Original Article

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Disease Severity and Care Practices of COVID-19 Infected Nurses: A Cross-sectional Study

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ABSTRACT

Introduction: Covid-19 has been causing serious medical complications resulting from mild to critical illness, including death. Nurses caring for patients with COVID-19 were getting infected themselves and posing a risk to their families. This study aimed to find out the severity of the disease and care practices of COVID-19-infected nurses

Methods: A cross-sectional study design among 418 nurses from COVID-designated hospitals was contact personally to collect data through a self-administered questionnaire in 2021 after taking Ethical approval from NHRC. The SPSS software version 16 was used to process and analyze the data.

Results: The mean age of participants was 29.69, ranging from 19 to 68 years. Among all female participants, 335 (80.1%) were staff nurses, 236 (56.5%) were working in the COVID-designated area, and only 17% received training. Likewise, participants who were in isolation were 322 (77%), while 8 (1.9%) were admitted and treated in the critical care unit, and 26 (6.2%) received antiviral therapy. Additionally, their practices showed wearing PPE at>90%, following donning and doffing 87%, and eating nutritious food 86%. Music was a relaxation technique for 60%, followed by yoga/meditation for 43%. The Chisquare test showed no association between disease severity and care practices of COVID-19 infection.

Conclusion: The majority of nurses experienced mild to moderate health issues due to COVID-19 infection. Whereas their care practices about wearing PPE, donning, and doffing were good, and no association of disease severity and care practice. Therefore, further exploration is needed to identify the factors associated with disease severity.

Keywords: Care practices, disease severity, COVID-19 infected nurses

INTRODUCTION

Coronavirus disease-2019 (COVID-19) caused a global pandemic with respiratory droplets and contact transmission playing an important role in the spreading of the disease. Standard recommendations to prevent the spread of COVID-19 include frequent practice of proper hand hygiene and respiratory hygiene. [1, 2] The covid-19 affected millions of people across the world including health care workers (HCWs). Its association with a very high rate of infectivity led to a high level of fear and anxiety about getting infected among the public and HCWs.

HCWs especially nurses caring for patients with COVID-19 are facing challenges in the current scenario having a higher rate of infection to themselves and by extension, having to contend with the risk of infecting their families. A survey conducted among 32,000 nurses by the American Nurses Association about 'How are nurses caring' found that 87% had feared going to work, 36%

had cared for an infectious patient without having adequate personal protective equipment (PPE), and only 11% believed they were well-prepared to care for patients with covid-19.[3]

Disease Severity means whether the infected nurse can take care of oneself as a mild disease, needs assisted care for moderate disease, and needs admission in the critical care unit for severe disease these are measured by self-isolation, admission in the hospital ward, and admission in the critical care unit respectively. Whereas, care practice means the care provided to patients by nurses before infected and care employed for themselves when got infected.[4] All infected nurses in the COVID care hospitals assigned by the Ministry of Health at the time of Covid pandemic were considered as the population of the study.

The study among 9684 COVID-19-infected HCWs revealed that 110 had covid-19 infection. Likewise, those working in the low-contagion area and nurses younger than 45 years had a higher rate of infection during the first outbreak. Most HCWs with COVID-19 had no severe disease, with an asymptomatic carrier prevalence of 0.9% and a mortality rate of 0.9%.[5, 6] As the virus is highly contagious with contact transmission playing an important role in the spreading of the disease, hand hygiene became an important measure for the prevention of the disease.[7] This article aimed to find out the disease severity and preventive care practices of COVID-19-infected nurses to prevent transmission in designated hospitals for COVID-19 service delivery in Kathmandu Valley

METHODS

A descriptive cross-sectional study design with a set of self-administered questionnaires was introduced among the 418 COVID-19-infected nurses working in 18 different COVID-19-designated hospitals of Kathmandu Valley. The sample size was calculated by using the following formula, (n) = z2 * p (100-q)/e^2 (Cochrane, 1977). Where, P=50% with an allowable error of 5%, with a 10% non-response rate.

All the hospitals designated for COVID-19 care were listed through the literature search and telephone calls to the NHRC and MOHP (Ministry of Health). There were 20 covid-19 designated hospitals, the name of covid hospitals in the Kathmandu valley were: Tribhuvan University Teaching Hospital, Bir Hospital, Shree Birendra Military Hospital, Civil Service Hospital, Shahid Ganga Lal Heart Centre, National Trauma Center, Kathmandu Medical College & Teaching Hospital, Nepal Medical College & Teaching Hospital, Armed Force Police Hospital, Kanti Children Hospital, HAMS, Birendra Police Hospital, Grande International Hospital, Bhaktapur Hospital, Medi city Hospital, Patan Academy of Health Sciences, Norvic Hospital, Sahid Memorial Hospital, Kist Hospital, and Star Hospital. Among them where nurses were infected with COVID-19 were sorted out through telephone calls to heads of nursing departments of those hospitals. Only eighteen hospitals have had COVID-19-infected nurses except KIST and Sahid Memorial Hospital at the time of proposal submission.

The data was collected from different hospitals by contacting the chief of the nursing department of the hospitals in person and taking the list of covid infected nurses and distriuted the questionnaire to them. The questionnaire was collected back in two weeks and compiled for data entry at the project office. Purposive sampling technique was adopted because we need to focus on specific characteristics (Covid-19 infected nurses) and their experiences, allowing for in-depth exploration and rich insights from infected nurses. The questionnaire was adapted from WHO, therefore the introduced instrument was validated tool.

The infected nurse who can take care of oneself as a mild disease, needs assisted care for moderate disease, and needs admission in the critical care unit for severe disease these are measured by self-isolation (home and hotel), admission in the hospital ward as moderate, and admission in the critical unit care as severe which were considered as severity of COVID-19 disease. Whereas, care practice means the care provided to patients by nurses before infected and care employed for themselves when got infected.[4] All infected nurses in the COVID care hospitals assigned

by the Ministry of Health at the time of Covid pandemic were considered as the population of the study.

RESULTS

The socio-demographic data of COVID-19-infected nurses revealed a mean age of 29.69 years, with all female participants. The majority of participants were staff nurses 335 (80.1%), 236 (56.5%) working in the COVID-designated area and only 71 (17.0%) received training related to COVID-19. Few of the respondents 47 (11.2%) have suffered from chronic diseases; among them, most of the comorbidities was hypertension which was 16 (34.0%) (Table 1)

Table 1: Co-morbidity of COVID-19-infected Nurses

Variables	Number	Percentage
Suffering from chronic diseases	47	11.2
Chronic diseases (n=47)		
Hypertension	16	34.0
Diabetes	8	17.0
Other*	23	49.0

**bronchial asthma, hypo/hyperthyroidism, stroke, RA, heart disease, and COPD*

Regarding the physical health status of the respondents, most of them (91.1%) had symptoms while covid-19 infection, only (8.9%) had no symptoms. A majority (77.3%) of the respondents had symptoms of tiredness followed by myalgia (75.4%), fever (57.9%), headache (69.4%), sore throat (59.3%), loss of smell (57.7%), cough (56.9%), and loss of taste (56.2%) respectively. Concerning treatment received while infected with COVID-19 majority (77.3%) of the respondents had received vitamin supplements followed by home remedies (69.4%), observation (40.0%), oral antibiotics (30.9%), antiviral therapy (6.2%) and only 2.2% had received plasma therapy. (Table 2)

Table 2: Symptoms and Treatment received during COVID-19 Infection among Respondents (n=418)

Characteristics	No. (%)
Symptoms of COVID-19 during the illness	
Yes	381 (91.1)
No	37 (8.9)
Types of symptoms*	
Fever	242 (57.9)
Sore throat	248 (59.3)
Cough	238 (56.9)
Myalgia	315 (75.4)
Headache	290 (69.4)
Tiredness	323 (77.3)
Gastrointestinal symptoms	130 (31.1)
Shortness of breath	116 (27.8)
Loss of smell	241 (57.7)
Loss of taste	235 (56.2)
Rashes	18 (4.3)
Others (backache, lack of concentration, ear pain, eye pain, insomnia, loss of appetite, SPO_2 dropped)	20 (4.8)
Treatment received *	
Only observation	167 (40.0)
Oral antibiotics	129 (30.9)
Intravenous antibiotics	14 (3.3)
Antiviral therapy	26 (6.2)
Vitamins	323 (77.3)
Oxygen therapy	18 (4.3)
Plasma therapy	9 (2.2)
Home remedies	290 (69.4)

**Multiple responses*

Regarding the disease severity majority (79.9%) of respondents had mild followed by moderate (18.2%) and severe (1.9%) disease among covid-19 infected nurses. Here the home, hotel isolation was considered as mild, admission to

the hospital ward as moderate, and admission to the critical care unit were considered as severity of COVID-19 disease. Regarding repeat PCR tests majority (62.7%) of the respondents had negative results after the 14th day of the first infection and 14.1% of the respondents had not done PCR tests. (Table 3)

Table 3: Disease Severity and Repeat PCR on COVID-19 among Respondents (n=418)

Characteristics	No. (%)
Disease severity of covid-19	
Mild disease	334 (79.9)
Moderate disease	76 (18.2)
Severe disease	8 (1.9)
Days after the infection PCR test became negative	
Second test on 14th day	262 (62.7)
Third test 21st day	55 (13.2)
Forth test 28th day	26 (6.2)
After 28th days	16 (3.8)
No PCR test done	59 (14.1)

Similarly, sixty-two percent of respondents revealed that they had different levels of anxiety, 29.4% had mild, 18.7% moderate, and 13.9 % had severe levels of anxiety respectively. Whereas only 38% of the respondents had no anxiety (Table 4)

Table 4: Level of Anxiety among COVID-19-infected Nurses (n=418)

Level of anxiety	No. (%)	Mean Score (SD)
No (0-4)	159 (38.0)	7.58 (5.76) (Range: 0-21)
Mild (5-9)	123 (29.4)	
Moderate (10-14)	78 (18.7)	
Severe (15-21)	58 (13.9)	

The care practices of respondents revealed that, out of the total participants 62% were trained on the correct use of PPE. Almost all (95.9%) of the participants wore face masks followed by wearing gloves (95.2%), wearing gowns (92.3%), and wearing goggles/face shields (90.9%) while in contact with the COVID-19 patient. A majority (93.3%) of the respondents washed their hands frequently during patient care and 87.1% of the respondents followed the donning and doffing protocol as per guideline. (Table 5)

Table 5: Preventive Care Practice of Respondents on COVID -19 (n=418)

Characteristics	No. (%)
Wear PPE when in contact with the COVID-19 patients	
Wearing masks	401 (95.9)
Wearing gloves	398 (95.2)
Wearing goggles/face shield	380 (90.9)
Wearing gowns	386 (92.3)
Washed hands frequently during patient care	
Yes	390 (93.3)
No	11 (2.6)
Sometimes	10 (2.4)
Not mentioned	7 (1.7)
Followed donning and doffing protocol when wearing PPE	
Yes	364 (87.1)
No	21 (5.0)
Sometimes	20 (4.8)
Not mentioned	13 (3.1)

Additional care practices the respondents did include social distancing nearly half (48.1%), and more than two-thirds (79.7%) followed hand washing protocol as per WHO recommendations. Similarly, 86.4% ate additional nutritious food during isolation. However, 29.2% of the respondents shared the same room, toilet, and other utensils during isolation which is not good practice. More than two-thirds (76.3%) of the respondents practiced relaxation techniques, among them more than half (59.8%) of the respondents used music for relaxation. (Table 6)

Table 6: Care Practice on COVID-19 among Respondents (n=418)

Characteristics	No. (%)
Maintained at least 2 meters physical distance	
Yes	201 (48.1)
No	94 (22.5)
Sometimes	116 (27.8)
Not mentioned	7 (1.7)
Followed Hand-washing protocol	
Yes	333 (79.7)
No	11 (2.6)
Sometimes	69 (16.5)
Not mentioned	5 (1.2)
Took additional food	
Yes	361 (86.4)
No	29 (6.9)
Sometimes	25 (6.0)
Not mentioned	3 (0.7)
Shared the same room, toilet, and other utensils	
Yes	122 (29.2)
No	268 (64.1)
Sometimes	22 (5.3)
Not mentioned	6 (1.4)
Practiced relaxation technique	
Yes	319 (76.3)
No	92 (22.0)
Sometimes	2 (0.5)
Not mentioned	5 (1.2)
Type of relaxation techniques	
Yoga/ meditation	182 (43.5)
Music	250 (59.8)
Physical exercises	166 (39.7)
Using social media	219 (52.4)
Others (reading books, watching movies, deep breathing exercises, dancing, praying)	10 (2.4)

DISCUSSION

In this study, the majority (77.3%) of the respondents had tiredness followed by myalgia (75.4%), headache (69.4%), sore throat (59.3%), loss of smell (57.7%), cough (56.9%), and loss of taste (56.2%). In contrast with the study done in China among 1210 general population, it was revealed that the most common physical symptoms were cough (13.9%), sore throat (11.5%), headache (9.7%), myalgia (7.9%), dizziness (7.3%), chills (3.5%), fever (0.5%).[8] This finding is also inconsistent with the study done in India and Singapore on A multinational, multicenter study on the psychological outcomes and associated physical symptoms amongst healthcare workers during covid-19 outbreak which showed that the commonest reported symptoms were headache (31.9%), throat pain (33.6%), anxiety (26.7%), lethargy (26.6%), and insomnia (21%).[9] However these findings are consistent with the study on physical and mental health impacts of COVID-19 on healthcare workers: a scoping review showed that the most common symptoms identified amongst HCWs were fever (85.0%), cough (70.0%), and weakness (70.0%).[10]

In this study, a majority (95.7%) of the respondents had used both hand washing and sanitizer and only 0.7% had used sanitizer. Similarly, in a study done in India, among 16 patients with new onset hand eczema, almost all patients admitted excess use of hand sanitizers and/or hygiene. [11] A Population-Based Survey study done in Saudi Arabia showed that 77% preferred hand washing overusing hand sanitizers and 67.6% reported using hand sanitizers after meeting any person or surface. [12]

In this study 66.7% of the respondents had hand washing more than 20 times per day. Similarly, a population-based survey conducted in Saudi Arabia revealed that 70.4% of the respondents had washed their hands 6-20 times per day.[12] In this study 93.3% of the respondents had washed their hands frequently during patient care. The finding of this study is supported by a study done in Jordan which showed that 98.8% of the respondents used hand washing with soap

and water regularly.[13] In this study, 95.9% of the respondents wear masks when in contact with COVID-19 patients' care. In contrast with this finding with study done in Jordan showed that only 64.7% of the respondents wear masks.[13]

This study showed that 29.4% of the respondents had mild, 18.7% moderate and 13.9 % had severe levels of anxiety. This finding is supported by a study done in Nepal on Student's Anxiety Experiences during COVID-19 which showed that 18.1% of the respondents were experiencing severe anxiety, 22.9% moderate anxiety, and 25.7% mild anxiety.[14] In this study 38 % of the respondents had no anxiety, 29.4% of the respondents had mild, 18.7% had moderate and 13.9 % had severe levels of anxiety. However, this finding is in contrast with a study done on physical and mental health impacts of covid-19 on healthcare workers: a scoping review showed that overall anxiety (23–44%), severe anxiety (2.17%), moderate anxiety (4.78%), mild anxiety (16.09%)[10].

The study findings brought information regarding COVID-19-infected nurse's disease severity, and care practices thereby 79.9% of COVID-19 infected nurses had mild disease followed by 18. 2% had moderate diseases, which generate a new scientific data. This study was limited to the use of self-administered questions to collect information about care practice. Another limitation was that the study excluded those COVID-19-infected nurses who couldn't communicate due to disease conditions might be less representative of the severe disease severity.

CONCLUSIONS

Based on the study it can be concluded that the majority of nurses experienced mild to moderate health issues due to COVID-19 infection. Whereas their care practices about wearing PPE, donning, doffing was good and no association of disease severity and care practice. Therefore further exploration should be needed to identify the factor associated with disease severity

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CONFLICT OF INTEREST: None

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