Nurses' knowledge and protective health behaviors about prevention of COVID-19 pandemic complications at Baghdad Teaching Hospitals

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Abstract:

BACKGROUND: Coronavirus disease (COVID-19) is a global pandemic caused by the severe acute respiratory syndrome coronavirus, SARS-CoV-2. Infection with SARS-CoV-2 primarily occurs through binding to angiotensin-converting enzyme-2 (ACE2), which is abundantly expressed in various anatomical sites, including the nasopharynx, lungs, cardiovascular system, and gastrointestinal and genitourinary tracts. This study aimed to nurses' knowledge and protective health behaviors about prevention of covid-19 pandemic complications.

MATERIALS AND METHODS: A descriptive design study was conducted from October 1, 2022, to March 15, 2023. A non-probability purposive sample of 50 nurses from different educational levels, genders, and departments at Baghdad teaching hospitals was selected. Data collected were analyzed using SPSS version 25.0.

RESULTS: The study comprised an equal distribution of male and female participants, with the majority (44%) aged between 22 and 30 years. A significant proportion (52%) of nurses held institute degrees. Forty-six percent were single, and the majority (74%) had 1-5 years of experience. The mean scores were 0.70 for nurses' knowledge and 3.22 for nurses' protective health behaviors.

CONCLUSIONS: The findings indicate that nurses possess satisfactory knowledge and exhibit high levels of protective health behaviors regarding complications associated with the COVID-19 pandemic. It is recommended to conduct future research focusing on nurses' knowledge and practices related to patient care in the context of a pandemic.

Keywords:

COVID-19, healthcare workers, knowledge, nurses, pandemic complications, protective health behaviorsSARS-CoV-2

Introduction

The global impact of the novel coronavirus 2019 (COVID-19) has been unprecedented, leading to widespread infections and a significant loss of lives. As a highly contagious infectious disease, COVID-19 has presented immense challenges that necessitate robust preventive measures to curb its transmission. Among the frontline healthcare workers, nurses, being at the forefront of patient care, face an elevated risk of exposure to the virus. Therefore, ensuring their preparedness is crucial in effectively combating the ongoing pandemic.[1]

The rapid transmission of COVID-19, which initially emerged in Wuhan City, Hubei Province, China, in December 2019, has evolved into a global health crisis. Within a mere three months, the virus had spread to 114 countries, resulting in over 4000 deaths and prompting the World Health Organization (WHO) to declare it a

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pandemic.[2] Belonging to the coronavirus family, human coronaviruses have been linked to various respiratory diseases in multiple studies.[3] COVID-19 manifests as a respiratory illness with a spectrum ranging from mild to severe, with an overall case fatality rate of 0.5–2.8% and higher rates among older individuals, particularly octogenarians.[4] The severe and critical illness categories, constituting around 20% of all infections, have strained healthcare systems worldwide.[5]

Beyond the acute phase of the infection, emerging data highlight persistent respiratory symptoms in many patients months after their initial illness. Complications such as chronic cough, fibrotic lung disease, bronchiectasis, and pulmonary vascular disease are becoming increasingly recognized. During hospitalization, critically ill patients with COVID-19, numbering 74 to 86 percent, may also experience gastrointestinal complications ranging from self-resolving transaminitis to life-threatening mesenteric ischemia.[6]

Against this backdrop, this study aims to delve into the knowledge and protective health behaviors of nurses regarding the complications associated with COVID-19. Understanding their awareness and preparedness is essential for enhancing the resilience of healthcare systems in managing the multifaceted challenges posed by this global health crisis.

Materials and Methods

Study design and setting
This descriptive study aimed to assess the knowledge and protective health behaviors related to COVID-19 pandemic complications among 50 nurses working in the male and female pandemic wards of four teaching hospitals in Baghdad city. The study spanned from October 1, 2022, to March 15, 2023.

Study participants and sampling
A non-probability (purposive) sampling technique was employed to select four hospitals for the study, representing various healthcare facilities in Baghdad city. The chosen hospitals included Baghdad Teaching Hospital, Al-Kindey Teaching Hospital, Al-Karama Teaching Hospital, and AL-Yarmuk Teaching Hospital. Specifically, pandemic wards from these hospitals were purposively selected due to the higher patient load of COVID-19 cases, ensuring representation from different educational levels and both genders (males and females). This deliberate selection aimed to capture insights from nurses working in areas where they encounter a substantial number of COVID-19 patients.

Data collection tools and technique
In this study, three interview questionnaires were employed:
I. **Socio-demographic Characteristics Questionnaire:** This gathered information on gender, age, marital status, level of education, years of experience, and whether participants had information about COVID-19 pandemic complications.
II. **Nurses' Knowledge Sheet:** Comprising 25 items, this sheet assessed knowledge using a binary scale (true = 1, false = 0). Scores were categorized as poor (1-12) or good (13-25).
III. **Nurses' Protective Health Behaviors Sheet:** Consisting of 12 items, this sheet evaluated behaviors on a four-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). The total score ranged from 10 to 40, with categories of low (10-19), moderate (20-29), and high (≥ 30) protective health behaviors.

Data analysis
Statistical Package for Social Science (SPSS) version 24 was used for data analysis. Descriptive statistics (mean, standard deviation, frequency, and percentage) were employed. The Chi-square test and Pearson correlation were utilized for quantitative data correlation, determining the relationship between knowledge and protective health behaviors. A *P*- value ≤ 0.05 was considered significant.

Ethical considerations
The study received approval from the Scientific Research Ethical Committee at the College of Nursing, University of Baghdad. Permission was obtained from the four participating hospitals. Informed written consent was secured from participating nurses, ensuring voluntariness and the option to withdraw at any time. Confidentiality of collected data was strictly maintained. The researcher provided clear explanations of the study aims to the nurses and obtained verbal consent.

Results

Table 1 illustrates the demographic characteristics of the study participants. Equal representation of male and female nurses (50%) was observed, with a majority falling within the age group of 26-30 years (44%). The majority held an Institute graduate degree (52%), and a significant portion were single (56%) with 1-5 years of experience (74%). Additionally, 96% of participants possessed information about COVID-19 pandemic complications, with 46% obtaining information from internet and social networking sites.

Table 2 outlines the total nurse's knowledge regarding the prevention of COVID-19 pandemic complications, revealing a commendable level of knowledge, as evidenced by a mean score (MS) of 0.70.

Table 1: Distribution of the Nurses Sample According to Socio-Demographical Characteristics Variables *n*=50 Nurses

Variables	Groups	Frequency	Percentage
Gender	Male	25	50.0
	Female	25	50.0
	Total	50	100.0
Age (Groups)	21-25 years	18	36.0
	26-30 years	22	44.0
	31-35 years	6	12.0
	36-40 years	3	6.0
	>41 years	1	2.0
	Total	50	100.0
Marital status	Single	28	56.0
	Married	20	40.0
	Widow	1	2.0
	Absolute	1	2.0
	Total	50	100.0
Level of Education	Nursing high school graduate	17	34.0
	Institute graduate	26	52.0
	College of nursing	6	12.0
	Postgraduate	1	2.0
	Total	50	100.0
Experience of Years	1-5 years	37	74.0
	6-10 years	8	16.0
	11-15 years	4	8.0
	≥16 years	1	2.0
	Total	50	100.0
Do you have any information about covid-19 pandemic complications?	Yes	48	96.0
	No	2	4.0
	Total	50	100.0
(If yes) Indicate the source of covid-19 pandemic complications	No have information	2	4.0
	The internet....social networking sites	23	46.0
	The Internet... solid scientific sites	20	40.0
	Other:work in pandemic word	5	10.0
	Total	50	100.0

In Table 3, the total protective health behaviors of nurses concerning the prevention of COVID-19 pandemic complications were found to be high, as indicated by a mean score (MS) of 3.22.

Table 4 explores the relationship between demographic variables (Gender, Age, Marital Status, and Educational Level) and nurses' knowledge and protective health behaviors, revealing no significant differences.

Furthermore, Table 5 underscores a robust positive correlation between knowledge and protective health behaviors variables, demonstrating a strong association at a significance level of 0.05 or less.

Discussion

Upon analyzing the socio-demographic characteristics of the nurses in our study, it was observed that half of the respondents were female, and the remaining participants

Table 2: Mean of score of nurses knowledge domain about prevention of Covid-19 pandemic complications

No	Nurses knowledge domain	True	False	SD	MS	AD
	Total (25) items	1324	555	0.425	0.70	G

AD: Assessment Degree, MS: Mean of score [(0-0.0.49)=poor (F); (5.0–1)=good (G)

Table 3: Mean of score of nurses protective health behaviors domain about prevention of COVID-19 pandemic complications

No	Nurses Protective Health Behaviors domain	SD	MS	AD
	Total (10) items	0.699	3.22	High

AD: Assessment Degree, MS=Mean of score [1-1.99=Low; 2-2.99=Moderate; 3-4=High]

were male. The predominant age group was between 26 and 30 years old, with over half of the study sample being single and the remaining being married. In terms of educational background, a significant portion of the sample held an Institute graduate degree, while less than half were graduates from Nursing high school.

Table 4: Association between demographic characteristics and Nurses' knowledge and protective health behaviors domain

Socio-demographic variables	Knowledge level			Protective Health Behaviors		
	Contingency Coefficients	*P*	Sig.*	Contingency Coefficients	*P*	Sig.*
Gender	0.482	0.234	NS	0.431	0.724	NS
Age groups	0.742	0.096	NS	0.752	0.305	NS
Marital status	0.621	0.699	NS	0.712	0.233	NS
Educational level	0.623	0.672	NS	0.732	0.095	NS

*Sig = Significance level ≤0.05=significant

Table 5: Association of the nurses knowledge and protective health behaviors by Pearson Correlations

Pearson Correlation	*P*	Sig.
0.256	0.072	Significant

Sig = Significance level

These findings align with a study conducted by Salim, B. and Abbas, S.[7] at Baghdad Teaching Hospital, where a high percentage of participants fell within the age group of 20-29 years, with Nursing Diploma graduates constituting a substantial portion. This trend is consistent with the observations of Mohammed *et al.*,[8] who reported that 38% of participants had 1-5 years of employment in nursing. Similar patterns were noted in the study by Abid *et al.*,[9] where a significant percentage had an institute graduate background, and 50% of the nurses were single.

Regarding the experience of years, three-quarters of the study sample had 1-5 years of experience in the pandemic ward. This finding is in agreement with other studies,[10-12] revealing that the majority of participants had 1-5 years of experience in the nursing field.

Our findings find support in a study by Qadah, T.[13] in Jeddah, Saudi Arabia, where out of 1023 participants, 49.39% were aged between 20 and 29 years, and 69.21% were married. Additionally, our study discovered that the majority of participants were well-informed about COVID-19 pandemic complications, with 46% obtaining information from the internet and social networking sites. This aligns with the results of Hassan and Ahmed,[12] indicating that 39.78% of their participants learned about COVID-19 through social media. Similarly, Salman *et al.*[14] reported that 65% of participants in Punjab, Pakistan, relied on social media as their primary source of COVID-19 information.

In terms of knowledge, our study revealed that more than two-thirds of nurses exhibited good knowledge about preventing COVID-19 complications, with one-third having poor knowledge. This outcome is consistent with Qadah T,[13] who found that 96.85% of nurses in Saudi Arabia possessed excellent knowledge of COVID-19. Additionally, a study by Huynh G.[15] in Ho Chi Minh City reported a high level of knowledge among healthcare workers.

Regarding protective health behaviors, our study demonstrated that over three-quarters of nurses exhibited high protective health behaviors, while less than one-third displayed low to moderate behaviors. This aligns with Salim B and Abbas S,[7] who reported that 96.85% of nurses showed positive protective health behaviors toward COVID-19. Huynh G.[15] also observed a positive attitude toward COVID-19 among healthcare workers.

Furthermore, our study identified significant relationships between gender, age, marital status, and educational level. Similar findings were reported by Alwatifi and Hattab[16] Semerci *et al.*,[17] and Qamar *et al.*,[18] emphasizing the importance of considering these factors in understanding nurses' attitudes and knowledge domains.

Our study's results reveal a robust positive correlation between knowledge and protective health behaviors among nurses, aligning with findings by Parajuli[19] at Seti Zonal Hospital in Nepal. Their study demonstrated a positive correlation (r = 0.28, *P* < 0.0001) between knowledge scores and protective health behavior scores.

Limitations
A notable limitation of our study is the relatively smaller sample size, restricting the generalizability of findings to all nurses across various hospital types in Baghdad Teaching Hospitals.

Conclusions

Approximately three-quarters of nurses in selected hospitals demonstrated a commendable level of knowledge regarding the prevention of COVID-19 pandemic complications. Additionally, a substantial percentage of nurses exhibited high protective health behaviors in preventing complications associated with COVID-19. To further enrich our understanding, we recommend future research exploring nurses' knowledge and practices in patient care during pandemics.

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Conflicts of interest
There are no conflicts of interest.

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