

Challenges Facing Pediatric Nurses Throughout the Provision of Nursing Care for Children with COVID-19

Maha Hosny Elshater ⁽¹⁾, Nora Abd -Elhamed Zaki ⁽²⁾, Amany G Abd-Elhamed ⁽³⁾, Nahed Khamies Mohamed ⁽⁴⁾

- 1- Lecturer of Pediatric Nursing ,Faculty of Nursing, Alexandria University, Alexandria, Egypt
- 2- Assistant professor of Pediatric Nursing, Faculty of Nursing, Assiut University, Egypt.
- 3- Lecturer of Pediatric Nursing, Faculty of Nursing, Assiut University, Egypt.
- 4- Lecturer of Pediatric Nursing, Faculty of Nursing, Assiut University, Egypt.

Abstract

Background: COVID-19 epidemic is rapidly increasing throughout the world . It is an important public health crisis which threat the humanity. Pediatric nurses are at the frontline of fighting against COVID-19. Nurses are faced with various challenges through the provision of care to provide high quality of nursing care for children and their family. **So, this study aimed to** identify the challenges facing pediatric nurses throughout the provision of nursing care for children with COVID-19. **Design:** Descriptive research design was used. **Setting:** This study was carried out at isolation pediatric unit in Assiut University Children Hospital. **Subjects:** Convenience sample of (33) pediatric nurses have participated in this study. Two tools were used in this study. **Tool I:** Structured interview questionnaire sheet for nurses. **Tool II:** Challenges facing pediatric nurses during COVID-19 crisis. **Results.** High Mean and SD of psychological challenges of pediatric nurses followed by challenges related to the organization's inefficiency in supporting nurses, physical challenges and finally challenges related to the nature of the disease (covid19) with Mean and SD were 12.9 ± 2.66 , 11.48 ± 2.43 , 11.36 ± 1.78 & 8.0 ± 1.80 respectively. **Conclusion:** Most of the studied pediatric nurses faced high challenges during COVID 19 and there was a statistically significant relationship between the total challenges level and personal data of the studied nurses except residence. **Recommendations:** Training programs are necessary to empower nurses with applicable preparations & manipulation for the challenges and experiences facing them to improve the skills that enable them to deal with challenges that help in controlling of crisis.

Keywords: Children, COVID-19 & Nurses Challenge

Introduction

A novel coronavirus was identified following a cluster of cases of pneumonia in Wuhan, China, in December 2019 (**Center for Disease Control and Prevention, 2019**). The World Health Organization designated the disease as coronavirus disease 2019 (COVID-19) (**WHO 2019**). Global spread included Egypt as the first case was recorded in Egypt on February 14, 2020. The total number of confirmed cases on May 1, 2020 was 5895, with case fatality rate of 6.9%. Children were affected like other age groups, but total incidence was less than 10%. Confirmed cases among health care workers were 11% of the total confirmed cases (**Mostafa et al., 2020**).

Coronavirus (Covid-19) is a virus that causes respiratory tract infections, ranging from the common cold to serious diseases such as Middle East Respiratory Syndrome (MERS) and severe acute respiratory syndrome (SARS). Covid-19 has been shown to attack humans of various ages ranging from adults to children (**Hastuti et al., 2021**).

The most common symptoms among children include fever, dry cough, and fatigue in addition to nasal congestion, running nose, and sore throat. Severe pediatric cases present acute dyspnea that may rapidly progress to acute respiratory distress syndrome (ARDS), difficulty of thinking or concentrating (sometimes referred to as 'brain fog'), headache, anosmia (loss of smell), myocarditis, septic shock, refractory metabolic acidosis, coagulation dysfunction, and multiple organ failure (**Sankar et al., 2020 & Shen et al., 2020**).

Although older children seem to show fewer plain bodily symptoms and have much lesser mortality rates than other age groups resulting from COVID-19 infection, they stay at considerable possibility for negative consequences such as the well-known financial and social trouble resulting from the pandemic. (**Hatoun et al., 2020 & Huang et al 2020**). Children of all ages who have been unconfined for the serious problem of the disease they are exposed to act liably to COVID-19. Boys are

more recurrently affected than girls, and ultimate children were either asymptomatic or slightly symptomatic. Children aged less than 3 years and those with congenital heart disease appear to be disproportionately impacted. (Yagnik et al., 2020).

Children and who have COVID-19 will commonly have no symptoms or merely mild respiratory symptoms – like to a cold. However, some can become very sick and require hospitalisation. Rare complications can include Multisystem Inflammatory Syndrome (MIS-C) that may necessitate intensive care. Children can also grieve long-term side effects (known as long COVID), even after mild cases of COVID-19. (World meters, 2020).

Children with COVID-19 needs special management, such as placing children in isolation rooms, not permitting family members to attend them, and limiting interactions between children and nurses (Members of the Divisions of Pediatric Infectious Disease., 2020).

Health workers providing care to these children should be considered as highly vulnerable to exposure (Adams & Walls ., 2020). For this reason, pediatric facilities face unique challenges through this pandemic. Although children with the infection present milder symptoms, they live with adults who may be infected, and usually are those who accompany or visit them during hospitalization (Espinoza et al., 2020). So, a variety of challenges impose severe psychological and physical strains on nurses throughout the provision of care for children with COVID-19 (Park & Park., 2020; See, et al., 2018).

Nurse roles in caring for children's with COVID-19 include discovering suspected cases with infections, giving vital management in an emergency and production with suspected children with defenses, serving in decontamination and organization with other healthcare providers, providing universal nursing care in supervision various infections consecutively, playing a serious function in increasing precaution facilities, and providing with families and relations (Xie et al., 2020). In crises, they have further responsibilities to handle families and their children. Subsequently, nurses must be well prepared with the necessary awareness, knowledge, and skills in establishing emergencies concerning clinical management, isolation, communication, triaging, emotional

support, general supportive, and palliative care if necessary (Borasio et al., 2020).

Significance of the study:

Egypt is one of the lower-middle-income countries with limited resources which require simple and practical clinical guidelines to diagnose and treat COVID-19 cases, as well as to protect health care workers from transmittable infection (World bank, data of Egypt., 2020). The nursing staff is in the front line dealing with this disease, working full time in the care provided to children and their families. Accordingly, these workers have important information that can help understand the actual situation of pediatric health facilities in the face of the COVID-19 pandemic. A variety of challenges impose severe psychological and physical tensions on nurses throughout the provision of care for children with COVID-19 related to lack of resources, and high contagious infection (Góes et al., 2020). Hence, this study objective was to identify the challenges facing pediatric nurses throughout the provision of nursing care for children with COVID-19.

Aim of the Study

This study aimed to identify the challenges facing pediatric nurses throughout the provision of nursing care for children with COVID-19.

Research question

This study was conducted to answer the research question:

- What are the challenges facing pediatric nurses throughout the provision of nursing care for children with COVID-19?
- What are the relations between level of challenges and personal data of the studied podiatric nurses?

Subjects and Method

Research design:

A descriptive study design was utilized to conduct this study.

Setting of the study:

The study was conducted at isolation pediatric department in Assiut University Children Hospital.

Subjects of the study:

A convenience sample was obtained from nurses who working at the previously mentioned setting. They are 33 nurse.

Tools of data collection:

Two tools were utilized to gather data in the study:

Tool 1: Personal data of the studied nurses structured interview questionnaire sheet for nurses.

It was developed by the researcher after thorough review of recent and relevant literatures such as age, qualification, years of experience, residence, and adequate training received regarding personal protective precaution to deal with COVID-19.

Tool (2): Challenges facing paediatric nurses during COVID 19 crisis questioners structure interview schedule

This tool adapted from Góes et al., 2020 & Ulrich et al, 2020 and modified by the researcher after reviewing the literatures. It includes four sub items as follows:

1. Physical challenges

It includes seven items : **Exhausting protective covers** such as (Reduced ability during working with personal protective equipment, Reduced focus during working with personal protective equipment, Unbearable heaviness of personal protective equipment, Difficulty eating and drinking during wearing personal protective equipment, Inability to use the bathroom during wearing personal protective equipment) & **Physical complications** such as (Physical tiredness, Spots and Skin damage).

2. Psychological challenges

It contains nine items: **Domestic distress** such as (lack of satisfaction in life, fear of life, limited contact with family members, family members being afraid of infection and family members' obsession) & **Psychological turmoil** such as nervousness, upsetting thoughts, upsetting dreams and disruption of night time sleep.

3. Challenges related to the nature of the disease (COVID19):

It includes ten items: **Unclear nature of the disease** such as lack of knowledge on the prognosis, unknown complications, lack of specific medications, unknown transmission route, unknown clinical presentation & fear of side effect of vaccine such as (fear of getting infected with the disease & fear of transmitting the disease to family & **Desire to quit the job** such as (low tendency to attend the shift, regretting being a nurse and thinking about quitting).

4. Challenges related to the organization's inefficiency in supporting nurses.

It contains eight items: **Poor organizational support** such as (improper personal support, failure to rewarding the personnel and no financial support of the hospital), **Excessive workload** such as no leave of absence, shortage of nursing workforce and heavy shifts, shortage of personal protective equipment and discrimination in providing protective equipment.

Scoring system

Scoring system for challenges scale includes 4 domains: Each question earned score from (0-2) consistent with their answer i.e., Zero means never, one means sometimes and two means frequently. For each one, the scores of items were summed- up and the total divided by the number of the items giving a mean score for the part. The pediatric nurses were faced high challenges, if the percentage score was 60% or more and they faced low challenges, if the percentage score was less than 60%.

Method of data collection

- 1- An official permission was obtained from the director of Assiut University Children Hospital.
- 2- Informed consent from nurses was obtained after explaining the nature and purpose of the study.

3- Validity and Reliability

For validity purposes, the researchers conducted an extensive literature review and developed the questionnaires from the previously used tools and reviewed the pertinent reviews. Tools I: it was designed by the researchers and revised by five experts in the field of in both pediatrics and pediatric nursing. its content validity index result was 95%.

Reliability of study tools I & II was measured using a cronback test that indicated high reliability tool and its result was R= 0.731.

4- Pilot Study

A pilot study was carried out on 10% (three nurses) of the sample. The purpose of the pilot study was to test the clarity and applicability of the tools and to estimate time needed to satisfy each sheet. Those nurses were excluded from the total sample.

- 5- Data was collected from the pediatric nurses individually at the morning and afternoon shifts to prevent work interruption.
- 6- Each interview took for 30–45 mints.

7- The data collection period lasted for three months from the beginning of May 2021 to the end of August 2021.

Ethical Consideration

Official permissions were obtained after an explanation the aim of the study; privacy and confidentiality are assured to the study subjects. Pediatric nurses were knowledgeable that their participation is voluntary and that they have the right to be withdrawn from the study at any time with full respect.

Statistical analysis:

Data entry and data analysis were done using statistical package for the science (SPSS) version 26. Data were presented as number, percentage means and standard deviation. Chi-square test was used to show relation between variables. T-test was used to compare mean P-value considered statistically significant when $p < 0.05$.

Results

Table (1): Shows distribution of the studied nurses according to their personal data. It is noticed that 48.4 % of the nurses their age, ranged between $25 < 30$ years with mean 27.3 ± 5.4 . More than one third (42.4%) of them had master's degree. Regarding the year of experiences, less than half of them (48.5%) had years of experience ranging from (1<5) years. As regards residence, more than half of nurses (51.5%) were from urban areas and finally 57.6% of them received adequate training to deal with COVID-19.

Table (2) illustrates distribution of the studied nurses according to physical challenges facing them during COVID 19 crisis. It is report that the majority of the studied nurses (93.9%, 90.9%) were frequently faced with physical challenges regarding to inability to use the bathroom and difficulty in eating/drinking when wearing personal protective equipment respectively. Moreover, more than half of them (69.7% and 63.7%) were frequently face challenge in reducing ability during working with personal protective equipment and feeling heaviness during their wearing it respectively .In addition 57.6% of them had frequently spot and skin damage .

Table (3) Shows distribution of the studied nurses according to their psychological challenges facing them during COVID 19 crisis. It was found that the majority of the studied nurses (81.8%) were frequently faced with limited

contact with their family members. Slightly more than three quarter(75.8%) of nurses were frequently face challenge of their family members being afraid of infection. In addition, more than half (57.6%, 54.5% & 51.5%) of them had upsetting thoughts, fear of life and lack of satisfaction of their life respectively during COVID 19 crisis.

Table (4) Clarifies distribution of the studied nurses according to their challenges related to the nature of disease facing them during COVID 19 crisis. It is indicated that the majority of the studied nurses (81.8%) were frequently have a fear of getting infected with the disease and fear of transmitting the disease to their families during COVID 19 crisis. Nearly half of them (48.5%) sometimes had lack of knowledge on the prognosis and lack of specific medication.

Table (5) shows distribution of the studied nurses according to their challenges related to organization's inefficiency in supporting them during COVID 19 crisis. It was shown that more than two thirds of the nurses 72.7%,72.7%, 69.7 % & 66.7% faced frequently heavy shifts, shortage of nursing workforce, shortage of personal protective equipment and no leave nor absence respectively during COVID 19 crisis. Furthermore, slightly more than half of them (51.5%) sometimes had no finical support of hospital.

Table (6): Shows Mean and SD of total score challenges facing the studied nurses during COVID 19 crisis. It noticed that high Mean and SD is shown in psychological challenges followed by challenges related to the organization's inefficiency in supporting nurses, physical challenges and finally challenges related to the nature of disease (covid19) with Mean and SD 11.48 ± 2.43 , 12.9 ± 2.66 , 11.36 ± 1.78 & 8.0 ± 1.80 respectively.

Figure (1): Illustrates distribution of the studied nurses according to levels of challenges faced them during COVID 19 crisis. It noticed that most of them (63.6%) faced high challenges, while the rest of them (36.4%) faced low challenges.

Table (7): displays the relation between levels of challenges and personal data of the studied nurses. It indicated that there was a statistically significant relationship between the

total challenges level and the nurses' age groups with p value was =0.014. Moreover, there were highly statistically significant differences were found between the total challenges level and qualification, years of experience and adequate

training received to deal with COVID-19 with p value were 0.002, 0.008, 0.003 respectively. There was no statistically significant relationship found between the total challenges level and residence with p. value 0.895.

Table (1): Percentage distribution of the studied nurses according to their personal data: n =33

Nurses Personal Data	N	%
Age :		
• < 25 years	12	36.4
• 25 < 30 years	16	48.4
• ≥30 years	5	15.2
Mean and SD	27.3±5.4	
Qualification:		
• Master degree	14	42.4
• Bachelor degree	9	27.3
• Technician nursing	10	30.3
Years of experience:		
• < 1 year	3	9.1
• 1 <5 years	16	48.5
• 5<10year	13	39.4
• ≥10 years	1	3.0
Residence:		
• Urban	17	51.5
• Rural	16	48.5
Received adequate training to deal with COVID-19:		
• Yes	19	57.6
• No	14	42.4

Table (2): Percentage distribution of the studied nurses according to their physical challenges facing them during COVID 19 crisis: (n= 33)

Physical challenges	Never		Sometimes		Frequently	
	N	%	N	%	N	%
Exhausting Protective Covers						
Reduced ability when working with personal protective equipment	3	9.1	7	21.2	23	69.7
Reduced focus during working with personal protective equipment	4	12.1	11	33.3	18	54.6
Unbearable heaviness of personal protective equipment	4	12.1	8	24.2	21	63.7
Difficulty eating and drinking during wearing personal protective equipment	0	0.0	3	9.1	30	90.9
Inability to use the bathroom during wearing personal protective equipment	0	0.0	2	6.1	31	93.9
Physical Complications						
Physical tiredness	1	3.0	15	45.5	17	51.5
Spots and skin damage	3	9.1	11	33.3	19	57.6

Table (3): Percentage distribution of the studied nurses according to their psychological challenges facing them during COVID 19 crisis: n= 33

Psychological challenges	Never		Sometimes		Frequently	
	N	%	N	%	N	%
Domestic Distress						
Lack of satisfaction in life	4	12.1	12	36.4	17	51.5
Fear of life	3	9.1	12	36.4	18	54.5
Limited contact with family members	0	0.0	6	18.2	27	81.8
Family members being afraid of infection	0	0.0	8	24.2	25	75.8
Family members' obsession	8	24.2	11	33.3	14	42.5
Psychological Turmoil						
Nervousness	3	9.1	19	57.6	11	33.3
Upsetting thoughts	4	12.1	10	30.3	19	57.6
Upsetting dreams	3	9.1	14	42.5	16	48.5
Disruption of night time sleep	8	24.2	10	30.3	15	45.5

Table (4): Percentage distribution of the studied nurses according to their challenges related to the nature of disease facing them during COVID 19 crisis: (n= 33).

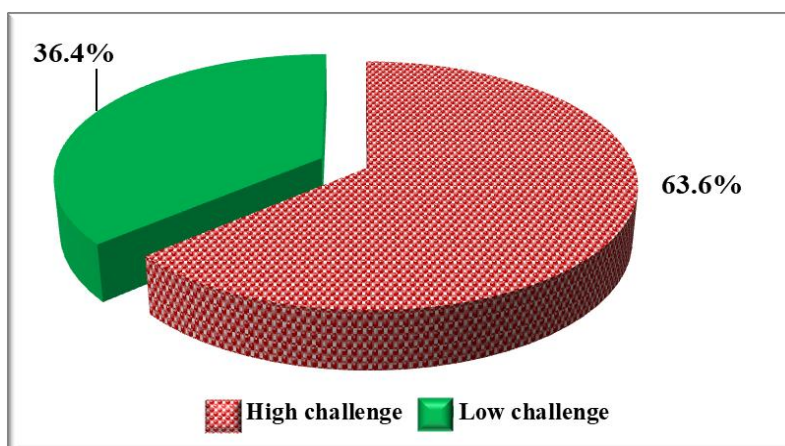
Challenges related to the nature of disease	Never		Sometimes		Frequently	
	N	%	N	%	N	%
Unclear Nature of the Disease						
Lack of knowledge on the prognosis	4	12.1	16	48.5	13	39.4
Unknown complications	11	33.3	14	42.5	8	24.2
Lack of specific medications	16	48.5	16	48.5	1	3.0
Unknown transmission route	32	97.0	1	3.0	0	0.0
Unknown clinical presentation	30	90.9	3	9.1	0	0.0
Fear of side effect of vaccine	22	66.7	8	24.2	3	9.1
Fear of getting infected with the disease	0	0.0	6	18.2	27	81.8
Fear of transmitting the disease to family	0	0.0	6	18.2	27	81.8
Desire to quite the job						
Low tendency to attend the shift	27	81.8	6	18.2	0	0.0
Regretting being a nurse and Thinking about quitting	11	33.3	14	42.5	8	24.2

Table (5): Percentage distribution of the studied nurses according to challenges related to organization's inefficiency in supporting them during COVID 19 crisis: n= 33

Challenges related to organization's inefficiency	Never		Sometimes		Frequently	
	N	%	N	%	N	%
Poor Organization Support						
Improper personal support	8	24.2	13	39.4	12	36.4
Failure to rewarding the personnel	3	9.0	15	45.5	15	45.5
No financial support of the hospital	4	12.1	17	51.5	12	36.4
Excessive Work Load						
No leave of absence	3	9.1	8	24.2	22	66.7
Shortage of nursing workforce	3	9.1	6	18.2	24	72.7
Heavy shifts	2	6.1	7	21.2	24	72.7
Shortage of personal protective equipment	2	6.1	8	24.2	23	69.7
Discrimination in providing protective equipment.	5	15.2	15	45.5	13	39.3

Table (6): Mean and SD of total score of challenges facing the studied nurses during COVID 19 crisis: (n= 33).

Challenges	Maximum score	Mean \pm SD
Physical challenges	14	11.36 \pm 1.78
Psychological challenges	18	12.9 \pm 2.66
Challenges related to the nature of disease (covid19)	20	8.0 \pm 1.80
Challenges related to the Organization's inefficiency in supporting nurses	16	11.48 \pm 2.43
Total challenges	68	43.76\pm5.01

**Figure (1):** Percentage distribution of the studied pediatric nurses according to levels of challenges faced during COVID 19 crisis: n= 33**Table (7)** Relation between levels of challenges and personal data of the studied nurses n= 33

Personal data	High challenges		Low challenges		Chi-square	
	N(21)	%	N(12)	%	X ²	P-value
Age groups:						
• < 25 years	4	19.0	8	66.7	8.51	0.014*
• 25< 30 years	12	57.2	4	33.3		
• \geq 30 years	5	23.8	0	0.0		
Qualification:					12.9	0.002**
• Master degree	4	19.0	10	83.4		
• Bachelor degree	8	38.1	1	8.3		
• Technician nursing	9	42.9	1	8.3		
Years of experience:					11.7	0.008**
• < 1 year	0	0.0	3	25.0		
• 1 < 5 years	8	38.1	8	66.7		
• 5<10year	12	57.1	1	8.3		
• \geq 10 years	1	4.8	0	0.0		
Residence:					0.017	0.895
• Urban	11	52.4	6	50.0		
• Rural	10	47.6	6	50.0		
Received adequate training to deal with COVID-19:					8.9	0.003**
• Yes	8	38.1	11	91.7		
• No	13	61.9	1	8.3		

(*) statistically significant difference

(**) highly statistically significant difference

Discussion:

Children are the most vulnerable age for COVID-19 due to an immature immune system and low ability to apply prevention protocol. Challenges faced by pediatric nurses during the pandemic period are about the demand to continue to provide comprehensive and quality nursing care. So, the present study was conducted to identify the challenges facing pediatric nurses throughout the provision of nursing care for children with COVID-19 (**Hastuti, et al., 2021**).

This study's findings show different challenges concerning the COVID-19 pandemic: the physical challenge, psychological challenge, nature of disease and challenges related to organization inefficiency. Physical challenges were the first studied challenge faced the pediatric nurses during COVID 19 crisis. The findings of this study showed that the majority of the studied nurses were frequently faced with physical challenges regarding to inability to use the bathroom when wearing personal protective equipment, difficulty eating/drinking when wearing personal protective equipment and reduced ability during working with personal protective equipment during COVID 19 crisis respectively.

This may be due to the unbearable heaviness of personal protective equipment which refrain them from eating, drinking and using the bathroom due to the inability to change the equipment during their shifts. Furthermore, the pediatric nurses took extra shifts, working more than 12 hours per day, and transferring to other departments & other hospitals which producing fatigue, exhaustion, aches, pain in the back and limbs, bodily reactions and deprived them of getting enough sleep rest (**Anwr, et al., 20121**). This finding was consistent with **Ungard et al., 2019** who conducted study about the impact of shift length on mood and fatigue in pediatric registered nurses and found that nurses not only work long hours in isolation departments due to the lack of nurses but also dress defensive equipment for 8- to 12-hrs in shifts, which produced discomfort and dehydration. Furthermore, **Jarrar et al., 2020** added in their study of hospital nurse shift length, patient-centered care, and the perceived quality and patient safety that working longer shifts exposed nurses to a higher danger of bodily

fatigue, increased ranks of pressure, and reduced performance of job and quality of care.

In addition to that, prolonged care for COVID-19 children was associated with the incidence of complications such as spots, skin damage, especially on facial skin due to constant use of respirators, and hormonal disorders. This finding was consistent with **Kim, 2018** in his study of nurses' experiences of care for patients with Middle East respiratory syndrome-coronavirus in South Korea.

Psychological challenges were ranked the second among the studied challenge facing the pediatrics nursing during COVID 19 crisis. The findings of this study showed that, the majority of the studied nurses were frequently faced psychological challenges regarding limited contact with their family members and family members being afraid of infection. More than half of them were upsetting thoughts, fear of life and lack of satisfaction in life during COVID 19 crisis. It may be due to fear& anxiety from exposure to infection and transmitting infection to the family members. Adding to this, a number of medical personnel have lost their lives/deaths in the COVID-19 crisis, and this affects the mental health and morale of medical personnel. This result goes in line with **Dewey et al., 2020** in their study of Coronavirus disease 2019 pandemic: Nursing challenges faced. It also goes in line with **Ulrich et al., 2020** in their study of nurses confronting the coronavirus: Challenges met and lessons learned to date. They stated that health care workers were psychologically affected regardless of specific exposure to infected patients or high-risk work area, emotional suffering involved: family anxiety & concerns, fear of infection, the stress of job, solitary separation and stigmatization.

The third studied challenge facing pediatric nurses during COVID19 crisis was related to the nature of the disease. The findings of this study reported that the majority of the studied nurses were frequently faced with challenges related to the nature of disease such as to fear of getting infected with the disease and fear of transmitting the disease to family during COVID 19 crisis. It is rationalized that COVID 19 is a great infectious and pathogenic disease that rapidly transmitted & threatens life. These results were consistent with **Huang et al., 2020** in their study of emotional

responses and coping strategies in nurses and nursing students during Covid-19 outbreak & also consistent with **Tang et al., 2020** in their study of the hallmarks of COVID-19 disease. They mentioned that, COVID19 is a rapid spreading and highly infectious disease that has modeled the severest threat to worldwide health in this century.

The finally studied challenge is related to organization's inefficiency. The findings of this study showed that more than two thirds of the studied nurses faced frequently heavy shifts, shortage of nurses, shortage of personal protective equipment and no leave of absence during COVID 19 crisis. This finding came back to poor organizational support, excessive workload, shortage of personal protective equipment and discrimination in providing protective equipment. These were the issues that confirm the above challenge. Pediatric nurses complained about the lack of personal protective equipment such as medical masks, N95 respirators, protective gowns and shields, latex and disposable gloves, protective goggles and special protective equipment. This finding was parallel with **Catton, 2020** in his study about nursing in the COVID-19 pandemic and beyond: Protecting, saving, supporting and honoring nurses. It was found that nurses heroically attempted to provide care and save human lives in fighting against COVID-19. Many of them worked long shifts for weeks with no days off. Moreover, most of them did not have proper personal protective equipment and were exposed to the risk of infection with COVID-19, and unfortunately, some died from the disease. Furthermore, **Musau et al., 2015** in their study of infectious disease outbreaks and increased complexity of care and **Sun et al., 2020** in their study on the psychological experience of caregivers of COVID-19 patients found shortage of personal protective equipment, poor management and distribution of resources and lack of crisis-oriented vision.

In relation to challenges facing the studied pediatric nurses during the COVID19 crisis, the findings showed that the first challenge facing pediatric nurses was psychological challenges followed by challenges related to the organization's inefficiency in supporting nurses, physical challenges and finally challenges related to the nature of disease (covid19). These may be

due to the fact that most of pediatric nurses have children and are afraid of transmission of infection to them or threatened their life , and hence keeping them unattended. This finding agreed with **Joshi, 2020** who applied his study in coronavirus disease in 2019 pandemic: Nursing challenges faced and stated that the common challenges faced by nurses in the existing condition were: deficiency of qualified nurses in the clinics and hospitals, deficiency of private protecting equipment necessary to avoid infection transmission. Physical tiredness and psychological experiences because of employed in an irregular state, absence of health insurance abilities, challenges regarding individual security, and absence of training.

In relation to the association between levels of challenges and personal data of the studied nurses during COVID 19 crisis, it was indicated that there was a statistically significant relationship between the total challenges score and the personal data of the studied pediatric nurses. It was rationalized by the fact that challenges among studied pediatric nurses increased as being frightened of getting infected or transmitting the infection to their siblings through the transferring the infection to their families, followed by their belief that the disease is highly transmissible .These results were consistent with **Abdelhafiz et al., 2020** in their study of knowledge, perceptions, and attitude of Egyptians towards the novel coronavirus disease (COVID-19) who reported that the first and the most frequently mentioned items that make nurses afraid of getting infected is their fear to transmit the infection to their families followed by their belief that the disease is highly transmissible.

Conclusion

Based on the findings of the present study, it was concluded that, most of the studied pediatric nurses faced high challenges during COVID 19 crisis. It is noticed that high percentages of pediatric nurses faced psychological challenges followed by challenges related to the organization's inefficiency in supporting nurses, physical challenges and finally challenges related to the nature of disease (covid19). There were a statistically significant relationship between the total challenges level and the socio-demographic characteristics of the studied nurses regarding age groups, qualification, years of experience and

adequate training received to deal with COVID-19.

Recommendations:

Based on the findings of the present study the following recommendations are suggested:

- Training programs are necessary to empower nurses with applicable preparations & manipulation of the challenges and experiences facing them to improve the skills of self-confidently, and consequently enable them to deal with challenges and control of crisis.
- Development of evidence-based systems leads to the support and protection of the most valuable workforce of health care systems, namely nurses, and supporting nurses directly improves children care and safety.
- Further researches should be conducted for pediatric nurses in order to enhance knowledge and practices related to prevention, precautions and management of COVID-19 crisis in hospital.

Reference:

- Abdelhafiz, A. S., Mohammed, Z., Ibrahim, M. E., Ziady, H. H., Alorabi, M., Ayyad, M., & Sultan, E. A. (2020):** Knowledge, perceptions, and attitude of Egyptians towards the novel coronavirus disease (COVID-19). *Journal of Community Health*, 45(5), 881-890.
- Adams JG & Walls RM, (2020):** Supporting the Health Care Workforce During the COVID-19 Global Epidemic. *JAMA*.;323(15): 39-40.
- Anwr D. B., Akl, Zahra Ahmed Sayed Z. A. & Saadoon M. M., (2021):** Nurses' challenges: Critically Ill Children Outcomes at Pediatric Intensive Care Units during COVID-19 crisis *Egyptian Journal of Health Care*, 12 (2)): 239-240
- Borasio, G. D., Gamondi, C., Obrist, M., & Jox, R. (2020).** COVID-19: decision making and palliative care. *Swiss medical weekly*, 150(1314) 11–15.
- Catton, H, (2020):** Nursing in the COVID-19 pandemic and beyond: Protecting, saving, supporting and honouring nurses. *International Nursing Review*, 67(2), 157–159.
- Centers for Disease Control and Prevention, (2019):** Novel coronavirus, Wuhan, China. Information for Healthcare Professionals. <https://www.cdc.gov/coronavirus/2019-nCoV/hcp/index.html> (Accessed 1 May 2020).
- Dewey, C., Hingle, S., Goelz, E., & Linzer, M, (2020):** Supporting clinicians during the COVID-19 pandemic. *Coronavirus disease 2020 pandemic: Nursing challenges faced*. *Cancer Research, Statistics, and Treatment*, 3(5), 136-138.
- Espinoza J, Crown K, Kulkarni O. (2020):** A Guide to Chatbots for COVID-19 Screening at Pediatric Health Care Facilities. *JMIR Public Health Surveill.* 3(5), 16-18.
- Góes FGB, Silva ACSS, Santos AST, Pereira-Ávila FMV, Silva LJ, Silva LF, Goulart MCL (2020):** Challenges faced by pediatric nursing workers in the face of the COVID-19 pandemic., *Rev. Latino-Am. Enfermagem*;28(67):1-9
- Hastuti, D, Rudhiati. F& Suryaningsih. C, (2021):** The Role Of Pediatric Nurses In Caring For Children With Covid 19 *Journal Keperawatan Komprehensif*, Vol. 7 Special Edition Agustus. Pp79-89
- Hatoun, J., Correa, E. T., Donahue, S. M. A., & Vernacchio, L, (2020):** Social distancing for COVID-19 and diagnoses of other infectious diseases in children. *Pediatrics*, 146(4), 225:228.
- Huang, L., Lei, W., Xu, F., Liu, H., & Yu, L, (2020):** Emotional responses and coping strategies in nurses and nursing students during Covid-19 outbreak: A comparative study. *PLoS One*, 15(8), 665:669.
- Jarrar, M. T., Minai, M. S., Al-Bsheish, M., Meri, A., & Jaber, M, (2020):** Hospital nurse shift length, patient-centered care, and the perceived quality and patient safety. *The International journal of health planning and management*, 34(1),443:446.
- Joshi, S, (2020):** Coronavirus disease 2019 pandemic: Nursing challenges faced.

- Cancer Research, Statistics, and Treatment*, 3(5).
- Kim, Y. (2018):** Nurses' experiences of care for patients with Middle East respiratory syndrome-coronavirus in South Korea. *American Journal of Infection Control*, 46(7), 781–787.
- Members of the Divisions of Pediatric Infectious Disease, H. M. (2020, Maret 23).** Clinical Guidance for the Care & Treatment of COVID-19 Pediatric Patients.
- Mostafa A S., Abdalbaky A, Fouda E. M, Shaaban H, Elnady H, Allah MH & Sarhan DT, (2020):** Practical approach to COVID-19: an Egyptian pediatric consensus, *Egyptian Pediatric Association Gazette*, 68(28), 225:229.
- Musau, J., Baumann, A., Kolotylo, C., O'Shea, T., & Bialachowski, A, (2015):** Infectious disease outbreaks and increased complexity of care. *International Nursing Review*, 62(3), 404–411.
- Park, S.-C., & Park, Y. C. (2020).** Mental health care measures in response to the 2019 novel coronavirus outbreak in Korea. *Psychiatry Investigation*, 17(2), 85–86.
- Sankar J, Dhochak N, Kabra SK, Lodha R.** COVID-19 in Children: Clinical Approach and Management. *Indian J Pediatr*, 17(2), 85–86
- See, K. C., Zhao, M. Y., Nakataki, E., Chittawatanarat, K., Fang, W.-F., Faruq, M. O., Wahjuprajitno, B., Arabi, Y. M., Wong, W. T., Divatia, J. V., Palo, J. E., Shrestha, B. R., Nafees, K. M. K., Binh, N. G., Al Rahma, H. N., Defleuxay, K., Ong, V., & Phua, J, (2018):** Professional burnout among physicians and nurses in Asian intensive care units: A multinational survey. *Intensive Care Medicine*, 44(12), 2079–2090.
- Shen K, Yang Y, Jiang R, Wang TY, Zhao DC, Jiang Yi, et al. Updated diagnosis, treatment and prevention of COVID-19 in children: experts' consensus statement (condensed version of the second edition).** *World J Pediatr*. 44(12), 279–290.
- Sun, N., Wei, L., Shi, S., Jiao, D., Song, R., Ma, L., Wang, H., Wang, C., Wang, Z., You, Y., Liu, S., & Wang, H. (2020).** A qualitative study on the psychological experience of caregivers of COVID-19 patients. *American Journal of Infection Control*, 48(6), 592–598.
- Tang, D., Comish, P., & Kang, R. (2020).** The hallmarks of COVID-19 disease. *PLoS pathogens*, 16 (5), 52–58.
- Ulrich, C. M., Rushton, C. H., & Grady, C, (2020):** Nurses confronting the coronavirus: Challenges met and lessons learned to date. *Nursing outlook*, 68(6), 838-844.
- Ungard,W., Kroger-Jarvis, M., & Davis, L. S, (2019):** The impact of shift length on mood and fatigue in pediatric registered nurses. *Journal of pediatric nursing*, 47, 167-170.
- World Health Organization. (2019)** Director-General's remarks at the media briefing - nCoV on 11 February 2020. <https://www.who.int/dg/speeches/detail/who-director-general-s-remarks-at-the-media-briefing-on-2019-ncovon-11-february-2020>. (Accessed 1 May 2020).
- Worldometers, (2020):** COVID-19 coronavirus outbreak. Retrieved from <https://www.worldometers.info/coronavirus/ accessed11September>.
- Xie, J., Tong, Z., Guan, X., Du, B., Qiu, H., & Slutsky, A. S. (2020):** Critical care crisis and some recommendations during the COVID-19 epidemic in China. *Intensive care medicine*, 46(5), 837-840.
- Yagnik, P. J., Umscheid, J., Khan, A. W., Ali, M., Bhatt, P., & Desai, P. H, (2020):** Pediatric characteristics of 2019 novel coronavirus: review of available published literature. *Clinical pediatrics*, 59(9-12), 849-852.