

## Knowledge and Perceptions of Corona Virus Disease (COVID 19) among Nurses Working at Teaching Hospital, Banke, Nepal

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## ABSTRACT

**Background** Coronavirus Disease (COVID-19) is an infectious, pandemic disease affecting many countries globally. The outbreak of a new virus occurred in Wuhan, China, in December 2019. The objective of the study was to find out the knowledge and perceptions of nurses on COVID-19 in a teaching hospital, Banke, Nepal. A quantity web-based cross-sectional survey was conducted at Nepalgunj Medical College, Teaching Hospital, Kohalpur Banke, which was selected purposively. All the nurses working in different departments who agreed to participate in the study were included in the study. A self-administered questionnaire in google form was developed by the researchers Data were analyzed by using descriptive and inferential statistics.

**Results** The study shows that more than half (56%) of the nurses had an adequate level of knowledge and the majority (97%) of nurses had a satisfactory perception regarding COVID-19. There was a statistically significant association between the age of the nurses with the level of knowledge regarding COVID-19 ( $P=0.009$ ). Those nurses who were up to 25 years had 3.166 times inadequate knowledge than those above 25 years ( $p=0.009$ ; OR= 3.166; CI=1.315-7.621). There was no statistically significant association between socio-demographic characteristics with the perception of nurses regarding COVID-19.

**Conclusion** The findings conclude that more than half of the nurses had an adequate level of knowledge regarding COVID-19 and the majority of nurses had satisfactory perception regarding COVID-19. The global threat of COVID-19 continues to emerge, it is critical for improving the knowledge and perceptions of the nurses in this pandemic situation.

## KEYWORDS

COVID 19, Perceptions, Knowledge, Nurses

## INTRODUCTION

Coronavirus Disease (COVID-19) is the infectious disease caused by the most recently discovered coronavirus with the most common symptoms as fever, dry cough, and tiredness. The outbreak of a new virus occurred in Wuhan, China, in December 2019. More than 215 countries, territories, and areas have reported cases of the virus to date (World Health Organization (WHO), 2020). World Health Organization declared COVID-19 a public health emergency of international concern on January 30, 2020 (WHO, 2020). COVID-19 is a potentially fatal disease that is of great global public health concern (Rothan & Byrareddy, 2020). To control COVID 19, the government of Nepal devised a comprehensive plan for quarantine for peoples who arrived in Nepal from COVID-19 affected countries (Piryani, Piryani & Shah (2020). The social distance along with other measures including proactive community testing, personal protective equipment (PPE), isolation and quarantine spaces, medical logistics such as infection control gears, and ICU facilities with adequate ventilators are essential. There should be a strong collaborative platform including the public, health workers, and policymakers to work together to consolidate the measures ahead to prevent the COVID-19 disaster in Nepal (Marahatta, Paudel, & Aryal, 2020).

People's adherence to control measures is affected by their knowledge, which helps encourage an optimistic attitude and maintain safe practices towards COVID-19 (Zhong et al., 2020). The level of knowledge and attitude of some health care workers is lower than that expected for their position level towards the virus (Huynh, 2020). Health workers, especially nurses, play critical roles in the prevention of the COVID-19 outbreak (Nemati, Ebrahimi & Nemati, 2020). The rapid and extensive spread of the COVID-19 pandemic has become a major cause of concern for healthcare professionals and case fatality has been very high (Livingston & Bucher, 2020). A poor understanding of the disease among health care workers may result in delayed treatment and rapid spread of the infection (Bhagayathula et al., 2020).

## METHODS

The setting of the study was Nepalgunj Medical College, Teaching hospital, located at Kohalpur Municipality, Banke, Nepal, one of the hospitals where COVID-19 diagnosis and treatment occurs. The sampling population was, all the nurses working in different departments agreed to participate in the study, and internet access. Non- probability web-based technique was used. The study population selected for the study was all the nursing staff (all the registered nurses) of different departments. Enumerative method (all the staff) was used to select the sample. All the nurses working in different departments agreed to participate in the study, and internet access was included in the study.

### Data Analysis Procedure

After collecting data, data were checked for completeness, then obtained data was edited, coded, and entered data in excel was transferred to SPSS version 16 for further analysis. Analysis and interpretation of the findings were done with the help of descriptive and inferential statistics.

### Procedure of Data Collection

Data was collected after getting ethical approval from the Institutional Review Board (IRB) of Nepalgunj Medical College, Teaching Hospital, Kohalpur on 30<sup>th</sup> June 2020, as ref. of 654/076-077). Permission was taken from the hospital authority. Data was collected through the online

technique. Informed consent was obtained from the participants to ensure the right of the subject. Then online questionnaires were distributed from 5 July 2020 to 17 July 2020 among 150 registered nurses through sending of link in their messengers to fulfill the tool. Only 100 nurses were responded and filled the submitted tool in time. Participants were given the liberty to participate in the study. Confidentiality and anonymity were maintained through using code.

### Validity and Reliability

The content validity of the test instrument was established by consulting with advisors, subject matter experts, and literature review. Pretesting of the instrument was done among 10% of nursing staff of the Nepalgunj Medical College, Teaching Hospital, Nepalgunj. Based on pretesting, questions were revised and finalized for the data collection.

## RESULTS

**Table 1: Sociodemographic Characteristics of Nurses**

Socio-demographic Characteristics	Number	n=100
		Percentage (%)
<b>Age group (in years)</b>		
20-25	63	63.0
25-30	28	28.0
30-35	7	7.0
35-40	2	2.0
Mean $\pm$ SD=25.31 $\pm$ 3.94, Range=20-38 years		
<b>Qualification</b>		
PCL Nursing	78	78.0
PBBN/BNS/BSC Nursing	22	22.0
<b>Duration of working experience</b>		
Less than 1 years	26	26.0
1 to 3 years	26	26.0
3 to 6 years	34	34.0
6 to 9 years	8	8.0
Greater than 9 years	6	6.0
<b>Involvement in the care of patients with COVID-19</b>		

Yes	46	46.0
No	54	54.0

Table 1 the mean age of the nurses was 25.31 years with an S.D. of  $\pm 3.94$  years and ranging from 20 to 38 years. Regarding qualification, 78% were PCL in nursing and 22.0% were PBBN/BNS/BSC Nursing. Regarding duration of working experience, 34% were within the years of 3to 6 years followed by very few 8% were experiences of more than 9 years. Likewise, less than half (46.0%) were involved in the care of patients with COVID-19.

**Table 2: Nurse's Source of Information about Corona Virus Disease (COVID-19)**

**n=100**

Response	Source of Information				
	News media n (%)	Social media, n (%)	Official government websites, n (%)	WHO website, n (%)	Family and friends, n(%)
Least used	17(17.0)	21(21.0)	13(13.0)	4(4.0)	6(6.0)
Sometimes	29 (29.0)	23(23.0)	11(11.0)	6(6.0)	11(11.0)
More often	18(18.0)	6(6.0)	10(10.0)	6(6.0)	8(8.0)
Most Used	28(28.0)	28(28.0)	2(2.0)	4(4.0)	-
Total	92 (92%)	78(78%)	36(36%)	20(20%)	25(25%)

The most used source of information (28.0%) was Social media and News media to obtain information regarding COVID-19. Majorities 92(92%) of the nurses used news media for sources of information followed by 20(20%) used WHO websites for sources of information (Table 2).

**Table 3: In-service Education Programme related to COVID-19**

**n=100**

Response	Type of In-service Education Programme			
	Online training n (%)	Lecture/discussions n (%)	Workshops n (%)	Seminars n (%)
Never	81	80	98	100
1-3 times	19	19	2	
3-6 times	-	1	-	-

Table 3 depicts the in-service education programmes related to COVID-19. Regarding online training, majorities 81 (81%) of the nurses never attain online training followed by 19% attained 1-3 times. Few (19%) of nurses had attended in-service education programmes 1 to 3 times.

**Table 4: Knowledge regarding Introduction of COVID-19 among Nurses**

n=100		
Questions	Number	Percentage
<b>Definition</b>		
Middle East Respiratory Syndrome coronavirus	12	12.0
Severe Acute Respiratory Syndrome coronavirus	48	48.0
Severe acute respiratory syndrome coronavirus 2	40	40.0
<b>Origin of COVID-19</b>		
Bats <sup>c</sup>	83	83.0
Rats	7	7.0
Birds	6	6.0
Human	4	4.0

c indicates Correct Response

Table 4 reveals, knowledge regarding COVID-19 among nurses. Forty (40%) of the nurses responded correctly COVID -19 is severe acute respiratory syndrome. Similarly, regarding the origin, 83% responded correctly it originated in bats.

**Table 5: Knowledge regarding Transmission of COVID-19 among Nurses**

n=100		
Transmission	Number	Percentage
<b>Mode of transmission*</b>		
Respiratory Droplet from infected people	66	37.5
Direct/close contact with infected people	69	39.2
Indirect contact with surfaces in the immediate environment or with the fomites of an infected person	32	18.2
Airborne transmission through droplet nuclei in procedures or support treatments that generate aerosols	47	26.7
<b>Aerosols-generating procedures*</b>		
Tracheal intubation	64	64.0
Tracheotomy	30	30.0
Cardiopulmonary resuscitation	42	42.0

Non-invasive ventilation	54	54.0
<b>The virus can live for *</b>		
72 hours on stainless steel and plastic	80	80.0
24 hours on cardboard	57	57.0
Four hours on copper	41	41.0
<b>Possibility of Transmission of COVID*</b>		
Asymptomatic patients	57	57.0
Pre-symptomatic patients	57	57.0
Symptomatic patients	80	80.0

**\*Multiple Responses**

Thirty- nine (39%) responded that COVID is from direct contact with infected people whereas 18% responded that it is from indirect contact. Regarding Aerosols-generating procedures, 64% responded it is transmitted through tracheal intubation. Similarly, 80% responded virus can survive for 72 hours on stainless steel and plastic whereas 41% said can survive four hours on copper. Regarding the possibility of virus transmission, 80% responded that transmission in symptomatic patients, and more than half (57%) said through asymptomatic and pre symptomatic patients (Table 5).

**Table 6: Knowledge regarding Case Definition and Features of COVID 19 among Nurses**

**n=100**

<b>Case Definition and Clinical features</b>	<b>Number</b>	<b>Percentage (%)</b>
<b>Case definition</b>		
<b>Laboratory confirmation of infection with COVID-19</b>		
Suspected Case	46	46.0
Probable Case	10	10.0
Confirmed Case <sup>s</sup>	44	44.0
<b>Common signs and symptoms*</b>		
Fever or chills	87	87.0
Cough	73	73.0

Fatigue	47	47.0
Anorexia	27	27.0
Shortness of breath	78	78.0
Muscle or body aches	45	45.0
<b>Other non-specific symptoms*</b>		
Sore throat	71	71.0
Nasal congestion	38	38.0
Headache	56	56.0
Diarrhoea	60	60.0
Nausea and vomiting	44	44.0
Loss of smell preceding onset of respiratory symptoms	59	59.0

**\*Multiple Responses ° indicates Correct Response**

Nearly half (44%) responded correctly is conform case, identified from laboratory confirmation of infection irrespective of clinical sign and symptoms. Eighty seven (87%) said fever and chills are common signs followed by 27% said is anorexia. Regarding Other non-specific symptoms, 71% said sore throat whereas 38% said nasal congestion (Table 6)

**Table 7: Knowledge regarding Incubation Period and Risk Factors of COVID 19 among Nurses n=100**

Incubation period and Risk Factors	Number	Percentage
<b>Incubation period</b>		
2-20 days	4	4.0
2- 14 days <sup>C</sup>	90	90.0
2-10 days	6	6.0
<b>Risk factors for severe covid-19 disease*</b>		
Age more than 60 years	93	93.0
Underlying non-communicable diseases	65	65.0
Immunosuppression	90	90.0
Smoking	79	79.0

<sup>c</sup> indicates Correct Response

\*indicates Multiple Responses

Table 7 presents knowledge regarding the incubation period and risk factors of COVID 19. Majorities (90%) of the nurses responded correctly, the incubation period is 2-14 days. Similarly, majorities (93%) nurses said risk factors for severe covid-19 disease are age group of more than 60 years followed by 65% responded common among people with non-communicable diseases.

**Table 8: Knowledge regarding Severity and Complications of COVID-19**

n = 100

Severity and Complications	Number	Percentage
<b>Mild disease symptomatic patients</b>		
No pneumonia or hypoxia <sup>C</sup>	50	50.0
Pneumonia or hypoxia	36	36.0
Severe pneumonia.	12	12.0
Sepsis	2	2.0
<b>Moderate disease</b>		
No pneumonia or hypoxia	10	10.0
Pneumonia <sup>C</sup>	57	57.0
Severe pneumonia	28	28.0
Septic shock	5	5.0
<b>Severe disease</b>		
No pneumonia or hypoxia	-	-
Pneumonia	2	2.0
Severe pneumonia <sup>C</sup>	32	32.0
Acute respiratory distress syndrome (ARDS)	66	66.0
<b>Critical disease *</b>		
Acute respiratory distress syndrome (ARDS),	92	92.0
septic shock	35	35.0



sepsis,	42	42.0
<b>Acute, life-threatening complications *</b>		
Acute pulmonary embolism	88	88.0
Acute coronary syndrome	45	45.0
Acute stroke	48	48.0
Delirium	10	10.0

<sup>c</sup> indicates Correct Response \*indicates Multiple Response

Half (50%) of the nurses responded correctly that there is no pneumonia or hypoxia in mild disease symptomatic patients. In moderate disease, more than half (57 %) responded correctly is they have pneumonia. In severe disease 32% respond correctly is severe pneumonia. In critical disease, a majority (92 %) nurses respond correctly is acute respiratory distress syndrome (ARDS) occurs. Similarly, regarding life-threatening complications, 88% responded there will be acute pulmonary embolism whereas 10% responded there will be delirium (Table 8).

**Table 9: Knowledge of Nurses regarding Infection Prevention and Control Measures**

**n = 100**

<b>Infection Prevention and Control Measures</b>	<b>Number</b>	<b>Percentage</b>
<b>Standard precautions*</b>		
Hand and respiratory hygiene	71	71
Use of appropriate personal protective equipment (PPE) according to a risk assessment	91	91
Appropriate patient placement	58	58.0
Injection safety practices	30	30.0
Safe waste management	54	54.0
Proper linens	34	34.0
Cleaning and disinfection of equipment	60	60.0
Environmental cleaning	48	48.0
Sterilization of patient-care equipment	60	60.0
<b>Respiratory hygiene measures</b>		
Cover nose and mouth with a tissue or elbow when	93	93.0

coughing or sneezing

Patients with suspected COVID-19 while they are in waiting/public areas or in closed rooms, use the medical mask	68	68.0
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Dispose of tissues safely immediately after use in a closed bin	64	64.0
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Patients perform hand hygiene after contact with Respiratory secretions	72	72.0
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In standard precautions, majorities (91 %) of the nurses responded use of appropriate personal protective equipment where as 30 % responded safety practice while injection was given. Regarding respiratory hygiene measures, majorities (93 %) the nurses said it can be prevented and controlled through covering their nose and mouth with a tissue or elbow when coughing or sneezing whereas 64% responded through disposing of tissues safely immediately after use in a closed bin (Table 9).

**Table 10: Knowledge of Nurses on Infection Prevention Measures**

<b>WHO's My 5 Moments*</b>	<b>Number</b>	<b>n = 100 Percentage</b>
Before touching a patient	72	72.0
Before any clean or aseptic procedure is performed	71	71.0
After exposure to body fluid	70	70.0
After touching a patient	73	73.0
After touching a patient's surroundings	73	73.0
<b>Preference of cleansing hands with an alcohol-based hand rub</b>		
Hands are not visibly soiled <sup>C</sup>	72	72.0
Hands are visibly soiled	28	28.0
<b>Contact and droplet precautions*</b>		
Use of PPEs: gloves, disposable gown, medical mask, and eye protection	96	96.0
Avoiding contaminating environmental surfaces	69	69.0
Refraining from touching eyes, nose and mouth	62	62.0

Keep at least 1 m distance from the infected person	66	66.0
Limit patient movement within the institution	46	46.0
<b>Recommendations of a fit-tested particulate respirator (N95 or equivalent, or higher level of protection)</b>		
Standard precaution	50	50.0
Contact precautions	19	19.0
Droplet precautions	14	14.0
Airborne precautions <sup>c</sup>	17	17.0

<sup>c</sup> indicates Correct Response \*indicates Multiple Response

Table 10 shows the knowledge of nurses on infection prevention measures. Regarding WHO's My 5 Moments, 74% of the nurses responded preventive measures can be applied after touching a patient and the same no. of nurse responded after touching a patient's surroundings followed by 70% said after exposure to body fluid. Regarding cleansing hands with an alcohol-based hand rub, 72% of the nurses responded correctly that they prefer when hands are not visibly soiled. The majority (96%) reported that contact and droplet precautions include use of the PPEs and only 17% of nurses responded correctly that fit-tested particulate respirator is recommended for airborne precautions.

**Table 11: Knowledge of Nurses on Management of COVID-19**

<b>n = 100</b>		
<b>Management</b>	<b>Number</b>	<b>Percentage</b>
<b>Management of persons suffering from COVID-19*</b>		
Around 80% of the people require no treatment	59	59.0
Around <20% or a small proportion may need hospitalization.	68	68.0
A small proportion suffering from chronic illness may need admission to an Intensive Care Unit (ICU)	75	75.0
<b>Management of Mild COVID-19 cases*</b>		
Hospitalization not required	30	30.0
Isolation	90	90.0
Symptomatic treatment	58	58.0
<b>Severe patients caring area should be equipped with</b>		
Pulse oxymeters,	58	58.0
Functioning oxygen systems	71	71.0
Disposable, single-use, oxygen-delivering interfaces	91	91.0
<b>Recommendation of Immediate administration of supplemental oxygen therapy *</b>		
With Emergency signs	76	76.0
Without Emergency signs and SpO <sub>2</sub> < 90%	66	66.0
<b>Emergency signs*</b>		
Obstructed or absent breathing,	60	60.0
Severe respiratory distress	94	94.0
Central cyanosis,	52	52.0

Shock	50	50.0
Coma	36	36.0
Convulsions	36	36.0
<b>Recommended first-line interventions for the management of sleep problems related to acute stress</b>		
Antidepressant drugs	10	10.0
Hospitalization	17	17.0
Psychosocial support strategies <sup>c</sup>	73	73.0

<sup>c</sup> indicates Correct Response    \*indicates Multiple Response

Table 11 reveals the knowledge of nurses on the management of COVID-19. Seventy-five percent (75%) of the nurses said a very small proportion suffering from chronic illness may need admission to an Intensive Care Unit (ICU) whereas more than half (59%) said no require to treatment as such and will recover on their own. Majorities (90%) of the nurses said mild COVID-19 is managed by isolation. Regarding the care of severe patients, majorities (91%) of the nurses said the use of disposable, single-use, oxygen-delivering interfaces whereas more than half (58%) said care through the use of pulse oximeters. Seventy-six percent of the nurses said immediate administration of supplemental oxygen therapy is recommended to any patient and 66% said administer oxygen without emergency signs and SpO<sub>2</sub> < 90%. Regarding Emergency signs, majorities (94%) said there will be severe respiratory distress. Similarly, 73% of the nurses responded correctly is first-line interventions for the management of sleep problems related to acute stress are psychosocial support strategies.

**Table 12: Perception of Nurses regarding COVID-19**

**n = 100**

S.N.	Statements	Number (Percentage)				
		SA(%) )	A (%)	U(%)	D(%)	SD(%) )
1.	COVID-19 is a curse from nature*	6	15	33	35	11
2.	COVID-19 is a fatal disease*	-	13	9	45	33
3.	It is easy to manage COVID-19 and prevent COVID-19 related complications and death.*	-	22	8	54	16
4.	Nurses are at higher risk of getting COVID-19*	66	26	5	3	-
5.	Coronavirus (COVID-19) can spread easily*	33	49	7	11	-
6.	Strict precautions should be taken every time and everywhere in the hospital to prevent COVID-19 transmission.	63	33	2	2	
7.	Specialized knowledge and training about COVID-19 is necessary for nurses.	74	23	1	2	-

8.	It is bothersome/annoying to take care of COVID-19 patient*	-	32	26	40	2
9.	Every coronavirus (COVID-19) positive person must be isolated and managed according to their need.	79	21	-	-	-
10.	Proper diet and a healthy lifestyle improve immunity that protects from COVID-19.	59	36	5	-	-
11.	Foods, vegetables, fruits, and meat should be well-treated and well-cooked before consuming to be protected from COVID-19.	40	51	8	1	-
12.	Simple measures like social distancing, hand hygiene, using a mask, covering nose and mouth during coughing and sneezing can prevent coronavirus transmission.	50	43	7		

SA: Strongly Agree, A: Agree, U: Undecided D: Disagree, SD: Strongly Disagree

#### \*Negative statements

Table 12 depicts the perception of Nurses regarding COVID-19 that most (79%) of nurses strongly agree regarding isolation and management of every COVID positive case and less than half (45%) disagreed COVID-19 is a fatal disease and 9% were undecided. More than half (54%) disagreed it is easy to manage and prevent related complications and death where only 8% were undecided. Sixty- six (66%) of the nurses were strongly agreed they were at higher risk of getting COVID-19 whereas very few (3%) were disagree. Nearly half (49%) were agree the coronavirus can spread easily where as 7% were undecided. Sixty three (63%) were strongly agreed to strict precaution should be taken every time and everywhere in the hospital to prevent COVID-19 transmission. Seventy four (74%) were strongly agreed specialized knowledge and training about COVID-19 is necessary for nurses and only 1% were undecided. Forty (40%) disagreed, it is bothersome/annoying to take care of a COVID-19 patient and only 2% were strongly disagreed. Most (79%) of the nurses were strongly agreed every coronavirus (COVID-19) positive person must be isolated and managed according to their need. More than half (59%) strongly agreed on proper diet and a healthy lifestyle improving immunity to protect from COVID-19 and very few (5%) were undecided. More than half (51%) were agreed foods and vegetables should be well treated and well-cooked before consuming to be protected from COVID-19. Similarly, half (50%) strongly agreed with simple measures that prevent coronavirus transmission.

**Table 13: Level of Knowledge and Perceptions of Nurses regarding COVID-19**

<b>Level</b>	<b>Number</b>	<b>n=100 Percentage</b>
<b>Level of Knowledge</b>		
Inadequate	44	44.0
Adequate	56	56.0
Mean $\pm$ SD=54 $\pm$ 1.86		
<b>Level of Perceptions</b>		
Unsatisfactory	3	3.0
Satisfactory	97	97.0
Mean $\pm$ SD=44.77 $\pm$ 3.08		

Table 13 represents the level of knowledge and perceptions of nurses regarding COVID-19. More than half (56%) of nurses had adequate knowledge regarding COVID-19 followed by 44% were inadequate knowledge. Majorities (97%) of the nurses had satisfactory perceptions regarding COVID-19 were as very few (3%) were unsatisfactory.

**Table 14: Association between Socio-demographic Characteristics of Nurses with Level of Knowledge**

n = 100

Variables	Level of Knowledge		P value	Unadjusted OR 95% CI
	Inadequate N (%)	Adequate N (%)		
<b>Age</b>				
Up to 25	34(34.0)	29(29.0)	0.009	3.166(1.315-7.621)
25 and above	10(10.0)	27(27.0)		
<b>Working experience</b>				
Up to 3 years	26(26.0)	26(26.0)	.208	1.667(.750-3.702)
More than 3 years	18(18.0)	30(30.0)		
<b>Qualification</b>				
PCL Nursing	36(36.0)	42 (42.0)	.414	1.500(.565-3.981)
PBBN/BNS/ BSC Nursing	8(8.0)	14 (14.0)		
<b>Involve in care of patients with COVID-19</b>				
Yes	19(19.0)	27(27.0)	.616	.816(.369-1.806)
No	25(25.0)	29(29.0)		

*Pearson's Chi-Square test, Fisher Exact Test, \*P value significant at <0.05 level, 1 Reference*

Table 14 shows the association between socio-demographic characteristics of nurses with the level of knowledge that there is a statistically significant association between the age of nurses and the level of knowledge regarding COVID-19 ( $P=0.009$ ). Those nurses who were up to 25 years had 3.166 times inadequate knowledge than those above 25 years ( $p=0.009$ ; OR= 3.166; CI=1.315-7.621). There was no significant association between work experience, qualification, and involvement in care of COVID- 19.



**Table 15: Association between Socio-demographic Characteristics of Nurses and Level of Perceptions**

**n=100**

Variables	Level of Perceptions		P value	Unadjusted OR 95% CI
	Unsatisfactory N (%)	Satisfactory N (%)		
<b>Age</b>				
Up to 25	1(1.0)	62(62.0)	.553 <sup>a</sup>	.282(.025-3.225)
25 and above	2(2.0)	35(35.0)		
<b>Working experience</b>				
Up to 3 years	1(1.0)	51(51.0)	.606 <sup>a</sup>	.451(.040-5.140)
More than 3 years	2(2.0)	46(46.0)		
<b>Qualification</b>				
PCL Nursing	3(3.0)	75 (75.0)	1.00 <sup>a</sup>	.962(.920-1.005)
PBBN/BNS/ BSC Nursing	0	22 (22.0)		
<b>Involve in care of patients with COVID-19</b>				
Yes	2(2.0)	44(44.0)	.593 <sup>a</sup>	2.409(.211-27.461)
No	1(1.0)	53(53.0)		

*Pearson's Chi-Square test, <sup>a</sup>Fisher Exact Test, \*P value significant at <0.05 level, 1 Reference*

Table 15 shows that there is no statistically significant association between socio-demographic characteristics (age, working experience, qualification, and involvement in COVID- 19 care) with the perception of nurses regarding COVID-19.

## DISCUSSIONS

Forty (40%) of the nurses responded correctly COVID-19 is severe acute respiratory syndrome coronavirus 2 (SARS CoV-2). Similarly, regarding origin 83% responded correctly it was originated from the bat. A study from Pokhara found that almost 80% of the respondents said that the major transmission from human to human occurs through respiratory droplets (Acharya, 2020). Whereas in our study, two-third (66%) of the nurses indicated the transmission occurs through respiratory droplets. Further, regarding mode of transmission, 69% responded it is from direct contact, whereas 32 % responded that it is from indirect contact. Airborne transmission of corona virus can occur during medical procedures that generate aerosols (WHO, 2020). Whereas the percentage of nurses identifying aerosol generating procedures ranged from less than two-thirds (64%) for tracheal intubation and less than one-third (30%) tracheotomy. Likewise, four out of five (80%) said transmission of coronavirus is possible through symptomatic patients but more than half (57%) said through asymptomatic and presymptomatic patients. It seems, the

knowledge regarding the mode of transmission is non-reassuring that can negatively impact the nurses alertness in taking adequate preventive measures.

Majorities (90%) of the nurses correctly responded that the incubation period of COVID-19 is 2-14 days. Similarly, the majority (93%) of the nurses said risk factors for severe COVID-19 is the age group of more than 60 years and people already having non-communicable diseases was said by 65%. In a study conducted in Pokhara, more than two-third (70%) of nurses said that the main source of COVID 19 was animals (like a bat). The majority (97.7%) said that 1-14 days is the incubation period of COVID-19. More than half (60%) of the respondents said that COVID 19 was a high risk to those persons who had a history of chronic medical illness and older adults (Acharya, 2018).

Less than half (44%) correctly responded that the confirm case is defined as laboratory confirmation of infection with COVID-19 virus, irrespective of clinical sign and symptoms. The percentage of nurses correctly indicating the common sign and symptoms of COVID-19 was ranging from 87% to 27% and other nonspecific symptoms ranged from 71% to 38%. The variation of a correct response on the identification of the severity of disease was 92% for critical, 32% for severe. Similarly, 88% - 10% of the nurses know various acute life-threatening complications of COVID-19. This variation in knowledge about case identification, sign, and symptoms, severity, and complication may result in a delay in patient's needs identification, decision-making, and provision of appropriate nursing actions.

WHO's My 5 Moments of hand washing were correctly answered by 70% -73% of nurses. In regards to infection prevention and control measures, the correct responses on various standard precautions ranged from 91% to 30%, on respiratory hygiene measures 93% - 64% and contact and droplet precautions 96% - 46%. Only 17% of nurses responded correctly that a fit-tested particulate respirator is recommended for airborne precautions. Where it is assumed that nurses have adequate infection prevention and control measures to halt the burden of disease spread, such differences in probable lack of knowledge about this critical skill found in this study suggest the urgency of conducting adequate skill training for nurses.

Two third (75%) of the nurses said a very small proportion of COVID-19 patients suffering from chronic illness may need admission in an Intensive Care Unit (ICU) whereas more than half (59%) said eighty percent of COVID-19 patient will not require treatment and will recover on their own and 68% of nurses said around and less than twenty percent patients will require hospitalization.

The Majorities (90%) of the respondents responded mild COVID-19 is managed by isolation, more than half (58%) said they require symptomatic treatment whereas less than one-third (30%) said hospitalization is not required for mild COVID-19 patients. This type of confusing rate of responses regarding the management of patients with COVID-19 may be due to lacking the knowledge about different case definitions and disease severity as well as the specific national protocol about case management. Further, at the time of conducting our research, even the asymptomatic confirmed cases were isolated and hospitalized, contact tracing was practiced.

Regarding the probable need for equipment's for severe patients, the correct responses varied from 91%-58%. The nurses knowing the recommended conditions when to immediately administer supplemental oxygen therapy were 76% and 66%. The percentage of nurses who identified the emergency signs of COVID-19 ranged from 94% - 36%. In case of emergency, even a small mistake and knowledge/skill gap may take away the lives of people. Therefore, it is seriously critical that 100 % of nurses should know what an emergency condition is, what preparation should be done, and what actions should be taken when it arises.

Furthermore, 73% of the nurses responded correctly that first-line interventions for the management of sleep problems related to acute stress are psychosocial support strategies. It seems that about three-fourths of nurses are sensitive to the mental health of the patients with COVID-19.

The study revealed that more than half (56%) of the nurses had an adequate level of knowledge. This percentage is greater than the finding of the study conducted in Pokhara about one-fourth (26.0%) had good knowledge and nurses having moderate knowledge (44.8%) about COVID 19<sup>18</sup>. However, an Iranian study showed that 56.5% of nurses had satisfactory knowledge, which was exactly similar to the findings of our study (Nemati, Ebrahimi, & Nemati, 2020).

This study disclosed a statistically significant association between the age of nurses and the level of knowledge regarding COVID-19. Those nurses who were up to 25 years had 3.166 times inadequate knowledge than those above 25 years ( $p=0.009$ ; OR= 3.166; CI=1.315-7.621). This may be due to There was no significant association of knowledge regarding COVID-19 with work experience, qualification, and involvement in COVID- 19 care. This finding supports the study conducted on 85 Iranian nurses who found no significant correlation of knowledge with work experience, and education level (Nemati, Ebrahimi, & Nemati, 2020).

The majority (97%) of nurses had satisfactory perceptions regarding COVID-19 were as very few (3%) were unsatisfactory. The range of nurses agreeing/strongly agreeing on negative statements regarding the perception of COVID-19 was 92% - 13%. Whereas, the range of nurses agreeing/strongly agreeing positive statements was 100% - 91%.

In this study, the majority of nurses having positive perceptions towards COVID-19. As revealed in a study, 78.4% of participants were confident that COVID 19 can be successfully controlled and 77.9% were confident that Nepal could win the battle against COVID 19 (Pasari et al., 2020). There is no statistically significant association between socio-demographic characteristics with perceptions of nurses regarding COVID-19.

## CONCLUSIONS

This study highlights that more than half of the nurses had an adequate level of knowledge and majorities had satisfactory perception regarding COVID-19 at the time of the COVID outbreak. There was a statistically significant association between the age of the nurses with the level of knowledge regarding COVID-19 ( $P=0.009$ ). There was no statistically significant association between socio-demographic characteristics with the perception of nurses regarding COVID-19. As the COVID-19 cases are rapidly increasing worldwide, it is essential to improve the knowledge and positive perception among nurses.

## LIMITATIONS

The study was conducted at only one teaching hospital in Banke and only hundred nurses were able to respond at the time because it was unable to include the nurses who had no access to the internet and did not have sufficient technical and language skills to participate in web- based investigations. In addition, the data presented in this study are self-reported and partly dependent on the participants' honesty and recall ability. Thus, they may be subject to recall bias.

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## CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest regarding the publication of this article.

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