Scoring system: Each procedure has 2 levels: Done and not done, the scoring system for nurses' practices was calculated as follows (1) score for done the skills, while (0) score for not done the skills. The score of the items was summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a present score. The total scoring system in practices part was classified as the following:

The total practices score = 34

- **Satisfactory** when the total score was $\geq 95\%$ (≥ 32 points).
- **Unsatisfactory** when the total score was $< 95\%$ (< 32 points).

The second part: Was concerned with observation of the environmental safety of MCH centers and adopted from **Salamati & Kulatunga, (2017)** and was modified by the researchers and included seven items such as (preventive measures of disinfection in the workplace that consisted of 4 items, communication and training that consisted of 2 items, PPE that consisted of 4 items, surveillance for infection that consisted of 3 items, waste management that consisted of 4 items, visit and checkup management that consisted of 3 items and emergency response that consisted of 2 items).

Environmental scoring system: Designed for the assessment of environment safety, (1) grade was given for present and (0) grade was given for absent. The score of each item summed-up and then converted into a percent score. The total scoring

system in environmental part was classified as the following:

The total Environment score = 22

- **Safe** if score was $\geq 80\%$ (≥ 18 points)
- **Unsafe** if the score was $< 80\%$ (< 18 points)

Content validity of the tools:

The tools were reviewed by five experts from the Community Health Nursing Specialties Department, Benha University and gave their opinion for clarity, relevance, comprehensiveness, appropriateness, legibility and applicability.

Reliability of the tools:

The reliability of the tools was done by Cronbach's Alpha coefficient test which revealed that each of the two tools consisted of relatively homogeneous items as indicated by the moderate to high reliability of each tool. The internal consistency of knowledge was 0.67, number of questions 10. The internal consistency of attitude was 0.87, number of sentences 20. The internal consistency of practice was 0.85, number of items 34.

Pilot study:

The pilot study was carried out on 10% (30) of the total sample to test the clarity, practicability and applicability of tools. According to the results obtained from data analysis, items didn't need for correction or modification, so the pilot study included in the total sample.

Procedure for data collection:

- **Study period:** Data were collected over four months from the beginning of April 2021 to end of July 2021.

- **Approval:** Before starting the study, a written official letter was obtained from the Dean of the Faculty of Nursing, Benha University and delivered to Directors of

MCH centers in Benha Bender, in order to obtain their approval for conduction of the study after explaining its purpose. At the time of data collection, a verbal agreement was taken from every participant in the study after a clear and proper explanation of the aim of the study to gain their cooperation.

- **Ethical considerations:** All ethical issues were assured; approval and an informed oral consent from all study participants were obtained for the fulfillment of the study. The aim of the study was explained to all nurses before applying the tools to gain their confidence, cooperation and trust. All nurses have the freedom to withdraw from participation in the study at any time. Privacy and confidentiality was assured. Ethics, values, cultural and beliefs was respected.

- **Development of data collection tools:** Data collection tools were based on reviewing the current and past available national and international references related COVID 19 and its effects, using journals, magazines, book and internet search were done. This was necessary for the researchers to be acquainted with and oriented about aspects of the research as well as to assist in the development of data collection tools; it was developed by the researchers based on reviewing related literatures and it was written in simple clear Arabic language.

- **Assessed baseline data:** Assessed knowledge, attitude and practices of the studied nurses through collection and analysis of baseline data from the filled tools. The researchers carried out the pre-test.

- **Development of the Preventive Program about COVID 19:** Based on the results obtained from the interviewing

Preventive Program about COVID 19 for Nurses

questionnaire and literature review which developed by researchers.

● **Important needs for target group:**

The researchers identified the important needs for target group, set priorities of needs, goals and objectives were developed.

► **General objective:** Apply the Preventive Program about COVID 19 for the nurses to improve their performance toward prevention of COVID 19.

► **Specific objectives:**

- Define COVID 19 and related terminology.
- List the methods of transmission of COVID 19.
- Recognize the vulnerable groups of COVID 19.
- Identify the incubation period of COVID 19.
- Enumerate the signs and symptoms of COVID 19.
- List ways to diagnose the infection of COVID 19.
- Discuss possible complications of COVID 19.
- Demonstrate ways to prevent infection with COVID 19.
- Demonstrate ways of prevention when contact with a person infected by COVID 19.
- Discuss measures taken during self-isolation at home.
- Apply steps of hand washing correctly committed with accurate time and possible reasons.
- Apply steps of wearing and removing PPE correctly.
- Apply respiratory health practices correctly.
- Apply positive practices when dealing with others.

● **Preventive Program about COVID 19:**

The study was conducted by the researchers for the studied sample in selected settings of MCH in Benha Bender and through program applications the researchers interviewed the nurses two days a week (Sunday and Wednesday) from 9:00 am to 1 pm, range of interviewed nurses daily was 4-5 nurses. The average time to complete each part ranged from 30-45 minutes.

The researchers implemented the program, the nurses were present all the time of the program sessions and the duration of each session was variable according to its contents as well as the nurses' response. Discussion, motivation and reinforcement during session were used to enhance learning. The researchers implemented the program through 8 sessions (4 theoretical and 4 practical); each session lasted 30-45 minutes and immediately did the post-test. Each session started by summary about the previous session and objectives of new topics. Direct reinforcement in the form of a copy of the illustrated booklet with picture about COVID 19 and its prevention was given as a gift for each nurse to use it as a future reference. At the end of each session, nurses participated in a discussion to correct any misunderstanding. Also, they were informed about the time of next session.

First session: At the beginning of the first session, the researchers welcome and introduce themselves to the nurses, an orientation to the program and its process were presented with clearance general and specific objectives of the program, definition of COVID 19, related terminology, modes of transmission, vulnerable groups and incubation period of COVID 19, taking into consideration the use of simple language according to the educational level.

Second session: Covered signs and symptoms of COVID 19, ways to diagnose the infection of COVID 19 and possible complications of COVID 19.

Third session: Covered ways to prevent infection with COVID 19 and ways of prevention when contact with a person infected by COVID 19.

Fourth session: Covered measures taken during self-isolation at home.

Fifth session: Covered steps of hand washing, accurate time required for hand washing and possible reasons of hand washing.

Six sessions: Covered steps of wearing PPE and removing PPE.

Seventh session: Covered correct respiratory health practices.

Eighth session: Covered positive practices when dealing with others.

► **Teaching methods:** All nurses received the same program content using the same teaching methods, there were:

- Lectures/ group discussions.
- Demonstration / re- demonstration.
- Role play.

► **Teaching aids:** Suitable teaching aids were specially prepared for program, as follow: Illustrated booklet, pictures, and handout.

● **Post -test: Evaluation of the preventive program:**

After implementation the program, the researchers applied the post-test immediately after the end of the program by using the post-test that was the same format of the pre-test questions.

Statistical Analysis:

The collected data was analyzed,

tabulated and presented in figures using the number and percentage distribution, mean and stander deviation using Statistical Analysis Package for Social Science (SPSS) version 20. Data were presented using proper statistical tests and if there were positive correlation or not. The following statistical tests that were used: Number and percentage: Mean, Stander Deviation (SD), Chi-square X^2 and correlation coefficient (r) were used for qualitative data. Also P-value was used to determine significance of results as follows: ≤ 0.05 is statistically significant relation: > 0.05 is not statistically significant relation and ≤ 0.001 is highly statistically significant relation.

Results

Table (1): Shows that; 50% of the studied nurses aged from $25 < 35$ years old with mean age was 33.46 ± 8.50 , while 48.5% of them had Technical Institute of nursing degree, 84.6% of them were married and 69.2% of them had enough monthly income.

Table (2): Clarifies that; 69.2% of the studied nurses had respiratory problems and 38.5% of them had digestive system problems and ear problems respectively while 84.6% of them had bone and nerves problems.

Figure (1): Represents that; 50.8% of the studied nurses had good total knowledge score about COVID 19 and its prevention at pre-program implementation then percentage increased to 93.8% at post program implementation.

Figure (2): Displays that; 30.8% of the studied nurses had positive total attitude level related COVID 19 and its prevention pre-program implementation compared to 83.8% at post program implementation.

Figure (3): Reveals that; 26.2% of the studied nurses had satisfactory total

Preventive Program about COVID 19 for Nurses

practices level toward prevention of COVID 19 at pre-program implementation then this percentage increased to 88.5% at post program implementation.

Figure (4): Shows that; 81% of MCH centers had safe environment while 19% of them had unsafe environment.

Table (3): Shows that; there was no statistically significant relation between total knowledge score of the studied sample and their socio-demographic characteristics pre and post program implementation.

Table (4): Clears that; there was highly statistically significant relation between total attitude score of the studied sample and their socio-demographic characteristics as age and educational level post program implementation while there was highly statistically significant relation between total attitude score of the studied sample and their socio-demographic characteristics as marital state and residence pre-program implementation.

Table (5): Clears that; there was highly statistically significant relation between total practices score of the studied sample and their socio-demographic characteristics as age and educational level pre and post program implementation.

Table (6): Clarifies that; there was positive correlation between total knowledge score of the studied sample, their total practices score and their total attitude score pre-program implementation.

Table (7): Clarifies that; there was positive correlation between total practices score of the studied sample and their total attitude score post program implementation.

Table (1): Frequency distribution of the studied sample regarding to their socio-demographic characteristics (n = 130).

Socio-demographic characteristics	No.	%
Age		
< 25 years old	15	11.5
25 < 35 years old	65	50.0
35 < 45 years old	39	30.0
45 < 55 years old	8	6.2
≥ 55 years old	3	2.3
Mean ± SD = 33.46 ± 8.50		
Educational level		
Secondary Nursing	37	28.4
Nursing Institute	63	48.5
Bachelor of Nursing	23	17.7
Postgraduate	7	5.4
Marital state		
Married	110	84.6
Widowed	10	7.7
Divorced	10	7.7
Monthly income		
Enough	90	69.2
Not enough	40	30.8

Table (2): Frequency distribution of the studied sample regarding to their self-reported health problems during last six months.

Items	Absent		Found	
	No.	%	No.	%
*Self-reported health problems during last six months				
Respiratory problems	40	30.8	90	69.2
Digestive system problems	80	61.5	50	38.5
Eye problems	100	76.9	30	23.1
Ear problems	80	61.5	50	38.5
Skin problems	90	69.2	40	30.8
Bones and nerves problems	20	15.4	110	84.6

***The responses were not mutually exclusive.**

Preventive Program about COVID 19 for Nurses

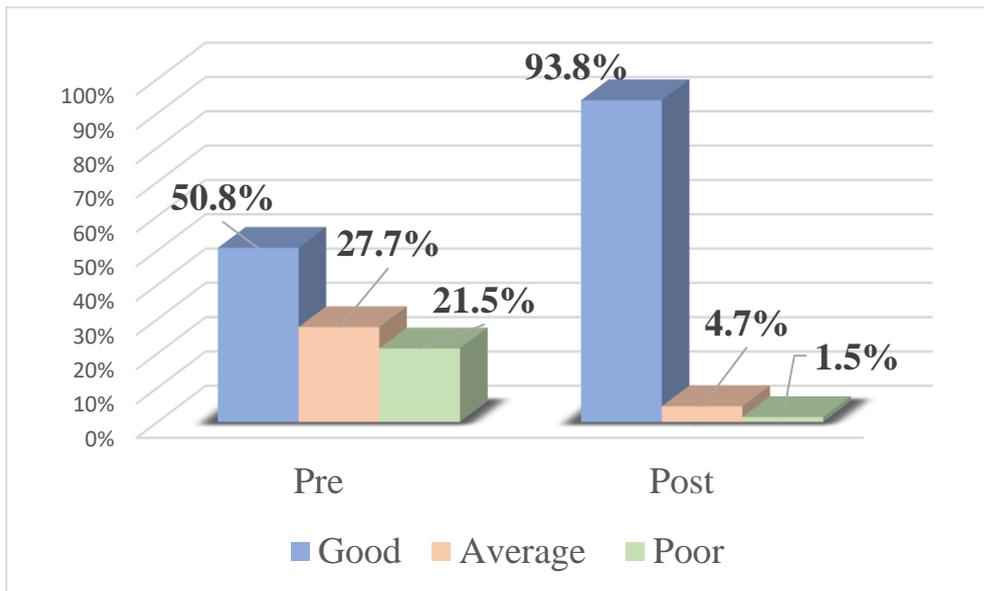


Figure (1): Percentage distribution of the studied sample regarding to their total knowledge score about COVID 19 and its prevention pre and post program implementation (n = 130).

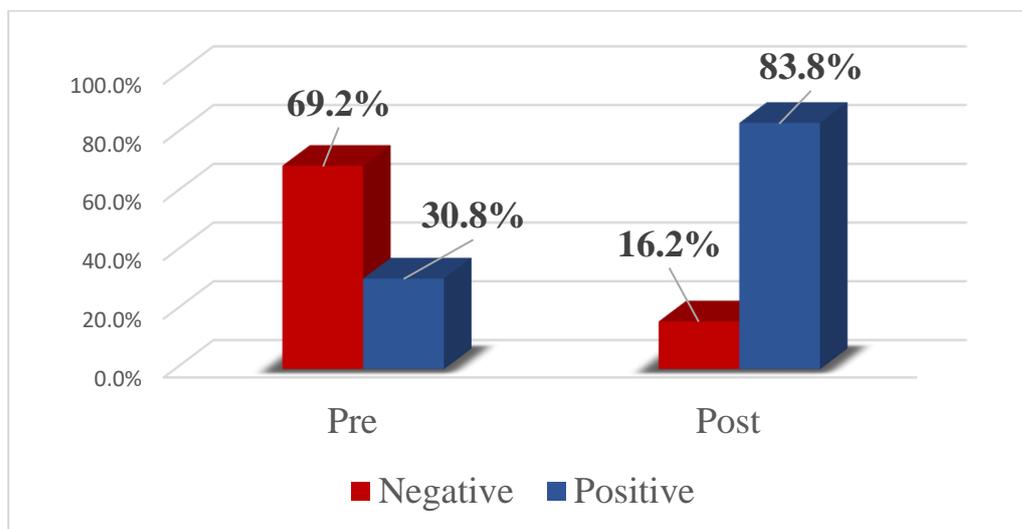


Figure (2): Percentage distribution of the studied sample regarding to their total attitude related COVID 19 and its prevention pre and post program implementation (n = 130).



Figure (3): Percentage distribution of the studied sample regarding to their total practices score towards prevention of COVID 19 pre and post program implementation (n=130).

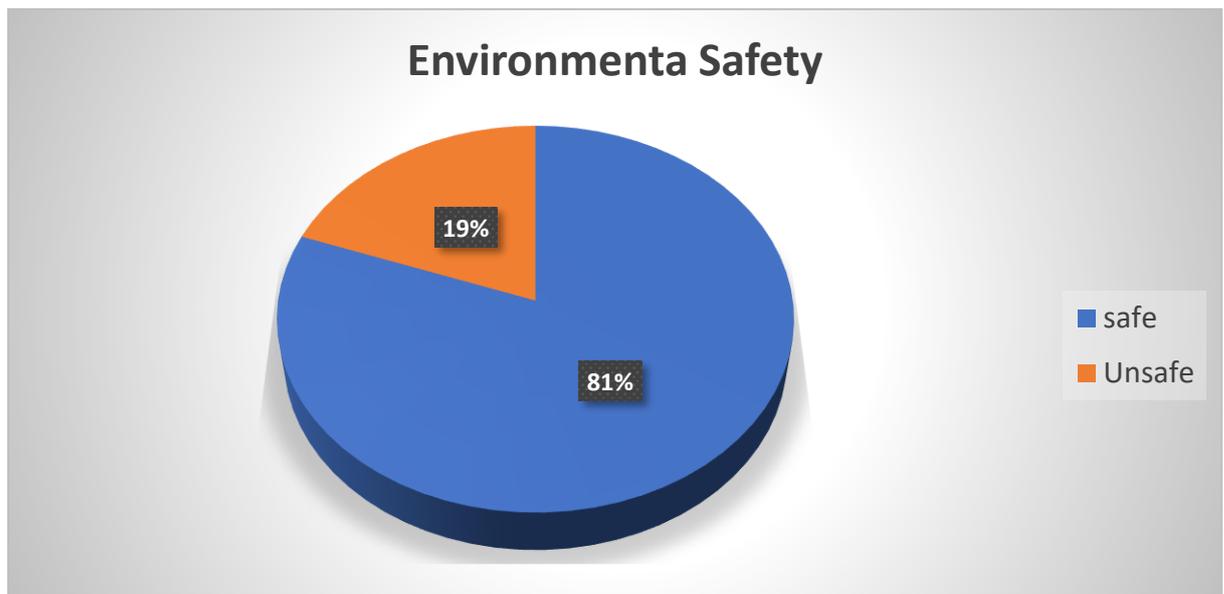


Figure (4): Percentage distribution of the studied sample regarding to their environmental safety of MCH centers (n=5).

Preventive Program about COVID 19 for Nurses

Table (3): Statistically relation between socio-demographic characteristics of the studied sample and their total knowledge score about COVID 19 and its prevention at pre and post program implementation (n=130).

Items	Nurses' total knowledge pre-program implementation						X ² ₁	P ₁ value	Nurses' total knowledge post program implementation						X ² ₂	P ₂ value
	Poor N = 28		Average N = 36		Good N = 66				Poor N = 2		Average N = 6		Good N = 122			
	No.	%	No.	%	No.	%			No.	%	No.	%	No.	%		
Age																
< 25 years old	1	3.6	4	11.1	10	15.2	7.40	0.494	0	0	0	0	15	12.3	6.97	0.54
25 < 35 years old	16	57.1	18	50.0	31	47.0			0	0	3	50	62	50.8		
35 < 45 years old	11	39.3	11	30.6	17	25.8			2	100	3	50	34	27.9		
45 < 55 years old	0	0.0	2	5.6	6	9.1			0	0	0	0	8	6.6		
≥ 55 years old	0	0.0	1	2.8	2	3.0			0	0	0	0	3	2.5		
Educational level																
Secondary Nursing	11	39.3	10	27.8	16	24.2	4.59	0.597	2	100	3	50	32	26.2	7.74	0.25
Nursing Institute	14	50.0	18	50.0	31	47.0			0	0	3	50	60	49.2		
Bachelor of Nursing	2	7.1	6	16.7	15	22.7			0	0	0	0	23	18.9		
Postgraduate	1	3.6	2	5.6	4	6.1			0	0	0	0	7	5.7		
Marital state																
Married	23	82.1	31	86.1	56	84.8	1.003	0.909	1	50	5	83.3	104	85.2	6.21	0.18
Widowed	3	10.7	3	8.3	4	6.1			1	50	0	0	9	7.4		
Divorced	2	7.1	2	5.6	6	9.1			0	0	1	16.7	9	7.4		
Residence																
Parents	2	7.1	2	5.6	6	9.1	0.450	0.978	0	0	1	16.7	9	7.4	1.88	0.75
Husband	2	7.1	3	8.3	5	7.6			0	0	1	16.7	9	7.4		
Children	24	85.7	31	86.1	55	83.3			2	100	4	66.7	104	85.2		
Monthly income																
Enough	20	71.4	24	66.7	46	69.7	0.181	0.913	2	100	2	33.3	86	70.5	4.61	0.10
Not enough	8	28.6	12	33.3	20	30.3			0	0	4	66.7	36	29.5		
Number of experience years																
One year < 5 years	8	28.6	13	36.1	19	28.8	0.667	0.716	0	0	2	33.3	38	31.1	0.91	0.63
≥ 5 years	20	71.4	23	63.9	47	71.2			2	100	4	66.7	84	68.9		

No significant at P > 0.05

Table (4): Statistically relation between socio-demographic characteristics of the studied sample and their total attitude level about COVID 19 and its prevention at pre and post program implementation (n=130).

Items	Nurses' total attitude pre-program implementation				X ² ₁	P ₁ value	Nurses' total attitude post program implementation				X ² ₂	P ₂ value
	Negative N = 90		Positive N = 40				Negative N = 20		Negative N = 20			
	No.	%	No.	%			No.	%	No.	%		
Age												
< 25 years old	10	11.1	5	12.5	4.99	0.28	14	70	1	0.9	111.30	0.000**
25 < 35 years old	40	44.4	25	62.5			0	0	65	59.1		
35 < 45 years old	32	35.6	7	17.5			0	0	39	35.5		
45 < 55 years old	6	6.7	2	5.0			6	30	2	1.8		
≥ 55 years old	2	2.2	1	2.5			0	0	3	2.7		
Educational level												
Secondary Nursing	25	27.8	12	30.0	0.381	0.94	0	0	37	33.6	54.56	0.000**
Nursing Institute	45	50.0	18	45.0			5	25	58	52.7		
Bachelor of Nursing	15	16.7	8	20.0			8	40	15	13.6		
Postgraduate	5	5.6	2	5.0			7	35	0	0		
Marital state												
Married	70	77.8	40	100.0	10.50	0.005*	18	90	92	83.6	0.52	0.76
Widowed	10	11.1	0	0.0			1	5	9	8.2		
Divorced	10	11.1	0	0.0			1	5	9	8.2		
Residence												
Parents	10	11.1	0	0.0	10.50	0.005*	1	5	9	8.2	0.52	0.76
Husband	10	11.1	0	0.0			1	5	9	8.2		
Children	70	77.8	40	100.0			18	90	92	83.6		
Monthly income												
Enough	0	0.0	0	0.0	0.903	0.34	14	70	76	69.1	0.52	0.76
Not enough	60	66.7	30	75.0			6	30	34	30.9		
Enough and saved	30	33.3	10	25.0			0	0	0	0		
Number of experience years												
One year < 5 years	30	33.3	10	25.0	0.903	0.342	7	35	33	30	0.52	0.76
≥ 5 years	60	66.7	30	75.0			13	65	77	70		

No significant at P > 0.05

* Significant at P ≤ 0.05

** Highly significant at P ≤ 0.001

Preventive Program about COVID 19 for Nurses

Table (5): Statistically relation between socio-demographic characteristics of the studied sample and their total practices level about COVID 19 and its prevention at pre and post program implementation (n=130).

Items	Nurses' total practices pre-program implementation				X ² ₁	P ₁ value	Nurses' total practices post program implementation				X ² ₂	P ₂ value
	Unsatisfactory N = 96		Satisfactory N = 34				Unsatisfactory N = 15		Satisfactory N = 115			
	No.	%	No.	%			No.	%	No.	%		
Age												
< 25 years old	0	0.0	15	44.1	93.67	0.000**	10	66.7	5	4.3	78.97	0.000**
25 < 35 years old	57	59.4	8	23.5			0	0	65	56.5		
35 < 45 years old	39	40.6	0	0.0			0	0	39	33.9		
45 < 55 years old	0	0.0	8	23.5			5	33.3	3	2.6		
≥ 55 years old	0	0.0	3	8.8			0	0	3	2.6		
Educational level												
Secondary Nursing	37	38.5	0	0.0	48.21	0.000**	0	0	37	32.2	67.58	0.000**
Nursing Institute	50	52.1	13	38.2			2	13.3	61	53.0		
Bachelor of Nursing	9	9.4	14	41.2			6	40	17	14.8		
Postgraduate	0	0.0	7	20.6			7	46.7	0	0		
Marital state												
Married	80	83.3	30	88.2	0.463	0.79	13	86.7	97	84.3	0.05	0.97
Widowed	8	8.3	2	5.9			1	6.7	9	7.8		
Divorced	8	8.3	2	5.9			1	6.7	9	7.8		
Residence												
Parents	8	8.3	2	5.9	0.275	0.87	1	6.7	9	7.8	0.05	0.97
Husband	7	7.3	3	8.8			1	6.7	9	7.8		
Children	81	84.4	29	85.3			13	86.7	97	84.3		
Monthly income												
Enough	67	69.8	23	67.6	0.054	0.81	11	73.3	79	68.7	0.13	0.71
Not enough	29	30.2	11	32.4			4	26.7	36	31.3		
Number of experience years												
One year < 5 years	28	29.2	12	35.3	0.44	0.50	5	33.3	35	30.4	0.052	0.81
≥ 5 years	68	70.8	22	64.7			10	66.7	80	69.6		

No significant at P > 0.05

** Highly significant at P ≤ 0.001

Table (6): Correlation between total knowledge score of the studied sample, their total attitude score and their total practices score at pre-program implementation (n=130).

Items		Total knowledge	Total Attitude
Total attitude	r.	0.25	
	P value	0.000**	
Total practices	r.	0.42	0.49
	P value	0.000**	0.000**

**** Highly significant at $P \leq 0.001$**

Table (7): Correlation between total knowledge score of the studied sample, their total attitude score and their total practices score at post program implementation (n=130).

Items		Total knowledge	Total Attitude
Total attitude	r.	0.13	
	P value	0.24	
Total practice	r.	0.08	0.84
	P value	0.32	0.000**

No significant at $P > 0.05$ ** Highly significant at $P \leq 0.001$

Discussion

The COVID 19 has brought to light many vulnerabilities and weaknesses in healthcare systems internationally, which with the rapid transmission of the virus, showed that were unable to absorb and manage sudden and intense surge events. Nurses can become overwhelmed by fear for the safety of own health, family members and patients. Under these circumstances, nurses can experience severe health problems and occupational syndromes like burnouts, reduced productivity and errors in clinical settings (Sharplin et al., 2023). The aim of this study is to evaluate the effect of preventive program about COVID 19 for nurses.

Regarding to socio-demographic characteristics of the studied nurses, the present study showed that half of the studied nurses aged between 25 to less than 35 years old with the mean \pm SD was 33.46 ± 8.50 , approximately half of them had educational

level was Technical Institute of nursing degree, the majority of them were married and more than two thirds of them had enough monthly income. These findings disagreed with Abd-Elaziz et al., (2022), who studied “Quality of Life among Nurses Working at Primary Health Care Centers during COVID-19 Pandemic Disease in Qalyobia Governorate”, where their total sample were (192) nurses and reported that one third (33.1%) of their participants were between age 20 to 30 years old with mean age 29.74 ± 6.15 , less than half (47.9%) and (45.8%) of them had bachelor's degree in nursing and had not enough monthly income respectively and more than half (59.4%) of them were married. This might be due to availability of hiring nurses with Technical Institute in Egypt.

Regarding self-reported health problems of the studied nurses during last six months, the present study showed that the majority of

Preventive Program about COVID 19 for Nurses

the studied nurses had bone and nerves problems, more than two thirds of them had respiratory problems and more than one third of them had digestive system and ear problems respectively. These findings disagreed with **Jemal et al., (2021)**, who studied “Knowledge, Attitude and Practice of Healthcare Workers toward COVID-19 and Its Prevention in Ethiopia”, where their total sample were (424) healthcare workers and reported that most (92.4%) of their study subjects had no medical illness. This might be due to the nurses neglect routine medical checkup and early treatment so they have many problems.

Concerning studied nurses’ total knowledge score about COVID 19 and its prevention at pre and post-program implementation, the current study showed that, half of the studied nurses had good total knowledge score about COVID 19 and its prevention at pre-program implementation. While, most of them had good total knowledge score about COVID 19 and its prevention at post program implementation. The study was in the same line by **Sliem et al., (2022)**, who studied “Effect of Educational Guidelines on Nursing Students’ Knowledge and Practice regarding Limitation The Spread of COVID- 19 in The Faculty of Nursing, Benha University, Egypt”, where their total sample were (241) nursing students and reported that there was significant improvement regarding total level of knowledge score of their studied sample post the educational guidelines where most (92.5%) of their studied sample had good knowledge score post intervention compared to the minority (12.8%) of them pre intervention. This might be due to the effect of preventive program and the researcher ability to illustrate the COVID 19 and its prevention.

Regarding studied nurses’ total attitude score related COVID 19 and its prevention pre and post program implementation, the current study revealed that less than one third of the studied nurses had positive total attitude related COVID 19 and its prevention pre-program implementation compared to the majority of them at post program implementation.

This finding was supported by **Ahmed et al., (2023)** who studied “Nursing Staff Knowledge, Attitudes and Selected Psychological Response regarding COVID-19 Outbreak in Minia Health Insurance Hospital”, where their total sample were (280) nurses and displayed that the majority (87.5%) of their nursing staff had a favorable attitude score toward COVID-19 and lowest (12.5%) of them had an unfavorable attitude score toward COVID-19. This might be due the nursing staff had good knowledge regarding COVID-19 and how to deal with this virus.

Regarding studied nurses’ total practices score toward prevention of COVID 19 at pre and post program implementation, the present study revealed that slightly more than one quarter of the studied nurses had satisfactory total practices level toward prevention of COVID 19 at pre-program implementation and this percentage increased to the majority of them post program implementation. This finding was compatible with **Abd El-Basset et al., (2023)**, who studied “Health Preventive Program regarding COVID 19 among Primary School Age Students at Benha City, Egypt”, where their total sample were (150) nursing students and found that the majority (86.7%) of their participants had satisfactory total practices score about COVID-19 prevention at post program intervention compared to the minority (17.3%) of them at

pre-program intervention. This might be due to the effect of the preventive program on improving nurses' practices.

Concerning the MCH centers environment safety, the current study showed that the majority of MCH centers had safe environment while less than one quarter of them had unsafe environment. This finding disagreed with **Abd-Elaziz et al., (2022)**, who studied "Quality of Life among Nurses Working at Primary Health Care Centers during COVID-19 Pandemic Disease in Qalyobia Governorate", where their total sample were (192) nurses and reported that slightly less than two thirds (63.6%) of Primary Health Centers environments were sanitary, while slightly more than one third (36.4%) of them were unsanitary during COVID-19 pandemic. This might be due to that COVID 19 appeared and spread suddenly with lack of MCH environmental preparation in Egypt during COVID-19 but now there is good environmental preparation.

As regards the relation between the studied nurses' socio-demographic characteristics and their total knowledge score about COVID 19 and its prevention at pre and post program implementation, the present study revealed that there was no statistically significant relation between total knowledge score of the studied sample and their socio-demographic characteristics pre and post program implementation. This study agreed with **Elpasiony et al., (2021)**, who studied "Efficacy of COVID-19 Prevention Educational Program on Nurses' Knowledge and Practices at Hemodialysis Unit at Mansoura University Hospital, Mansoura, Egypt", where their total sample were (30) nurses and reported that there was no statistically significant difference between their studied nurses' knowledge and their socio-demographic characteristics (age,

education and experience) pre and post program. This might be due to that the COVID 19 infection is new pandemic.

As regards the relation between the studied nurses' socio-demographic characteristics and their total attitude level about COVID 19 and its prevention at pre and post program implementation, the present study showed that there was highly statistically significant relation between total attitude score of the studied sample and their socio-demographic characteristics as age and educational level post program implementation while there was highly statistically significant relation between total attitude score of the studied sample and their socio-demographic characteristics as marital state and residence pre-program implementation. These findings disagreed with **Awale et al., (2021)** who studied "Knowledge and Attitude towards COVID-19 among Nursing Students of Patan Academy of Health Sciences (PAHS), Nepal", where their total sample were (382) nursing students and found that there was no significant association between socio-demographic variables and the attitude of their nursing students toward COVID-19. This might be due to the education help in opening the mind and become more readily to accept and retain new data and ideas.

Regarding to the relation between socio-demographic characteristics of the studied nurses and their total practices score about COVID 19 and its prevention at pre and post program implementation, this study showed that there was highly statistically significant relation between total practices score of the studied sample and their socio-demographic characteristics as age and educational level pre-program and post program implementation. This finding disagreed with **Malk et al., (2022)**, who studied "Effect of

Preventive Program about COVID 19 for Nurses

An Educational Program on Nurses' Performance regarding COVID-19 in The Obstetrics and Surgical Units at Beni-Suef University Hospital", where their total sample were (40) nurses and found that there is no statistical significant relation between demographic characteristics of their nurses and their total practices score at different phases of implementing the training program except age and training course during post program. This might be due to increasing learning that affects ability to understand and do tasks effectively.

Regarding the correlation between total knowledge score of the studied sample, their total attitude score and their total practices score about COVID 19 and its prevention at pre-program implementation, the current study illustrated that there was positive highly statistically correlation between total knowledge score of the studied sample, their total practices score and their total attitude score pre-program implementation. This study was in match with **Hathurusinghe et al., (2021)**, who studied "A Study on Knowledge, Attitude and Practices towards The COVID-19 Pandemic among The Non-COVID-19 Patients at Outpatient Department in A Teaching Hospital, Northern Sri-Lanka", where their total sample were (500) non-COVID-19 patients and reported that there was positive highly statistically significant correlation among their participants' knowledge and attitude, knowledge and practices and attitudes with practices score. This might be due to the effect of the preventive program on improving nurses' knowledge, attitude and practices regarding COVID -19 and its prevention.

Regarding the correlation between total knowledge score of the studied sample, their total attitude score and their total practices

score about COVID 19 and its prevention at post program implementation, the current study illustrated that there was positive highly statistically correlation between total practices score of the studied sample and their total attitude score post program implementation. This finding agreed with **Ahmed et al., (2021)**, who studied "Effect of Educational Intervention on Secondary School Students' Knowledge, Practices and Attitudes regarding COVID-19 at Sohag City in Egypt", where their total sample were (260) students and revealed that there was a highly statistically significant positive correlation between total practices score of their studied sample and their total attitude score at the post intervention implementation. This might be due to the success of the preventive program, and it had an impact on nurses' attitude and practice regarding COVID -19 and its prevention.

Conclusion

Preventive program about COVID 19 succeeded to improve knowledge, attitude and practices of nurses regarding Covid-19, half of the studied nurses had good total knowledge score about COVID 19 and its prevention at pre-program implementation. While, most of them had good total knowledge score about COVID 19 and its prevention at post program implementation. Slightly less than one third of the studied nurses had positive total attitude related COVID 19 and its prevention pre-program implementation compared to the majority of them at post program implementation. Slightly more than one quarter of the studied nurses had satisfactory total practices level toward prevention of COVID 19 at pre-program implementation while the majority of them had satisfactory total practices level toward prevention of COVID 19 at post program implementation.

Recommendations

- Periodic health educational programs for nurses should be made to improve nurses' knowledge, attitude and practices regarding prevention of COVID 19.
- Continuous periodic medical examination should be done for nurses regularly for early detection of infection with COVID-19.
- Apply health preventive programs about prevention of COVID 19 on a large scale, large sample and other health workers to achieve generalize results.

References:

- Abd- Elaziz, S., Abd El- Megeed, H. and Abd Elrahman, B. (2022).** Quality of life among nurses working at primary health care centers during COVID-19 pandemic disease. Available at: Journal of Nursing Science - Benha University, Vol. 3 (2), p. 215 (Accessed 10/6/2023 at 06:50 p.m.).
- Abd El-Basset, Y., Abd El-Hameed, H., Sabry, S. and Abdel-Mordy, M. (2023).** Health preventive program regarding COVID 19 among primary school age students at Benha city. Available at: Journal of Nursing Science - Benha University, Vol. 4(1), Pp: 309 - 313 (Accessed 10/6/2023 at 04:32 a.m.).
- Ahmed, M., Mohamed, A., Mahmoud, T. and AbdElaziz, S. (2021).** Effect of educational intervention on secondary school students' knowledge, practices and attitudes regarding COVID-19. Available at: Egyptian Journal of Health Care, Vol. 12 (2), p. 71 (Accessed 17/6/2023 at 06:00 p.m.).
- Ahmed, N., Abd Elrhman, S. and Thabet, M. (2023).** Nursing staff' knowledge, attitudes and selected psychological response regarding COVID-19 outbreak. Available at: Minia Scientific Nursing Journal, Vol. 13 (1), Pp: 89 – 97 (Accessed 10/6/2023 at 05:50 p.m.).
- Awale, S., KC, S., Maharjan, R. and Panthee, B. (2021).** Knowledge and attitude towards COVID-19 among nursing students. Available at: Journal of Patan Academy of Health Sciences, Vol. 8 (1), Pp. 26-35. Available online at: <https://www.researchgate.net/publication/352377730> (Accessed 3/5/2023 at 6:35 p.m.).
- Barua, S. (2020).** Who is at risk corona virus? Available online at: <https://www.issup.net/node/8446> (Accessed 2/7/2023 at 11:37 a.m.).
- Elpasiony, N., Mostafa, M. and Gabr, W. (2021).** Efficacy of COVID-19 prevention educational program on nurses' knowledge and practices at hemodialysis unit. Available at: Egyptian Journal of Health Care, Vol. 12(1), P. 1694 (Accessed 2/5/2023 at 5:40 p.m.).
- Hathurusinghe, H., Suganthan, N., Sujanitha, V. and Rajeshkannan, N. (2021).** A study on knowledge, attitude and practices towards the COVID-19 pandemic among the non-COVID-19 patients at outpatient department in a Teaching Hospital, Northern Sri Lanka. Available at: Journal of Family Medicine and Primary Care, Vol. 10 (10), Pp. 3775 – 3776 (Accessed 12/6/2023 at 08:49 p.m.).
- Hua, F., Qin, D., Yan, J., Zhao, T. and He, H. (2020).** COVID 19 related experience, knowledge, attitude and behaviors among orthodontists, orthodontic and nurses in China: Across-sectional survey. Available at: Journal of Frontiers in Medicine, Vol. 7(48): pp. 338-389 (Accessed 16/10/2020 at 11:25a.m.).
- Jemal, B., Aweke, Z., Mola, S., Hailu, S., Abiy, S., Dendir, G., Tilahun, A., Tesfaye, B., Asichale, A., Neme, D., Regasa, T., Mulugeta, H., Moges, K., Bedru, M., Ahmed,**

Preventive Program about COVID 19 for Nurses

S. and Teshome, D. (2021). Knowledge, Attitude and Practice of Healthcare Workers toward COVID-19 and Its Prevention in Ethiopia: A Multicenter Study. Available at: Journal of SAGE Open Medicine, Vol. 9(2), Pp. 1–10 (Accessed 6/6/2023 at 07:32 a.m.).

Kandula, U. and Wake, A. (2021). Assessment of quality of life among health professionals during COVID-19. Available at: Journal of Multidisciplinary Healthcare, vol. 14 (2), p. 3571 (Accessed 3/7/2023 at 08:44 a.m.).

Khurshid, Z., Asiri, F. and Al Wadaani, H. (2020). Human saliva: non-invasive fluid for detecting novel coronavirus. Available at: International Journal of Environment Research Public Health, Vol. 17(7), p. 2225 (Accessed 2/7/2023 at 11:11 a.m.).

Madabhavi, I., Sarkar, M. and Kadakol, N. (2020). COVID-19: A review. Available at: Journal of Monaldi Archives for Chest Disease, Vol. 90 (2), Pp. 248–258. Available online at: <https://doi.org/10.4081/monaldi.2020.1298> (Accessed 3/7/2023 at 08:08 a.m.).

Malk, R., Hassan, E., Mohamed, A., Amr, E. and Hassan, H. (2022). Effect of an educational program on nurses' performance regarding COVID-19 in the obstetrics and surgical units. Available at: Egyptian Journal of Health Care, Vol. 13 (4), Pp. 258 – 254 (Accessed 12/6/2023 at 08:05 p.m.).

Rahman, S., Montero, M., Rowe, K., Kirton, R. and Kunik, J. (2021). Epidemiology, pathogenesis, clinical presentations, diagnosis and treatment of COVID-19: a review of current evidence. Available at: Expert review of clinical pharmacology, Vol. 14(5), Pp. 601-621 (Accessed 2/7/2023 at 12:30 p.m.).

Saha, A., Reza, H. and Mitra, C. (2020). Nurses' knowledge and practices regarding prevention and control of COVID-19 infection

in a tertiary level hospital. Available at: Bangladesh Journal of Infectious Diseases, Vol. 7 (2), Pp. 27-33 (Accessed 10/6/2023 at 07:33 a.m.).

Salamati, N. and Kulatunga, U. (2017). Safety and security of hospitals during natural disasters: challenges of disaster managers. Available at: International journal of safety and security engineering, Vol. 7(2), pp. 234-246 (Accessed 13/10/2020 at 7:15a.m.).

Sharplin, G., Brinn, M. and Eckert, M (2023). Impacts of COVID-19 and workloads on new south wales nurses and midwives' mental health and wellbeing, e-book, South Australia, 103275, p. 10 (Accessed 1/5/2023 at 5:00 p.m.).

Sliem, K., Hassan, H. and Mahmoud, D. (2022). Effect of educational guidelines on nursing students' knowledge and practice regarding limitation the spread of COVID- 19. Available at: Journal of Nursing Science - Benha University, Vol. 3(2), Pp: 832 – 836 (Accessed 10/6/2023 at 06:49 a.m.).

World Health Organization a (WHO a), (2020). Pneumonia of unknown cause – China. Available online at: Disease outbreak news. <https://www.who.int/emergencies/disease-outbreak-news/item/2020-DON229> (Accessed 2/7/2023 at 10:44 a.m.).

WHO b, (2020). Guidance book for prevention of COVID 19 for workers in field of awareness of society. Available at: <https://www.unicef.org/yemen/ar/> (Accessed 13/9/2020 at 3:00a.m.).

WHO, (2021). Health workforce; nursing and midwifery. Available online at: https://www.who.int/hrh/nursing_midwifery/nursing-midwifery/en/ (Accessed 2/7/2023 at 10:00 a.m.).

WHO, (2023): Coronavirus disease (COVID-19) weekly epidemiological update. Available online at <https://www.who.int/publications/m/item/weekly-epidemiological-update> (**Accessed 3/7/2023 at 09:42 a.m.**).

Zhong, L., Luo, W. and Li, M. (2020). Knowledge, attitudes and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. Available at: International Journal Biological Science, Vol. 16(10), Pp. 1745-1752 (**Accessed 2/7/2023 at 01:00 p.m.**).

تأثير البرنامج الوقائي للممرضات من الإصابة بفيروس كورونا المستجد من خلال تقييم معلوماتهم وممارساتهم وسلوكياتهم تجاه فيروس كورونا المستجد

مروه الشحات ذكي - محبوبة صبحي عبدالعزيز - سماح سعيد صبري- منى عبدالله المرضي

لقد تم تصنيف العدوي بفيروس كورونا رسميا من قبل منظمة الصحة العالمية بأنه مرض تنفسي شديد العدوى يسببه فيروس كورونا المسبب للمتلازمة التنفسية الحادة الوخيمة (سارس كوفيد ٢) المسؤولة عن أمراض الجهاز التنفسي المتعددة بدرجات متفاوتة من الشدة، بما في ذلك نزلات البرد والزكام والالتهاب الرئوي والتهاب القصبة الهوائية. لذا هدفت هذه الدراسة الي تقييم تأثير البرنامج الوقائي للممرضات من الإصابة بفيروس كورونا المستجد من خلال تقييم معلوماتهم وممارساتهم وسلوكياتهم تجاه فيروس كورونا المستجد. وقد أجريت هذه الدراسة أجريت الدراسة على ٢٥٪ من إجمالي الإدارات الصحية وعددهم (١١) في محافظة القليوبية والتي شملت ٣ إدارات صحية تم اختيارها عشوائيا وهم الإدارة الصحية بكفر شكر، والإدارة الصحية بطوخ والإدارة الصحية بقها، وتم تضمين جميع مراكز صحة الأم والطفل من كل الإدارات الصحية في هذه الدراسة والتي شملت خمسة مراكز رعاية الأمومة والطفولة من جميع الإدارات الصحية المختارة. تم استخدام عينة ملائمة من الممرضات العاملين في الإدارات المذكورة سابقا في هذه الدراسة والتي شملت ١٣٠ ممرضة. واطهرت النتائج بأن ٤٥ نصف الممرضات اللواتي تمت دراستهن لديهم مستوى جيد من المعلومات الكلية حول فيروس كورونا المستجد، والوقاية منه قبل البرنامج مقارنة بمعظمهم بعد البرنامج. أقل من ثلث الممرضات اللواتي تمت دراستهن لديهم سلوكيات إيجابية تجاه فيروس كورونا والوقاية منه قبل البرنامج، مقارنة بمعظمهم بعد البرنامج. أكثر من ربع الممرضات اللواتي تمت دراستهن لديهم مستوى مُرضي من إجمالي الممارسات تجاه فيروس كورونا والوقاية منه قبل البرنامج، مقارنة بمعظمهم بعد البرنامج. واوصت الدراسة بإجراء دورات تثقيفية صحية يصوره دورية للممرضات لتحسين معلوماتهم وسلوكياتهم وممارساتهم فيما يتعلق بالوقاية من كوفيد ١٩