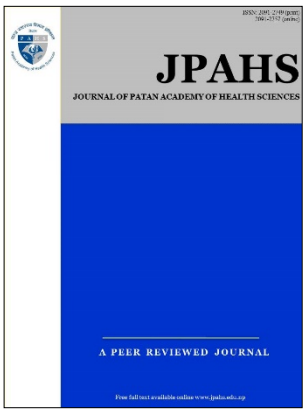

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Knowledge and attitude towards COVID-19 among nursing students

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Abstract

Introduction: Coronavirus disease 2019 (COVID-19) pandemic caused by a novel coronavirus mainly present with fever, dry cough, fatigue, myalgia, and dyspnea. This study was aimed to identify the knowledge and attitude toward COVID-19 among nursing students.

Method: A cross-sectional analytical study was conducted to find out knowledge and attitude toward COVID-19 among nursing students of the School of Nursing and Midwifery, Patan Academy of Health Sciences, Lalitpur. Online Google form was used for data collection. The SPSS 16 version was used to analyze.

Result: Out of 382 nursing students, the majority knew COVID-19, with 84.54% correct responses (6,782 out of a total 8,022). A favorable attitude toward COVID-19 was found in 209 (54.7%). There was a positive correlation between student's knowledge and attitude (r =0.10, p=0.04) and no significant association between demographic variables and attitude.

Conclusion: Most (84.54%) of the nursing students surveyed knew COVID-19 and more than half of them had a favorable attitude toward COVID.

Keywords: attitude, COVID-19, coronavirus disease-2019, knowledge, nursing students

Introduction

Coronavirus disease 2019 (COVID-19) is an emerging respiratory disease caused by a novel coronavirus and was first detected in December 2019 in Wuhan, China.[1] The disease is highly infectious, and its main clinical symptoms are fever, dry cough, fatigue, myalgia, and dyspnea.[1] COVID-19 was declared Public Health Emergency of International Concern (PHEIC) on 30 January 2020 and Pandemic on 11 March 2020. The outbreak soon spread to 216 countries including Nepal.[2] As of 14 September 2020, a total of 54,159 COVID-19 cases were confirmed, and 345 deaths in Nepal. All seven provinces and 77 districts in the country have been affected.[3]

In India, 76.0% of nursing students showed adequate knowledge about COVID-19 and around 87.47% of nursing students were aware of the high-risk age group for COVID-19.[4] In Nepal, 69.2% of technical staff (nurses, laboratory, and radiology technicians) and 80.1% of doctors have good awareness about COVID-19.[5] There is a lack of similar studies among nursing students in Nepal.

People's adherence to the control measures is essential in the fight against the disease, which is largely affected by their knowledge, and attitude towards COVID-19. Thus, the study aimed to find out knowledge and attitude towards COVID-19 among nursing students.

Method

A cross-sectional analytical study was conducted among nursing students (Proficiency Certificate Level, Bachelor of Science in Nursing, Bachelor of Nursing Science, Master of Nursing) of Patan Academy of Health Sciences (PAHS), Nepal, in June 2020 which represents an 89.25% response rate. Total enumerative sampling (382 out of 428) was used to collect data. The students voluntarily participated in the study.

The study was approved by the Institutional Review Committee of PAHS, Lalitpur, Nepal. Modified knowledge and attitude-related self-administered structured questionnaire[6] were used in Google form to collect the data. The permission for modification to fit in the recent Nepalese context was obtained from the author of the original questionnaire.

It contained a total of 27 questions; three questions on demographic information, 15 questions were related to knowledge about COVID-19 with three negative questions, and nine were related to attitude towards COVID-19. The responses were classified as "yes", "no" and "don't know" in the knowledge-related questions. A correct response was given one score and incorrect/don't know responses were given zero scores. The total knowledge score ranges from zero to 21, with a higher score denoting a better knowledge of COVID-19.

In attitude-related questions, one score was given for the 'Yes' response and a zero score was given for the 'No' response. The total score ranged from zero to nine. The cut-off point was identified based on the mean value (8.33) of a total obtained score for attitude, and it was categorized as favorable attitude (score >8.33) and unfavorable attitude (score $\leq$8.33).

The personal email addresses of students were collected from coordinators and the information regarding the study was given online through Google meet by the Principal Investigator and Co-Investigators. Participants were explained about the study objectives and were invited to participate. They were informed about the data collection method and how to use Google form. Participants' information sheet was sent in their email along with a questionnaire by the Principal Investigator. The approximate time to fill the questionnaire was 15-20 minutes. Students were requested to send back the filled questionnaire within one week. The reminder email was sent on the 3rd and 4th day of sending the Google form. Those who returned the filled questionnaire were considered as voluntarily participating in the study. The data in this study were kept anonymous to respect privacy as

participants were not required to mention their names in the Google form. Confidentiality was maintained by using the study findings for research purposes only.

All the data received from the online system were checked for completeness. The data were analyzed using SPSS version 16. Descriptive statistics (frequency, percentage, and mean) were used to describe the demographic data and find out the knowledge and attitude level. Inferential statistics (Chi-square test and Pearson correlation analysis) was used to determine the association between knowledge and attitude; and between demographic variables and attitude towards COVID-19. A p-value was set at 0.05 to be statistically significant.

Result

Out of 382 nursing students, 225(58.9%) were residing in Bagmati Province followed by Gandaki province 86(22.5%). Among the students, 145(38%) were from the BSc Nursing course and 136(35.6%) of students were studying in the second year, Table 1.

The mean knowledge score was 16.52±2.13.

Table 1. Demographic characteristic of nursing students who participated in an online survey for knowledge and attitude towards COVID-19 (N=382)

Characteristics	N	%
Area of current residence		
Province 1	26	6.8
Province 2	13	3.4
Bagmati Province	225	58.9
Gandaki Province	86	22.5
Province 5	26	6.8
Karnali Province	3	0.8
Sudurpaschim Province	3	0.8
Academic level		
PCL	120	31.4
B.Sc. Nursing	145	38.0
BNS	100	26.2
MN	17	4.4
Academic year		
First	116	30.4
Second	136	35.6
Third	104	27.2
Fourth	26	6.8

Out of all the knowledge-based questions, and a full score of 8,022 (i.e., 21x382) the aggregate score of all the correct answers by all the participants was 6,782(84.54%). Favorable attitude toward COVID-19 was found in 209(54.7%) and unfavorable in 174(45.3%), Table 4. There was a significant positive correlation between students' knowledge and attitude towards COVID-19 (r= 0.10, p=0.04) and there was no significant association between demographic variables with attitude. Regarding the main symptoms of COVID-19, 76.76% of students answered correctly that are fever, dry cough, fatigue, and myalgia. Furthermore, 377(98.7%), 349 (91.4%), 320(83.8%), and 127(33.2%) students responded that fever and dry cough, fatigue, and myalgia are the main clinical symptoms of COVID-19, respectively, Table 2. The majority, 375(98.2%) knew early symptomatic and supportive treatment and no effective cure for COVID-19; and 330(86.4%) students knew that not all persons with COVID-19 will develop severe symptoms except elderly and those with chronic illnesses (e.g., diabetes, heart, lung and liver diseases, kidney failure, immunocompromised) and obese people, Table 2.

Table 2. Knowledge on COVID-19 among nursing students (N=382)

Items	Yes N(%)	No N(%)	Don't know N(%)
The main clinical symptoms of COVID-19 are			
Fever	**377(98.7)**	5(1.3)	-
Fatigue	**320(83.8)**	35(9.2)	27(7.1)
Dry cough	**349(91.4)**	25(6.5)	8(2.1)
Myalgia	**127(33.2)**	121(31.7)	134(35.1)
The less common symptoms of COVID-19 are			
Common cold	**232(60.7)**	137(35.9)	13(3.4)
Stuffy nose	**173(45.3)**	123(32.2)	86(22.5)
Runny nose	**193(50.5)**	131(34.3)	58(15.2)
Sneezing	**221(57.9)**	115(30.1)	46(12.0)
There is currently no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection.	**375(98.2)**	7(1.8)	-
Early symptomatic and supportive treatment (isolating the patient in a well-ventilated room, giving medicines for cough and fever) can help patients recover from the infection.	**253(92.4)**	21(5.5)	7(2.1)
Not all persons with COVID-19 will develop severe cases. Only those who are elderly, have chronic illnesses (e.g. diabetes, heart, lung, and liver diseases, kidney failure, immunocompromised) and obese are more likely to be in severe cases.	**330(86.4)**	41(10.7)	11(2.9)
Eating meat or animal product would result in infection by the COVID-19.	80(20.9)	**249(65.2)**	53(13.9)
Contacting/handling animals would result in the infection by the COVID-19.	116(30.4)	**215(56.3)**	51(13.4)
Persons with COVID-19 cannot transmit the virus to others when fever is not present.	22(5.8)	**336(88.0**)	24(6.3)
The COVID-19 virus spreads via respiratory droplets of infected individuals.	**373(97.6)**	8(2.1)	1(0.3)
Wearing general and medical masks can prevent one from acquiring infection by the COVID-19 virus.	**259(67.8)**	112(29.3)	11(2.9)
Children and young adults don't need to take measures to prevent the infection by the COVID-19 virus.	17(4.5)	**361(94.5)**	4(1.0)
To prevent the infection by COVID-19, individuals should avoid going to crowded places such as gyms, shopping malls, cinema halls, bus parks and avoid taking public transportations.	**374(97.9)**	8(2.1)	-
Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.	**366(95.8)**	9(2.4)	7(1.8)
People who have contact with someone infected with the COVID-19 virus should be immediately quarantined in a proper place.	**378(99.0)**	2(0.5)	2(0.5)
In general, the duration of quarantine for a suspected case is 14 days.	**351(91.9)**	16(4.2)	15(3.9)

Note: Correct responses are in bold.

The majority, 373(97.6%) knew the mode of transmission of coronavirus but only 259(67.8%) knew the importance of wearing a mask. Similarly, 361(94.5%) students knew that children and young adults also need to take control measures to prevent the infection by the coronavirus and 374(97.9%) knew that individuals should avoid going to crowded places. Likewise, 366(95.8%) students knew effective ways to reduce the spread of the virus that is isolation and treatment of infected people. Similarly, 378(99%) students answered

correctly that people who have contact with someone infected with the coronavirus should be quarantined. Regarding the duration of quarantine for suspected cases, 351(91.9%) students answered correctly, Table 2.

Table 3. Attitude towards COVID-19 among nursing students (N=382)

Attitude statements	Yes		No	
	N	%	N	%
I will use the mask correctly (covering the nose, mouth, and chin) to prevent COVID-19 when going out from home.	382	100.0	-	-
I will expose my mask to sunlight after its use.	321	84.0	61	16.0
I will wash my hands with soap and water or alcohol-based hand sanitizer to prevent getting COVID-19.	310	81.2	72	18.8
I am sure that COVID-19 will finally be successfully controlled.	290	75.9	92	24.1
I am sure that Nepal can win the battle against COVID-19.	381	99.7	1	0.3
Protection of myself is necessary for the protection of others.	380	99.5	2	0.5
I know that not everyone with COVID-19 will die.	378	99.0	4	1.0
I will stop to go to a crowded place such as a shopping mall, cinema hall, or vegetable bazaar.	360	94.2	22	5.8
I am following social distancing.	381	99.7	1	0.3

Table 4. Level of attitude towards COVID-19 among nursing students (N=382)

Level of Attitude	N	%
Favourable attitude (score > mean)	209	54.7
Unfavourable attitude (score ≤ mean)	173	45.3

Mean of attitude= 8.33, SD=0.870

Table 5. Association between demographic variables and attitude of nursing students towards COVID-19 (N=382)

Items	Unfavorable attitude		Favorable attitude		Chi-Square
	N	%	N	%	
Academic level					
PCL	47	39.2	73	60.8	0.154
BSc	71	49.0	74	51.0	
BNS	44	44.0	56	56.0	
MN	11	64.7	6	53.3	
Academic year					
First	50	43.1	66	56.9	0.920
Second	62	45.6	74	54.4	
Third	48	46.2	56	53.8	
Fourth	13	50.0	13	50.0	

Note: PCL-Proficiency Certificate Level, BSc- Bachelor of Science in Nursing, BNS- Bachelor of Nursing Science, MN- Master of Nursing

Discussion

In the current study, among 382 nursing students, 6,782(84.54%) responses (out of total 8,022 scores) were correct for knowledge regarding COVID-19. A similar finding has been reported by a study from Turkey which shows that among 123 nurses, 89.43% of the nurses had extensive knowledge about COVID-19[7]; yet another study shows that 484(96.85%) nurses of Saudi Arabia had excellent awareness about COVID-19.[8] Likewise, 79.9% of medical students (MBBS, Nursing, BDS and Allied Health Sciences) of Pakistan had adequate knowledge on coronavirus infection.[9] This could be because of their interest in listening to updates about COVID-19. However, In the study conducted among

1,562 healthcare students and professionals in Mumbai, the overall correct percentage (median) regarding the COVID-19 questionnaire among nursing students and faculty (379) was 67.6%.[10]

In this study, regarding the main symptoms of COVID-19 (fever, dry cough, fatigue, and myalgia), 76.76% of students answered correctly. A study done in Kist Medical college, Nepal, among medical students (MBBS and BDS) had similar findings showing that 443(78.4%) of participants knew about the signs and symptoms of COVID-19.[11] Similarly, a survey done in India during April 2020 (n=380), found that most (89.74%) of budding nurses responded that fever, fatigue, dry cough, and headache are the main clinical manifestations of COVID-19.[12] Likewise, 114(91.9%) B.Sc. nursing students of Saudi Arabia knew about the main symptoms of COVID-19.[13]

In this study, the majority (N=375, 98.2%) of students had adequate knowledge that there is currently no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection. Similarly, 330(86.4%) students knew that not all persons with COVID-19 will develop severe cases. These findings are supported by a study published in Saudi Arabia in May 2020, where 3,260(96%) general population knew that there is no effective cure for COVID-19 and 3,227(95.25%) gave correct answer that older adults and those with serious chronic illnesses, such as heart or lung diseases and diabetes, are at increased risk of developing more serious complications from COVID-19.[14] However, only 40.98% of medical and allied health science students in India knew that the elderly persons or people with comorbidities are more prone to acquire COVID-19.[15] That study had been conducted during February and March 2020, when the infection rate was very low, hence it might have revealed the contradictory findings.

In the current study, most of the respondents, 310(81.2%) believed that washing hands with soap and water or rubbing with alcohol-based hand sanitizer can prevent them from getting COVID-19. A similar finding was revealed in a study done in Pakistan with 326(84.9%) having adequate knowledge about the same.[9] Likewise, around 83.54% of nursing students in the Telangana state of India were aware of the concept of hand hygiene.[4] This study was conducted in April 2020 when all students were at their homes because of the lockdown period.

In this study, 259(67.8%) students had correct knowledge regarding wearing a general medical mask in the prevention of acquiring coronavirus infection. Likewise, 374(97.9%) knew that individuals should avoid going to crowded places such as gyms, shopping malls, cinema halls, bus parks and avoid taking public transportations to prevent COVID-19 from the transmission. A study done in India revealed similar results, in which 260(68.42%) budding nurses strongly agreed on wearing general medical masks by people to prevent the spread of coronavirus infection caused by COVID-19, and 365(96.05%) replied that people should avoid going to crowded places such as train stations and avoid taking public transportation to prevent the infection.[12] However, in Pakistan, 64.7% of health care workers obtained an overall moderate-to-poor score regarding the correct usage of a surgical face mask to limit the spread of COVID-19.[16]

In this study, knowledge of the correct duration of quarantine for suspected cases was known by 351(91.9%). A similar finding was found in a study done in Kist Medical College, Nepal, where 517(91.5%) of medical and dental students answered that WHO recommended self-isolation period for COVID-19 is 14 days.[11] Likewise 773(88.7%) of Nepalese adults knew the need for 2-weeks self-isolation period following the exposure to a COVID-19 suspected person.[17] People of Nepal were up to date about regular information and news provided by the Health Ministry of Nepal through different media, so they may have been well-informed about this. But, in India, only 194(47.67%) of nursing students (407) were aware of the correct concept of quarantine and isolation.[4]

In this study, 209(54.7%) students had a favorable attitude and 174(45.3%) had an unfavorable attitude towards COVID-19. However, a study done in Pakistan among undergraduate medical students showed that more than 80% of students showed positive attitudes among which the nursing students were dominant.[9] Similarly, another study also reported that the majority of university students in Jordan had a positive attitude towards COVID-19 with an average score of 81.1%.[18] But a study was done in Nepal among health care workers during May-June 2020, revealed that 87(40.7%) had a positive attitude and 127(59.3%) had a negative attitude. [19]

The number of students who identified correctly the ways of prevention of coronavirus transmission was 380 (99.5%). They believed that protection of self is necessary for the protection of others. Likewise, a study conducted in Birgunj, Nepal also revealed that 374(97.9%) people with medical backgrounds believed that self-protection is necessary for the protection of others.[20] Similarly, a qualitative study of different districts of Nepal found that participants knew that using a mask, washing hands or using sanitizer, and maintaining social distance will help in preventing the spread of COVID-19. [21]

Three fourth of the students 290(75.9%) in this study believed that COVID-19 will finally be successfully controlled in Nepal. Likewise, 313(81.9%) of people of Birgunj, Nepal with a medical background, also believed that.[20] Similar finding was revealed in a study, where 2,419(71.40%) of the public strongly agreed that COVID-19 will finally be successfully controlled in Saudi Arabia.[14] The majority (90.8%) of the respondents in China agreed that COVID-19 will finally be successfully controlled in China also.[6]

This study also revealed that there was no significant association between academic level and attitude (p=0.154) and academic year and attitude (p=0.920). Similarly, in Jordan, socio-demographic variables had no significant association (P>0.05) with the attitude of the university students toward COVID-19.[18]

Some of the limitations of this study include, the study was limited to nursing students of one nursing campus of Lalitpur, Nepal, and the total enumerative sampling method without randomization which may not be generalized in other settings.

Conclusion

The findings of this study demonstrated that more than three-quarters of the nursing students knew COVID-19 while more than half of the students had a favorable attitude. There was a positive correlation between students' knowledge and attitude towards COVID-19.

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Conflict of Interest

None

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None

Author Contribution

Concept, design, planning- all authors - SA, SKC, RKM, BP; Literature review- All; Data collection/ analysis- SA, RKM, BP; Draft manuscript- All; Revision of draft- All; Final manuscript- All; Accountability of the work- All.

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Supplement

Questionnaire
Knowledge and attitude toward COVID-19 among nursing students of Lalitpur

Part I- Proforma
Please click on the appropriate response

1. Area of current residence
    a. Province 1
    b. Province 2
    c. Bagmati Province
    d. Gandaki Province
    e. Province 5
    f. Karnali Province
    g. Sudur paschim Province
2. Academic level
    a. PCL
    b. B. Sc. Nursing
    c. BNS
    d. MN
3. Currently, which academic year are you studying in?
    a. First
    b. Second
    c. Third
    d. Fourth

Part II- Knowledge related to COVID-19
Please click on the appropriate box.

S.N.	Statements	Yes	No	Don't Know
1	The main clinical symptoms of COVID-19 are (tick all that apply)			
	a. Fever			
	b. Fatigue			
	c. Dry cough			
	d. Myalgia			
2	The less common symptoms of COVID-19 are (tick all that apply)			
	a. Common cold			
	b. Stuffy nose			
	c. Runny nose			
	d. Sneezing			
3	There is currently no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection.			
4	Early symptomatic and supportive treatment can (isolating patients in a well-ventilated room, giving medicines for cough and fever) help patients recover from the infection.			
5	Not all persons with COVID-2019 will develop severe cases. Only those who are elderly, have chronic illnesses (e.g. Diabetes, heart, lung, and liver diseases, kidney failure, and immunocompromized clients), and are obese are more likely to be in severe cases.			
6	Eating meat animal products would result in infection by the COVID-19 virus.			
7	Contacting/handling animals would result in the infection by the COVID-19			
8	Persons with COVID-2019 cannot transmit the virus to others when fever is not present.			
9	The COVID-19 virus spreads via respiratory droplets of infected individuals.			

10	Wearing general and medical masks can prevent one from acquiring infection by the COVID-19 virus.			
11	It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus			
12	To prevent the infection by COVID-19, individuals should avoid going to crowded places such as gyms, shopping malls, cinema halls, and bus parks and avoid taking public transportations.			
13	Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.			
14	People who have contact with someone infected with the COVID-19 virus should be immediately quarantined in a proper place.			
15	In general, the duration of quarantine for the suspected case is 14 days.			

Part III- Attitude related to COVID-19
Please click in the appropriate box that applies to you most.

S.N.	Statements	Yes	No
1	I will use the mask correctly (covering the nose, mouth, and chin) to prevent COVID-19 when going out from home.		
2	I will expose my mask to sunlight after its use.		
3	I will wash my hands with soap and water or alcohol-based hand sanitizer to prevent getting COVID-19.		
4	I am sure that COVID-19 will finally be successfully controlled.		
5	I am sure that Nepal can win the battle against COVID-19.		
6	Protection of myself is necessary for the protection of others.		
7	I know that not everyone with COVID-19 will die.		
8	I will stop to go to a crowded place such as a shopping mall, cinema hall, or vegetable bazaar.		
9	I am following social distancing.		