

Challenges Facing Nurses during New Mutations of COVID-19 Pandemic: their Perception of Health Facility Preparedness and Organizational Support

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ABSTRACT

Background: The corona virus undergoes spontaneous mutations over time and generates new variants and strains, posing significant challenges to health care systems across the globe. **Aim** was to assess challenges facing nurses during and beyond new mutations of COVID-19 pandemic in relation to perceived health facility preparedness and organizational support. **Method:** Design: A descriptive correlational design. **Setting:** The study was conducted at all over Shibin El-Kom centers and two affiliated villages, Menoufia Governorate, Egypt. **Sample:** Convenience sampling technique was utilized to recruit 275 nurses. **Instruments:** 1. Questionnaire about challenges facing nurses, 2. Survey of perceived organizational support, and 3. Survey of perceived of health facility's preparedness. **Result:** The highest nurses' percentage reported being faced with increased level of current challenges while this level decreased regarding future challenges. Moderate perception of organizational support and the institution preparedness was reported by the highest percentage of them. A highly significant negative correlation was reported between future challenges faced by nurses and their perception of organizational support. There was a highly significant relationship between total nurses' perception of health facility's preparedness and their total perception of organizational support. **Conclusions:** New mutations of COVID-19 pandemic are creating new challenges on nurses currently and at future. Nurses' perception of organizational support and facility preparedness minimizes their perception of being challenged during and beyond new mutations of COVID-19 pandemic. **Recommendation:** nurse managers aid in gaining a greater knowledge of nurses, allowing them to implement effective actions to address the formidable problems facing nurses confront during current and future public health emergencies.

Keywords: Challenges, COVID19, Organizational support, Perception, Preparedness.

Introduction

Coronavirus (COVID-19) is the most alarming epidemic worldwide, and every nation is working hard to combat it [1]. A total of 454,952 confirmed cases and 387,700 recovered cases were reported by the Ministry of Health and Population in Egypt on February 13th, 2022, although the country experiences roughly 23,349 death cases from 28 Governorates [2].

Through mutation, corona virus continuously modifies its personality. Consequently, new variants might be more contagious and infectious than their predecessors [3]. The new variations could spread quickly and exacerbate the condition. [4] has issued a warning about the increased probability of a reappearance in outbreaks of diseases that can be prevented by vaccination. Also, novel variants may impact the efficacy of vaccinations, diagnostic instruments, treatment medications, and other preventative measures [5]. Healthcare professionals are constantly at the vanguard of the fight against developing infectious disease outbreaks, which exposes them to hazards including psychological distress, stigma, and exhaustion that increase their risk of infection [6].

Healthcare systems in low and low-middle income areas are suffering from significant difficulties in managing the COVID-19 pandemic resulting from the high vulnerability that pre-existed [7,8]. The development of a national COVID-19 crisis control center, the issuance of defense regulations, the Egyptian government enforced partial and total lock downs for various lengths of time depending on the epidemiological situation [9].

The International Council of Nurses claim that nurses are essential during disease outbreaks, and disasters (ICN), nurses had a number of challenges during pandemic, which strained the healthcare system (e.g., increased patient volume and load, COVID-19 protocols), which negatively impacted their productivity and well-being. The ICN estimates that 90,000, or 6%, of all confirmed COVID-19 cases globally, were among healthcare personnel [10]. More than 600 nurses have died from the outbreak [4]. It is critical to examine the difficulties that nurses will face both during and after the COVID-19 outbreak [11, 12].

Lack of supplies, insufficient staffing, and poor hospital facilities were the key indicators of this lack of readiness. Healthcare professionals utilize personal protective equipment to prevent

infection in themselves and their patients as well as the spread of infection to others. Global health care workers are at serious risk if supply networks aren't safe [13].

The attempt to develop work within an organization depends heavily on the perception of organizational support. Because of the increasingly competitive climate, which makes workers more concerned about how much attention firms give to their well-being, this concept is crucial [14].

Nursing behavioral outcomes are influenced by organizational support [15]. Strong organizational support can encourage nurses' feelings of wellbeing and productive work habits [16]. Nurses have higher ownership of their organizations and job satisfaction when they perceive organizational support [17].

1.1 Aim of the study

This trial aimed to assess challenges facing nurses during and beyond new mutations of COVID-19 pandemic in relation to perceived health facility preparedness and organizational support.

Research Questions:

- 1- What are current and future challenges facing nurses?
- 2- What are nurses' perception of health facility's preparedness and organizational support?
- 3- Is there a relationship between total current and future challenges facing nurses and total nurses' perception of organizational support?
- 4- Is there a relationship between total nurses' perception of organizational support and total nurses' perception of health facility's preparedness?

Methods:

The study was conducted using a descriptive correlational design.

Participants and Sample:-

Convenience sampling technique was utilized to recruit as many nurses as possible from all over Shibin El-Kom centers and two affiliated villages, Menoufia governorate, Egypt. Variable types of healthcare settings were included including primary and secondary health care settings, and isolation hospitals for COVID-19 cases. The participants

had inclusion criteria included all eligible nurses with diverse ages, educational levels, and years of experience who were on duty at their place of employment at the time of data collection.

Sample Size:- Based on review of past literature [11], who found that there was a highly significant negative correlation between the issues managers are now facing, and their perception of organizational support ($p < 0.001$).

Sample was calculated at confidence level 95% and power 80%, with following equation $N = [Z\alpha + Z\beta / C]^2 + 3$ where:

The standard normal deviate for $\alpha = Z\alpha = 1.9600$ The standard normal deviate for $\beta = Z\beta = 0.8416$ $C = 0.5 * 1/n$

$[(1+r)/(1-r)] = 0.1789$. The calculated sample was 248 and it was increased by 10% to avoid dropout so total sample

was 272 participants.

Data Collection Instruments: Three instruments were used for data collection;

Instrument (1) : the questionnaire about challenges facing nurses: The researcher created this instrument after doing a literature study [11, 18]. It is divided into four segments, the socio-demographic profile of nurses as well as the type of health facility where they work were in the first section. In the second segment, the researchers proposed a list of 20 present challenges that nurses face as a result of new COVID-19 pandemic mutations. The third segment contained a list of 20 future challenges that the nurses may face as a result of new COVID-19 pandemic mutations. Subjects were asked to check "Yes" or "No" in front of every item, with "Yes" receiving a score of "1" and "No" receiving a score of "0." A score of $>70\%$ indicates a high level of difficulty, 50% to $< 70\%$ suggests a moderate level of difficulty, and $< 50\%$ indicates a low level of difficulty. The questionnaire's validity had been verified by a bilingual committee of five specialists. The questionnaire's reliability was also examined, with a Cronbach's coefficient alpha of ($=0.87$).

Instrument (2): Survey of perceived organizational support developed by [19]. It was utilized to evaluate the nurses' perceptions of the organization's appreciation for their work, effort, and contributions. It consists of 8 items. The subjects responded to items on a 3-point Likert type scale that ranges from "1=disagree" to "3=agree." The items 5, 6, 7 and 8 have reversed scoring, resulting in a total score ranging from 8 to 24. A score of 75% or higher shows a high perception of organizational support, a score of 50% to $< 75\%$ indicates a moderate sense of support, and a score of

<50% indicates a negative perception of organizational support. Cronbach's alpha was ($\alpha=0.93$) for the 8-items variant.

Instrument (3): Survey of perceived of health facility's preparedness for new mutations of COVID-19 pandemic was adopted from [20, 21]. It was utilized in trial study to assess nurses' perception concerning the health facility's preparedness for new mutations of COVID-19 pandemic. It includes three sections; the first section related to coordination and communication and included (5 items). The second section related to stock of supplies and medicines and included (15 items). The third section related to training, triage and physical evaluation of suspected COVID-19 cases and included (9 items). The subjects responded to items on a 3-point Likert type scale that ranges from "1 = disagree" to "3 = agree", yielding a total score between 29 and 87.

The **coordination and communication section** was assessed with a score of 5-15. The total score of every nurse was classified into "**Negative perception of coordination and communication**" when he/ she achieved " <7 ", if the total coordination and communication score, was " $7-<11$ ", he/she was classified as had "**Moderate perception of coordination and communication**", and if the total coordination and communication score was " $11-15$ ", he/she was classified as had "**High perception of coordination and communication**". The **perception of stock of supplies and medicines section** was assessed with a score of 15-45. The total score of each nurse was categorized into "**Negative perception of stock of supplies and medicines**" when he/she achieved " < 22 ", if the total stock of supplies and medicines score, was " $22-<34$ ", he/she was classified as had "**Moderate perception of stock of supplies and medicines**", and if the total stock of supplies and medicines score was " $34-45$ ", he/she was classified as had "**High perception of stock of supplies and medicines**".

Regarding the nurses' perception regarding training, triage and assessment of suspected COVID-19 cases, it was assessed with a score of 9-27. The total score of every nurse was classified into "regarding training, triage score , was " $13 - <20$ ", he/she was classified as had "**Moderate Negative perception of training, and triage**" when he/she achieved " < 13 ", if the total perception **regarding training & triage**, and if the total perception regarding training,

triage score was “20–27”, he/she was classified as had “**High perception regarding training, and triage**”. Concerning assessment of nurses' perception about the health facility's preparedness for new mutations of COVID-19 pandemic, the researchers studied it through 29 items with a range of 29 to 87. The total score of every nurse was classified into “Negative perception about the health facility's preparedness” when he/she achieved “<43”, if the total health facility preparedness score, was “43–65”, he/she was classified as had “Moderate perception about the health facility's preparedness, and if the total the health facility's preparedness score was “66–87”, he/she was classified as had “High perception about the health facility's preparedness”. Cronbach's alpha was (=0.90) for the twenty-nine item variant.

Procedure.

- Data were collected throughout November 2021 till the end of March 2022.
- Approval: for the setting/hospital approval were obtained from the manager of each setting to collect the data. To conduct the study, consent was sought from the managers of the included health care facilities. Also, consent was obtained to share in the study from the nurses.
- Nurses' informed consent was obtained to ensure participation. All information was held in strict confidence. The researcher introduced herself to the nurses and provided a brief summary of the study's goal and requested their participation.
- Ethical considerations: This research received approval from the Research and Ethics Committee at the Faculty of Nursing, Menoufia University (IRB reference number: 926).
- Before starting the real data collection, the instruments were pre tested. It was tested on 10% of nurses who were chosen randomly.
- A pilot study: It was carried out for 10 % of the sample to test the clarity, practicability, simplicity of the study instrument and time required for data collection.
- The data was collected through interview technique three days a week for five months.

Data analysis:

Version 22 of the Statistical Program for Social Science was used to analyze the data. Excel application was used to present graphs. The presentation of quantitative data was by mean (\bar{X}) and standard deviation (SD). Frequency, quantity, and percentage were used to represent qualitative data and analysis was done using the chi-square test. However, if the predicted value of any cell was less than five, the Fisher Exact test (if the table had 4 cells) or the Likelihood Ratio (LR) test was used (if the table was more than 4 cells). A two-tailed P value of < 0.05 was deemed statistically significant.

Results

The participant's demographics shows that, 66.5% of studied nurses, were between 30 to 40 years with mean of 36.6 ± 5 years and the majority of them (96.7%) were females. Concerning their education, majority had nursing technical institution (72.4%), while 27.6% had nursing diploma.

Table (1) highlights that the highest mean total score was 34.4 ± 3.7 for studied nurses reported being faced with high level of current challenges while the level of challenges in the future with a mean total score was 33.5 ± 3.4 .

Table (2) highlights that the first nurses' perception of availability of stock of supplies and medicines was the highest mean of perception (31.5 ± 5.3). The organizational support was the second perception with a mean of 15.4 ± 3.1 .

Fig. (1) reveals that the majority of studied nurses had moderate perception level about the institution preparedness (70.5%), while near to one-thirds 29.5% had high perception.

Table (3) reveals a significant negative correlation between total score of future challenges and total score of nurses' perception of organizational support ($r = -0.15$, $p < 0.01$). This pattern was not observed in correlation between current challenges and total nurses' perception of organizational support which showed a non-significant correlation between them.

Table (4) represents that there no relationship between current challenges expected by nurses and their perception of health facility's preparedness. While, there was highly statistical significant relationship between future challenges expected by nurses and their perception about health facility's preparedness ($p < 0.002$).

Table (5) represents relationship between total nurses' perception of organizational support and total nurses' perception of health facility's preparedness. It illustrated that, there was a highly significant relationship between total nurses' perception of health facility's preparedness and their total perception of organizational support ($p < 0.008$).

Answer Research Question Number one:

Table 1: Current and future Challenges for Nurses to Confront Covid-19 Virus' New Mutation (N=275)

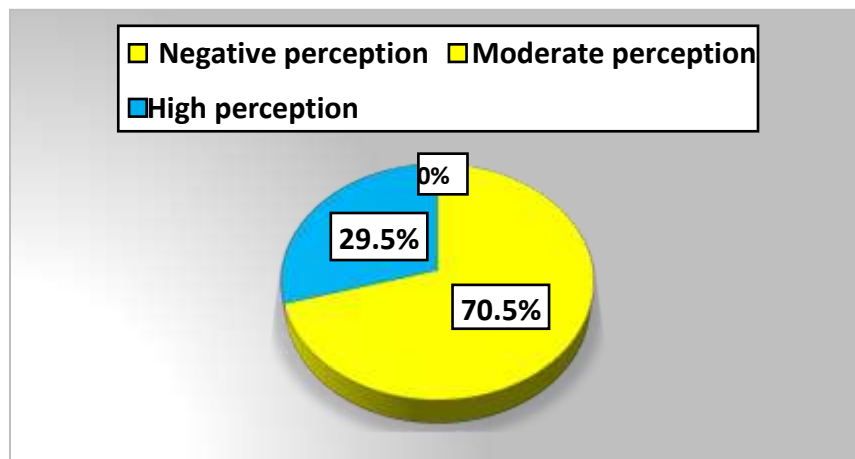
Challenges	Current challenges				Future challenges			
	No		Yes		No		Yes	
	No.	%	No.	%	No.	%	No.	%
Fear of infection with new mutations in the Covid-19virus	11	4	264	96	28	10.2	247	89.8
Stress and anxiety that others have around you	30	10.9	245	89.1	56	20.4	219	79.6
Shortage of nursing staff	60	21.8	215	78.2	52	18.9	223	81.1
Absence of any of the nursing staff	72	26.2	203	73.8	83	30.2	192	69.8
Afraid of being a source of infection with the Covid-19 virus for my family and children	10	3.6	265	96.4	67	24.4	208	75.6
Non-compliance of people who come to work place with the precautionary measures	88	32	187	68	87	31.6	188	68.4
People who come to rural units or health centers, outpatient clinics, may be infected with COVID-19	82	29.8	193	70.2	88	32	187	68
Increased workload	58	21.1	217	78.9	94	34.2	181	65.8
Assignment of duties	58	21.1	217	78.9	91	33.1	184	66.9
Stress and extreme fatigue	114	41.5	161	58.5	115	41.8	144	52.2
Lack of cooperation at work	116	42.2	159	57.8	131	47.6	144	52.4
Lack of resources and personal protective equipment	90	32.7	185	67.3	111	40.4	164	59.6
Constantly changing instructions	85	30.9	190	69.1	99	36	176	64
Conflicts within the administration	58	21.1	217	78.9	11	4	264	96
Working hours are increased	80	29.1	195	70.9	70	25.5	205	74.5
No alternative or flexible working arrangements	106	38.5	169	61.5	101	36.7	174	63.3
Not hiring new nurses	107	38.9	168	61.1	110	40	165	60
Penalties and discounts	116	42.2	159	57.8	87	31.6	188	68.4
The presence of ambiguity and doubt while working	70	25.5	205	74.5	165	60	110	40
Strict management style	119	43.3	156	56.7	143	52	132	48
Mean total score (X± SD, Range)	34.4±3.7 (21-40)				33.5±3.4 (22-40)			

Answer Research Question Number Two:

Table 2: Nurses' Perception Mean total score (X± SD, Range) to Confront the Covid-19 Virus' New Mutation

Nurses' perception of:-	Disagree	Neutral	Agree
	Mean total score (X±SD, Range)		
• Organizational support	15.4±3.1 (8 - 23)		
• Institution's Coordination and communication	12.2±2.5 (5 - 15)		
• Availability of stock of supplies and medicines	31.5±5.3 (21 - 45)		

Fig. 1: Nurses' Perception Levels about the Institution Preparedness to Confront the Covid-19 Virus' New Mutation



Answer Research Question Number Three:

Table 3: Pearson Correlation between total current and future challenges facing nurses

• Challenges Facing Nurses		Organization Support						Test of significance	P value
		Groups of total Nurses' perception about Organization Support							
		Negative		Moderate		High			
		No.	%	No.	%	No.	%		
Current challenges	Moderate	0	0	23	11.1	0	0	LR=13.5	<0.001 HS
	High	30	100	185	88.9	37	100		
Future challenges	Moderate	0	0	22	10.6	0	0	LR=12.9	<0.002 HS
	High	30	100	186	89.4	37	100		
Total		30	100	208	100	37	100		
• Total challenges facing nurses		Total nurses' perception of organizational support							
		Correlation coefficient r			Statistical probability P				
Total current challenges		0.07			0.27			NS	
Total future challenges		-0.15			<0.01			HS	

NS=Not significant, HS =High significance

Table (4) Relationship between Total Current and Future Challenges Facing Nurses and Total Nurses' Perception of Health Facility's Preparedness N=275)

Challenges Facing Nurses		Facility Preparedness				Test of significance	P value
		Groups of total Nurses' perception about health facility's Preparedness					
		Moderate		High			
		No.	%	No.	%		
Current challenges	Moderate	17	8.8	6	7.4	0.14	0.71 NS
	High	177	91.2	75	92.6		
Future challenges	Moderate	22	11.3	0	0	9.9	<0.002 HS
	High	172	88.7	81	100		
Total		194	100	81	100		

Answer Research Question Number four:**Table (5):** Relationship between Total Nurses' Perception of Organizational Support and Total Nurses' Perception of Health Facility's Preparedness (N=275)

Organizational Support		Facility Preparedness				Test of significance	P value
		Groups of total Nurses' perception about health facility's preparedness					
		Moderate		High			
		No.	%	No.	%		
Organization Support	Negative	24	80	6	20	9.7	<0.008 HS
	Moderate	137	65.9	71	34.1		
	High	33	89.2	4	10.8		
Total		194	70.5	81	29.5		

Discussion

As a result of new mutations of COVID-19, nurses are directly involved in patient care and encounter several obstacles. Thus the current study was conducted to assess challenges facing nurses during and beyond new mutations of COVID-19 pandemic in relation to perceived health facility preparedness and organizational support.

The current study revealed that facing high level of challenges was reported by the highest percentage (91.6%) of nurses, and expecting to face higher level of in the future had even high percentage (92%). The most three difficulties by most of nurses were; fear of infection with new mutations in the COVID-19 virus, afraid of being a source of infection, and stress and anxiety. They expected facing higher challenges in the future. In the same line, a research was conducted by [12]; who identified that nurses experience work related stress that results in burnout, which lead to mental health issues that decreases the efficiency of their care, in addition to prolonged working durations. Nurses' physical and psychological well-being is impacted by long working hours, overtime, and work overload. Also, a study by [5] reported that the variants of the Coronavirus are creating more difficulties to health care system worldwide. All those drawbacks may have attributed to the reason that, the health care workers at serious risk especially if supply aren't safe and of the

increasingly competitive climate, which makes workers more concerned about how much attention firms give to their well-being.

Additionally, a study by [22]; who indicated that nurses suffered from increased workload, quality PPE shortage, psychological challenges, violence against them, prolonged working hours, higher risk of infection, lack of incentives, social exclusion/stigmatization, absence of proper management and coordination during work. They reported preparedness and mutual support to be the keys to adapt to adversities. Also, a study by [23], who determined lack of education and training may be a key barrier to the development of a successful disaster response system. The education and training lead to increase preparedness for managing crisis. Also, [24] reported that the increased workload and shortage of nurses in intensive care units has prompted them to work in teams for supporting and assisting each other and to become more assertive professionally, to make sense of sensibility and to make crucial decisions in order to adapt to elevated stress levels.

Nurses' perception of the institution preparedness

In the current study, most of studied nurses had moderate perception level about the institution preparedness, while near to one-thirds of them had high perception. In contrast, a trials by [25, 26] were conducted to assess hospitals' and nurses' preparedness to COVID-19 pandemic; the studies' result indicated that hospitals were adequately prepared to combat COVID-19. This discrepancy due to high budget of those countries.

In the current trial, most of studied nurses had moderate perception about institution's coordination and communication, and availability of stock of supplies and medicines. While the majority of them had high training triage perception. In agreement, a study conducted by [8] reported that training on the safe and effective care of suspected COVID-19 cases had previously been delivered at a higher level of the sites' health Staff. During the new mutation of COVID-19, the safety of health professionals was also reviewed in terms of the availability of PPEs and hand hygiene facilities.

In vein with the current result, a trial by [27] concluded that participation in the formulation of a preparedness plan that involves safety and security, communication and coordination, reaction protocols, resources and assets, and the capacity to raise staff responsibility in the event of a new mutation of COVID-19 is expected of hospitals. Additionally, a study by [20] who stated median health centers preparedness score for new COVID-19 mutation. As part of health facility readiness,

increasing the nurse's perceptions of hospital facility support, and their preparedness in managing disasters. The current study's result was in line with [28] who stated that more than 90% of front-line nurses claimed that they were not properly equipped to manage COVID-19 cases, and only 20.3 % said that they were willing to care for COVID-19 cases regardless of the circumstances. The same results were pointed out by [29]; who indicated that the majority of health care personnel believe that their healthcare facilities are inadequately equipped to respond to the COVID-19 pandemic, with the majority of them noting that their facilities lack sufficient PPE. Moreover, a study by [30] discovered that more than 70% of the participants lacked proper training, around 53% of the respondents were dissatisfied with the PPEs provision, and 64% were dissatisfied with their employment and wages status. Also, this discrepancy may be attributed to the differences in health care facilities present in different settings.

Perception of organizational support

This study offers knowledge on how the impression of organizational support influences the perception of the problems posed by the new COVID-19 mutations. As highest percentage of studied nurses reported moderate perception of organizational support. [28]; who reported that Front-line nurses in the Philippines perceived moderate levels of social and organizational support during the COVID-19 pandemic. Moreover, higher levels of social and organizational support in nurses were associated with lower levels of anxiety that is related to COVID-19. Also a study by [31] found that over two-thirds of the surveyed staff nurses had negative perceptions of organizational support.

The current study shows a highly significant negative correlation between total score of future challenges facing the nurses and total score of their perception of organizational support. In congruence, a trial by [32] who reported that higher scores on the social support scale were negatively correlated with challenges to face new mutations of COVID-19 pandemic as sleep disorders, anxiety, and, depression suggesting that enhancing social support during and after the COVID-19 pandemic might alleviate the psychological symptoms of health care professionals. Also, [28] suggested that during any disease outbreak, such as the COVID-19 pandemic, when anxiety and stress are increased, providing enough organizational support (e.g. efficient communication, structural support, trainings related to COVID-19, provision of a safe work environment, monitoring of the health and well-being of the healthcare personnel) is vital to aid nurses to face the challenges caused by the COVID-19 pandemic.

Correlation among challenges expected by nurses; there was a highly significant relationship between future challenges expected by nurses and their perception about health facility's Preparedness. In agreement, [33] noted that a health facility's Preparedness helps to give assistance and identify the requirements of nurses so that they can work and respond with more confidence to anticipated future issues. Additionally, [34] have demonstrated that disaster preparedness training favorably affects the responses and perceptions of future difficulties and identifies the knowledge and disaster readiness gap.

In the current study, there was a highly significant relationship between total nurses' perception of health facility's preparedness and their total perception of organizational support. In accordance, [27] reported that the more the nurse's perceptions of hospital facility support, the more they are prepared to disaster management. In the event of a disaster, nurses will receive the best possible support if hospital disaster planning rules are strengthened, particularly in terms of the ability of hospitals to recover from disasters. It may be claimed that increased infrastructure support leads to increased disaster management preparedness. This was in line with prior observations by [35]. Also, [36] suggested that organizational leaders should reconsider their approach to employee support in order to be better prepared for future crises. Furthermore, a research by [37] reported that the perception of organizational support is correlated with change preparedness. This result shows that earlier research on the perception of organizational support may offer significant recommendations to facilities experiencing transition.

Conclusions:

- The highest percentage of nurses reported being faced with high level of challenges currently and in the future. The three highly reported future challenges by the majority of staff nurses were fear of infection with new mutations in the Covid-19 virus, absence of any of the nursing staff, and stress and anxiety.
- Highest percentage of studied nurses reported moderate perception of organizational support. Most of studied nurses had moderate perception level about the institution preparedness, while near to one-thirds of them had high perception.
- There was a highly significant negative correlation between challenges that are currently being

faced by nurses and their perception of organizational support and facility preparedness, and it was an independent predictor for the ongoing and future challenges during and beyond COVID-19 pandemic, reflecting the importance of organizational support and facility preparedness specifically during the times of crisis.

Recommendations

- Hospital administrators and managers aid in gaining a greater knowledge of nurses, allowing them to implement effective actions to address the formidable problems nurses confront during current and future public health emergencies.
- Organizations should take action to address the underlying structures, habits, policies, and norms that have contributed to or exacerbated the conditions that have caused or aggravated the issues nurses face. Explicit policies to safe guard personnel (e.g., staffing, PPE usage, breaks and rest periods, limits to the number of hours worked for each shift).

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Conflict of interests

The authors declare that there is no conflict of interests.

Data availability statement

Data derived from public domain resources.

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