

## Challenges Facing Nursing Profession in Implementing COVID -19 Infection Prevention and Control Practices in Health Care Settings



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### 1.ABSTRACT

**Background:** Covid 19 is one of the most serious expanding pandemics which affecting all people worldwide. Nurses are responsible for introducing care to covid 19 patients. There are many challenges facing them during implementation of covid 19 prevention and control practices related to nurse and work organization **Aim:** The study aimed to assess challenges facing nursing profession in implementing covid-19 infection prevention and control practice in health care settings. **Methods:** A descriptive cross-sectional research design was utilized with convenient sample of 203 nurses from three different hospital sectors, Mansoura University Hospitals, Ministry of Health Hospitals and Mansoura Health Insurance Hospital at Dakahlia Governorate, Egypt. **Tools of data collection:** Two tools were used in this study, nurses' knowledge and nurses' challenges related to covid 19 infection prevention and control practices. **Results:** More than half of nurses (54.7%) showed good knowledge levels. The highly most common challenges faced nurses were lack of personal protective equipment and fear of infecting themselves and other. **Conclusion:** There are many challenges facing nurses during implementing covid -19 infection prevention and control practice, the most common challenges were lack of personal protective equipment and fear of infecting themselves and others. **Recommendation:** Continuous educational programs for nursing profession about covid - 19 infection prevention. periodical evaluation for nurses' performance to ensure proper adherence to the preventive measures, continuous updating for the nursing education curriculum about principles of infection prevention and control practices and maintaining availability of necessary resources.

**Key words:** Challenges, Covid 19, Epidemic, Infection Prevention Measures, Nursing Profession

### 2.Introduction:

The world had watched the slow-motion birth and rapid growth of a new pandemic disease, coronavirus (COVID-19). Covid-19 is considered one of the central crises that having serious long-term effects on human health. It affects all people from all generations and all aspect of lives such as health, education, economy, commerce, trade and media. It led to quarantining of entire communities, closing of schools, social isolation, and shelter- in-place orders and lockdown. (Topcuoglu, 2020).

Covid 19 is a cluster of acute respiratory viral infectious diseases that was first occurred in Wuhan, Hubei Province, China Since December 2019. On February 14, 2020, Egypt announced the first case of covid-19. Since the announcement of the 1st case of covid- 19 infection in Egypt, the number of cases has risen to over 7000 by May 2020. Egypt's infection rate is predicted to be 67/1 million, with a 6.4 % fatality rate. By the end of May, it was spread rapidly worldwide and more than

5.7 million people had been infected, with around 358,000 deaths reported. Covid-19 pandemic continues to spread, with the global case count and number of deaths estimated at 154 million and 3.2 million, respectively, as of May 5th, 2021 (El Kassas, Abdelkader & Medhat, 2020; Jirjees, Bashi, & Al-Obaidi, 2021; Salyer et al., 2021).

Covid-19 pandemic has shown a high incidence of infection transmission among health healthcare workers (HCWs) especially nurses who are caring for Covid-19 cases and being at risk of infecting themselves and others due to close contact with positive cases and touching contaminated surfaces, so governments and the specific organizations published infection prevention and control guidelines to reduce infection transmission and mitigate its negative impact on health systems (Wang et al., 2020). Infection prevention and controls (IPC) guidelines contain many essential items such as using personal protective equipment (PPE), patient's isolation

and stricter cleaning routines. During implementation of IPC guidelines in different health care settings there are different challenges facing nurses such as inadequate or difficulty access to appropriate PPE, shortage of staff ,increased work load especially with increased number of cases , being exhausting from long working hours and lack of knowledge regarding this novel virus and its IPC guidelines (**Hamid, Kanwal, Bajwa, Khalid & Mubarak, 2016; Houghton et al., 2020**).

Moreover, being stressed from fear of getting infection at work and the possibility of transmission infection to their family and delay in the early detection of infections due to its long incubation period, which can last up to fourteen days on average and not having rapid access to testing if they have Covid-19 symptoms. Inadequate training on how to deal with this serious virus and lack of access to updated accurate information, uncertainty that their organization will support them or take care of their personal and family needs if they develop infection, lack of authority support, being unable to provide competent medical care if redistributed to a new work area, lack of a preset action plan for those infection crises, poor communication strategies and lack of financial motivation pay and rewards (**Kang 2018; Shanafelt, Ripp & Trockel, 2020; Mohammadi, et al.,2021**). In addition to the discomfort of wearing PPE for long period, the public stigma for those who get infection (**Pappa et al., 2020; Perry & DoniniLenhoff, 2010**).

#### **Significance of the study**

No previous study was implemented to evaluate the challenges that may facing nursing profession in implementing covid -19 infection prevention and control practices in health care settings at mansoura university hospitals. Infection prevention and control practices is critical component while providing competent nursing care, as well as the basic right for every patient, health care member in health care setting especially in the time of covid -19 pandemic as it was inevitable to apply infection control guidelines to reduce morbidity, mortality and cost of health care

services. So, this study was conducted to assess the challenges facing nursing profession in implementing covid -19 infection prevention and control practices in health care settings.

#### **Aim of the Study**

The aim of the study was to assess the challenges facing nursing profession in implementing covid -19 infection prevention and control practices in health care settings.

#### **Research question**

What are challenges that facing nursing profession in implementing covid -19 infection prevention and control practices in health care settings?

#### **Subjects and Method**

**Research design:** A descriptive cross-sectional research design was used to conduct this study.

**Setting:** The study was conducted at three different hospital sectors, Mansoura University Hospitals (Main University Hospital Building-Urology and Nephrology Center-Oncology Center-Gastro Intestinal Surgery Center (GISC)- Emergency Hospital), Ministry of health hospitals (Mansoura chest hospital, Mansoura International Hospital, Mansoura Specialty Hospital, and Mansoura Health Insurance Hospitals at Dakahlia Governorate, Egypt.

#### **Subjects:**

**Sample Size:** A convenience sample of 203 Nurses (female and male) who work with positive covid-19 cases in above mentioned settings.

#### **Tools of data collection:**

**Two tools were used for data collection:**

**Tool (1): Nurses knowledge about covid 19 infection prevention and control practices:** it was developed by the researcher based on literature review it was included two parts

**Part I: Nurse's Demographic characteristics** such as (age, gender, working area, educational level, years of experience, number of working hours per week and per day, attending previous training course about IPC practices and covid-19 IPC practices).

**Part II: Nurse's Knowledge Assessment Sheet**, this part of tool was used to assess nurse's knowledge regarding covid-19 disease (20 question) and knowledge regarding covid-19 infection prevention and control practices (10 question). Each question was answered by either (yes, no). The correct answer to questions was yes, and the incorrect answer was no.

**Scoring System:** Adding 1point for each correct answer and 0 point for each wrong answer.

The levels of knowledge were considered as follows: Poor for less than 50%, average from 50% to 75% and good for more than 75% (Abolfotouh, Soliman, Abolfotouh, & Raafat, 2011).

**Tool (2): Nurses challenges assessment about covid 19 infection prevention and control practices:**

It was developed by the researcher to assess challenges facing nursing profession in implementing covid -19 infection prevention and control practices in health care settings. It was checked by the nurses as being: "agree" or "disagree". It consisted of three main items, challenges related to nurses (16), related to work organization (10) and related to perception of others (2).

**Scoring system:** Score 1 was given for agree response and Score 0 was given for each disagree response.

**Validity of the tool**

The content validity was tested by jury of five experts in the field of medical surgical nursing who reviewed the tools for clarity, comprehensiveness, relevance, applicability and all the necessary modifications were done accordingly.

**Reliability of the tool**

Reliability test was done by using Alpha Cronbach's Coefficient test. and found to be for Tool (1) Nurse's Knowledge was 0.91 while tool (2) Nurses challenges was 0.88.

**Pilot Study**

It was carried out on 10% of the study sample to test feasibility, objectivity, clarity and the applicability of the study tools, the

necessary modifications were done accordingly, it was excluded from the study sample.

**Data Collection Process**

Ethical approval was obtained from the faculty of nursing and research scientific ethical committee mansoura university. The researcher reviewed the recent relevant literature of various aspect of this study in order to develop appropriate tools. The online google forms was designed by the researcher to use for data collection in this study due to the lockdown in Egypt during covid 19 pandemic infection, regarding maintaining isolation guidelines of the infected cases. Also, to maintain social distance, prevent spread of infection and the difficulty of approval by hospitals to go to isolation places. The access link was then shared via on line platform including facebook and whatsapp with groups for nurses who deal with covid-19 positive cases. Additionally, the researcher had shared the link personally to nurses in their network areas. Data was collected over a period of two months which started from 2nd week of March to 2nd week of May 2021.

**Ethical Considerations**

Ethical approval was obtained from the Research Ethical Committee of Faculty of Nursing Mansoura University Prior to the study. The participation of the respondents was voluntary, and they were not coerced in any way after providing comprehensive information about the nature of the study, aim, benefits, risks, Participants was informed that they have the right to refuse to participate in the study and withdrawn at any time.

**Statistical design:**

The collected data were revised then analyzed, coded and fed to the computer and analyzing using SPSS for windows version 25.0 (SPSS, Chicago, IL). Continuous data were normally distributed and were expressed in mean  $\pm$  standard deviation (SD). Categorical data were expressed in frequency and percentage. Chi-square test was used for comparison of variables with categorical data. The comparisons were determined using Student's t test for two variables with

continuous data & one-way ANOVA for more than two variables. Statistical significance was set at  $p < 0.05$ , while highly significance was set at  $p < 0.001$ .

**Results**

**Table 1:** Revealed that near to three quarters of studied nurses (73.4%) were female with mean age  $\pm$  SD  $27.093 \pm 3.109$  years. The largest percentage, more than half (57.6%) of studied nurses were graduated from technical nursing institute. Concerning years of experience, more than half of studied nurse (51.7%) are working from less than 3 years.

**Table 2:** Showed that as regard hospital type, more than half (55.2%) of nurses were working in university hospitals in face to less than one forth (12.8%) were working on health insurance hospital.

**Figure (1):** Shows that more than half of studied nurses (54.7%) had good total knowledge level, while less one tenth (7.9%) had poor total knowledge level.

**Table 3:** Shows that the largest percent of challenge related to nurse was fear of infecting themselves or others which represent (97.5%), while the largest percent of challenge

related to work organizations was the workplace culture and influence of colleagues who get the infection from the work for which represent (94.6%). In addition to the largest percent of challenge related to perception of other was negative societal perception just because of working with positive covid-19 cases which represent (95.6).

**Table 4:** demonstrated that lack of PPE is most common challenge that face four fifth of studied nurses (80 %) who worked in ministry of health hospitals. While lack of training programme is common challenge faced less than one fifth of studied nurses (17%) who work in university hospitals. In addition to fear of infecting themselves or others is a common challenge among more than one quarter of studied nurses (26.9) who work in mansoura health insurance hospital.

**Figure (2):** Illustrate that the highly most common challenges that faced the studied nurses were the lack of personal protective equipment as it presented nearly less than half of studied sample (45,8%), while increase work overload during the shift is the least common challenges (0.5%).

**Table 1.** Distribution of the nurses according to their demographic characteristics (N=203)

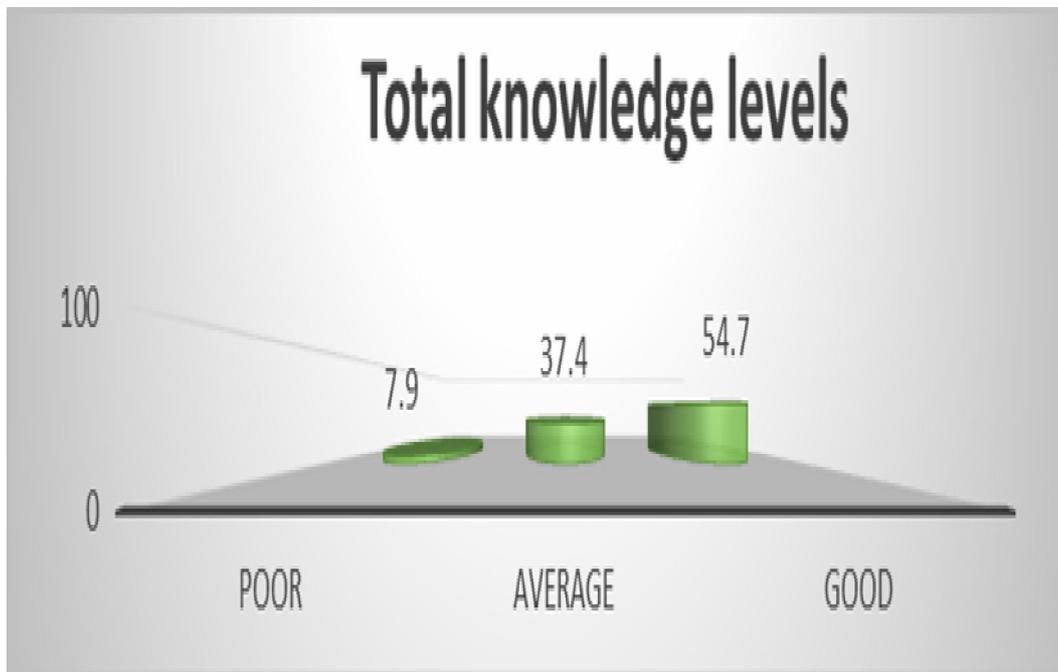
Items	No (203)	%
<b>Gender</b>		
▪ Female	149	73.4
▪ Male	54	26.6
<b>Age</b>		
▪ 20-30 years	177	87.2
▪ 31-40 years	26	12.8
<b>Mean age <math>\pm</math> SD</b>	27.093 $\pm$ 3.109	
<b>Educational level</b>		
▪ Technical nursing institute	117	57.6
▪ Bachelor	74	36.5
▪ Postgraduate	12	5.9
<b>Years of experience</b>		
▪ 1-3 years	105	51.7
▪ 3-5 years	28	13.8
▪ 6-9 years	52	25.6
▪ $\geq$ 10 years	18	8.9
<b>Weekly working hours</b>		
▪ Less than 48 hours	159	78.3
▪ More than 48 hours	44	21.7

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<b>Daily working hours</b>		
▪ Less than 12 hours	175	86.2
▪ More than 12 hours	28	13.8
<b>Attending infection control training programme.</b>		
▪ Yes	136	67
▪ No	67	33
<b>Attending Covid 19 training</b>		
▪ Yes	72	35.5
▪ No	131	64.5

**Table 2.** Distribution of nurses according to working areas (N=203)

Items	N (203)	%
<b>Mansoura University hospitals</b>	<b>112</b>	<b>55.2</b>
▪ University main hospital	41	20.2
▪ Oncology center	15	7.4
▪ Urology and nephrology center	19	9.4
▪ Emergency hospital	21	10.3
▪ GISC center	16	7.9
<b>Ministry of health hospitals</b>	<b>65</b>	<b>32.0</b>
▪ Mansoura chest hospital	22	10.8
▪ Mansoura international hospital	28	13.8
▪ Mansoura specialty hospital	15	7.4
<b>Mansoura Health Insurance hospital</b>	<b>26</b>	<b>12.8</b>



**Figure (1)** Total knowledge levels related to covid 19 infection prevention and control practices

**Table 3.** Challenges facing nursing profession in implementing covid -19 infection prevention and control practices in health care settings (N=203)

Challenges	Agree		Disagree	
	No	%	No	%
1. Lack of adequate updated knowledge about covid-19.	178	87.7	25	12.3
2. Lack of training programme about the infection prevention and control practices regarding covid-19.	175	86.2	28	13.8
3. Lack of knowledge about how to deal with this epidemic infection prevention and control practice.	168	82.8	35	17.2
4. Inadequate number of the nurses in each shift.	173	85.2	30	14.8
5. Increasing number of working hours.	157	77.3	46	22.7
6. The discomfort of wearing personal protective equipment for long period.	188	92.6	15	7.4
7. Increase work overload during the shift.	168	82.8	35	17.2
8. Redistribution of nurses from main work place area.	182	89.7	21	10.3
9. Fear of infecting themselves or others.	198	97.5	5	2.5
10. Difficulty of accessing to the confirming test if infection occurred.	178	87.7	25	12.3
11. Lack of ability to maintain personal hygiene practice during the long-time hospital stay.	177	87.2	26	12.8
12. Lack of shower facilities within the healthcare settings.	170	83.7	33	16.3
13. Fatigue related to inadequate sleeping hours.	195	96.1	8	3.9
14. Psychological distress due to fear of infecting themselves and their family member.	192	94.6	11	5.4
15. Inadequate sleeping hours due to long working hours	191	94.1	12	5.9
16. Sleep disturbance as a result of psychological distress	194	95.6	9	4.4

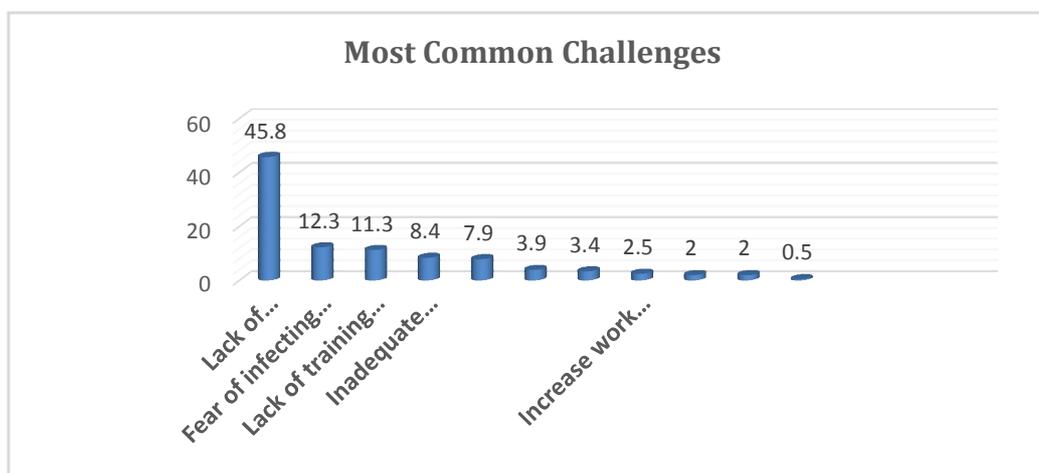
Challenges related to work organizations				
1. Lack of predetermined and organized planning in how to dealing with the epidemic	174	85.7	29	14.3
2. Lack of availability of personal protective equipment.	188	92.6	15	7.4
3. Lack of easy accessibility to personal protective equipment.	177	87.2	26	12.8
4. Lack of adequate training for personal protective equipment usage	168	82.8	35	17.2
5. Lack of authority support and proper management system for nurses if they acquire the infection.	175	86.2	28	13.8
6. Lack of authority support for nurse's family if they acquire the infection.	179	88.2	24	11.8
7. Lack of rewarding motivation	177	87.2	26	12.8
8. The workplace culture, and influence of infected nurses who get the infection from the work on other nurses	192	94.6	11	5.4
9. Undeveloped communication method for dealing with patient and reporting new related information concerning successful infection prevention and control implementation guidelines.	168	82.8	35	17.2
10. Deficiency of necessary technological devices in hospital environment.	173	85.2	30	14.8
1. Negative societal perception just because of working with positive covid-19 cases.	194	95.6	9	4.4
2. The public stigmatizes those who get infection.	182	89.7	21	10.3

**Table 4.** Relation between working area and most common challenges facing nursing profession in health care setting (N=203)

Most Common Challenges Facing Nursing Profession in Health Care Setting	Hospital Type			Significance
	University Hospitals (N=112)	Ministry of health Hospitals (N=65)	Health insurance Hospitals (N=26)	
Lack of PPE No (%)	39 (34.8)	52 (80)	2 (7.7)	X <sup>2</sup> = 102.775 P= 0.000 **
Lack of training programs No (%)	19 (17)	3 (4.6)	1 (3.8)	
Inadequate number of the nurses No (%)	9 (8)	5 (7.7)	3 (11.5)	
The workplace culture and influence of infected nurses No(%)	1 (0.9)	0 (0)	0 (0)	
Increase work overload No (%)	4 (3.6)	1 (1.5)	5 (19.2)	
Fear infecting themselves or others No(%)	15 (13.4)	3 (4.6)	7 (26.9)	
Lack of rewarding motivation No (%)	7 (6.2)	0 (0)	0 (0)	
Difficulty of accessing to the confirming test No (%)	0 (0)	1 (1.5)	3 (11.5)	
Lack of ability to maintain personal hygiene No(%)	13 (11.6)	0 (0)	3 (11.5)	
Inadequate sleeping hours No (%)	2 (1.8)	0 (0)	1 (3.8)	
Negative societal perception No (%)	3 (2.7)	0 (0)	1 (3.8)	

X<sup>2</sup> refers to chi square test, \* refers to significance if  $p < 0.05$ , \*\* refers to highly significance if  $p < 0.001$ .

**Figure (2)** Most common challenges which facing nursing profession in implementing covid -19 infection prevention and control practices



**Discussion**

Covid-19 is a serious pandemic disease that affect negatively all people over the world. The most effective way to control this pandemic infection is to implement infection prevention and control measures. During implementation of IPC measures, nurses who considered the essential part of health care system are facing various challenges which put

serious psychological and physical stresses on them when caring for Covid 19 patients. (Park & Park, 2020; Wang, Tang&wei,2020). Hence, the present study was conducted to assess challenges facing nursing profession in implementing covid-19 infection prevention and control practice in health care settings.

The results of this study showed that three forth of the studied nurse were female.

This in the same line with (Aydin & Balci, 2020; Labrague, & De los Santos, 2020). who reported that the majority of studied sample were females. The results of this study not consistent with (Zhou et al., 2021) who reported that all of studied sample were male. This may attribute to the fact that most of nurses in our community were females.

Concerning educational level, the study revealed that more than half of the nurses had graduated from technical nursing institute, this result is inconsistent with (Baraka, Ramadan, & Hassan, 2021; Nemati, Ebrahimi, & Nemati, 2020) who stated that the majority of nurses in their study had graduated from bachelor's degrees. This may relate to most of nurses in our country are graduated from two main educational level, technical Institute of nursing and faculty of nursing, where bachelor's degree commonly occupies the supervisory and administrative positions in working area.

As regard to years of experience, half of studied nurses are working from one to three years. This result is harmony with (Nemati, Ebrahimi, & Nemati, 2020) who reported that the largest percent in nurse's years of experience in his study was less than five years and the study of (Jose, Dhandapani, & Cyriac, 2020) who reported that around three fifth of his sample had from one to five years of experience. The result of the present study is contradicted with (Ejeh et al., 2020) who reported that the largest percent in nurse's years of experience in his study was ranged between six to ten years.

The result of the present study revealed that more than half of nurses in the study showed a good overall knowledge level while more than one third of the studied sample had average total knowledge level. This finding is in accordance with (Maleki et al., 2020) who reported that awareness for more than half of studied sample was good regarding COVID-19. and also consistent with (Alwani et al., 2020) who reported that nurses have sufficient knowledge regarding different aspects of COVID-19. On the other hand, the result of the present study is contradicted with (Bhagavathula, Aldhaleei, Rahmani, Mahabadi, & Bandari, 2020) who reported that

poor knowledge about transmission of covid 19, and its symptom was seen in a significant proportion in health care workers, including nurses.

The researcher point of view, the high level of knowledge may relate to some factors such as covid 19 serious health crisis which add sever anxiety and fear from getting infection for all people worldwide especially nurses who seek to acquire information about this novel virus to protect themselves and their family. also, there are several available sources of information about COVID-19 such as ministry of health and population or WHO official web sites, and social media which published regular updated information.

The present study revealed that lack of PPE is considered the first common challenges facing nurses during implementation of IPC measures accounted approximately forty-five point eight. This result in the same line with (Houghton et al., 2020) who reported that inadequate supplies of appropriate PPE to maintain nurse staff and patient safeness was reported as a major challenge by nurses and managers. Also (Wahed, Hefzy, Ahmed, & Hamed, 2020) stated that lack of the PPE was the most commonly mentioned barrier facing nurses in covid 19 pandemic. From the researcher point of view this may be contributed to increased demand during this serious pandemic, a lack of crisis-oriented vision, poor management and resource distribution, and panic buying by the general public which contributed to PPE shortage.

Regarding fear of infecting themselves or others which is considered the second challenges facing nurses during implementation of IPC measures in the present study. This finding are in the same line with (Ahmed et al., 2020; Liu et al., 2020; Roy et al., 2020) which justify the reasons for HCWs including nurses fear from getting infected and quarantined such as their family and childcare responsibilities during times of self-isolation or quarantine, risk of transmitting the infection to loved one, lack of specific treatment for this novel virus. From the researcher point of view this may be related to living with uncertainty which may confuse them, worrying about their

health and the possibility of infecting their families and others, which raise their anxiety levels.

Regarding lack of training programme which is considered the third challenges facing nurses during implementation of IPC measures in the present study. This result coincides with **(Labrague & de Los Santos 2021)** who stated that study nurses who had received training during covid-19 epidemic had a significant decreased in apprehension level from this serious pandemic and improved mental health functioning when compared to nurses who had not received training.

Regarding, inadequate number of the nurses in each shift when dealing with increased number of covid 19 patients which is considered the fourth challenges facing nurses during implementation of IPC measures in the present study. This consistent with **(Legido-Quigley et al.,2020; Moyo et al. 2022)** who reported that shortage of nurses is a huge challenge among human resource related challenges that affecting all health care systems around the world and **(Lam et al.,2019; Poortaghi, Shahmari, & Ghobadi, 2021)**who stated that shortage of staff is considered an essential challenge associated with covid-19 pandemic. Moreover, **(Hashish, & Ashour, 2020; Mahran, Taher, & Saleh, 2017)**. reported that Egypt health care sector faced severe shortage of professional healthcare workers particularly nurses.

Regarding, lack ability to maintain personal hygiene practice during the long-time hospital stay which is considered the fifth challenges facing nurses during implementation of IPC measures in the present study. This result is similarly with **(Liu, et al., 2020)** who reported that nurses faced difficulties in maintaining personal hygiene during covid 19 pandemic. The researcher point of view this may be due to nurses had to stayed with PPE for long working hours as she must wear airtight protective gear that cause sweating and clothes to become wet.

The result of the present study showed that inadequate sleeping hours due to long working hours is considered the sixth challenges facing nurses during

implementation of IPC measures in the present study. This consistent with **(Sun et al., 2020)** who stated that nurses reported a variety of psychological issues during introducing the care for covid-19 patients including exhaustion, discomfort, and powerlessness due to the excessive insufficient sleep and increased workload during shifts. Furthermore, **(Sikaras et al., 2022)** who report that fatigue was more prevalent in nurses caring for covid 19 patients as a result of night long working hours, rolling or extending shifts with decreased sleep hours quality and amounts, which can result in excessive daytime sleepiness, fatigue, and decreased effectiveness of the work, which can justify this finding

Concerning, lack of rewarding motivation (financial) which is considered the seventh challenges facing nurses during implementation of IPC measures in the present study. This in the same line with **(McLaren, Baldwin, & Boden, 2018)** who reported lack of financial motivation is one of the important challenges that affect nurse's ability to perform their work in good way.

Concerning, increase work overload during the shift which are considered the eighth challenges facing nurses in the present study. This result is in agreement with **(Nicholson et al.,2019)** who reported that caring for patients with an infectious disease can lead to unusual work overload, terror, and anxiety on caregivers, which can have an adverse effect on their performance.

Concerning, negative societal perception just because of working with positive covid-19 cases and difficulty of nurses accessing to the confirming test. which are considered the ninth challenges facing nurses in the present study. This comes in the same line with **(Dalky et al., 2020)** who reported that social discrimination and stigmatization have been observed and practiced versus infected people and HCWs including nurses also caused people to label HCWs particularly nurses who care for diseased people as a source of infection which have affected nurses' performance. This is also consistent with the study of **(Simeone et al.,2022)** who stated that stigma within the

workplace is essentially found in those who actively provide assistance to infected subjects. Furthermore, (Alsyouf et al., 2018; BaniHani & Hamdan- Mansour, 2020) reported that nurses have faced negative societal perception which have negative and harmful effects for stigma associated with covid-19 such as disease hiding when be infected, delayed treatment, burden, burnout, and frustration feeling , all of which have an impact on their ability to provide quality care, proper application of infection control measures and raise their desire to leave their current job and lower their job satisfaction.

The result of the present study showed that the workplace culture, and influence of colleagues who get the infection from the work are considered the tenth challenges facing nurses. This result is in the harmony with (Corley, Hammond, & Fraser, 2010) who reported that work organization where all workers adhered to proper application of IPC guidelines contributed to establish "pulling together" culture for other or new workers. (Zinatsa, Engelbrecht, van Rensburg, & Kigozi, 2018) who reported that health care workers after learning that a coworker had contracted the virus, their adherence to wearing facemasks and other PPE increased.

In the present study, there was relation between working area and most common challenges. The result of the present study clarifies that lack of training programme related to covid 19 IPC is most common challenge for nurses who working in university hospitals. From the researcher point of view, lack of training programme may relate to increased number of positive covid 19 cases in university hospitals and no time for conducting training courses during this serious pandemic for both authority and employee.

Furthermore, the result of the present study stated that lack of personal protective equipment is a most common challenge to those who working in ministry of health and population (MOHP) hospitals. This result in harmony with the study of (Nicola, et al.,2020) who reported that Egypt as being one of the developing countries suffered from lack of

resources including PPE. From the researcher point of view, lack of personal protective equipment may relate to increased material price due to increased demand.

### **Conclusion**

The study showed that there are many challenges facing nurses during implementation of covid 19 infection prevention and control measures, challenges related to nurses, work organization and perception of others. This challenges were arranged as follow, lack of personal protective equipment, fear of infecting themselves or others, lack of training programme about the infection prevention and control practices regarding covid-19, inadequate number of the nurses in each shift, lack ability to maintain personal hygiene practice during the long-time hospital stay, inadequate sleeping hours due to long working hours, lack of financial motivation as rewards, increasing work overload during the shift, difficulty of accessing to the confirming test if infection occurred and negative societal perception just because of working with positive covid-19 cases, the workplace culture and influence of colleagues who get the infection from the work.

### **Recommendations**

Continuous educational programs for nursing profession in health care settings about covid - 19. Periodical evaluation for nurses' performance to ensure proper adherence to the preventive measures. Continuous updating for the nursing education curriculain content about principles of infection prevention and control practices and crisis mangment. Maintaining availability of necessary resources by different responsible authority.

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