Title: Knowledge, Attitude, and Practice Associated with COVID-19 Among School Students in Bharatpur, Chitwan District of Nepal

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Authors Contribution Statement:

Conceptualization: DS, MK & SS. Methodology: DS, SB, AG, MK & SS. Software: DS & SK. Validation: DS, SK. Formal Analysis: SK. Investigation: DS, SB, AG, MK & SS. Resources: DS & SK. Data Curation: DS, SB, AG, MK & SS. Writing – Original Draft: DS, AG & SK. Writing – Review & Editing: DS & SK. Visualization: DS & SK. Supervision: SK. Project Administration: DS.

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Discussion Points:

1. During infectious disease outbreak, a study on knowledge, attitude, and practices of the public can be pivotal to improve communication efforts by clinicians and public health officials
2. KAP studies can understand the perception of travel-associated infectious diseases and vaccine-preventable diseases

ABSTRACT

Background: The emergence of the novel coronavirus in December 2019, now named SARS-CoV-2, has reached the pandemic level. The ongoing pandemic has already infected more than twenty-nine million people with a global death tally of over nine hundred thousand as of Mid-September 2020. The knowledge, attitude, and practice (KAP) of people towards this disease is important to understand to limit its transmission.

Methods: This cross-sectional study was conducted among 101 secondary level students in Bharatpur, Chitwan, Nepal to assess their KAP.

Results: The majority of the students were found to be knowledgeable of the timeline of the first outbreak (92.08%), and nearly three-fourth participants were aware of the hand-washing duration of 20 seconds (73.27%). The knowledge of the presence of disease in Nepal (50.50%), the causative agent of disease (65.53%), and symptoms (57.43%) showed that there is significant knowledge gap among participants. The good proportion of participants were found to have a positive attitude towards the prevention and control of the disease. The majority of the respondents reported using face mask (77.23%), adopting hand-washing measures (79.21%) as preventive measures for COVID-19. The majority of the students were highly concerned about the disease.

Conclusion: In summary, secondary level students of Chitwan, Nepal were found to have fair knowledge and understanding of the disease, showed a moderately positive attitude towards preventive measure and reported appropriate preventive practices against COVID-19. It is recommended that a similar study with a wider population be conducted to assess KAP of Nepalese people towards COVID-19.

Key Words: Awareness, COVID-19, Novel Coronavirus, SARS-CoV-2, School students.

INTRODUCTION

Several cases of pneumonia of unknown etiology and origin was reported on 31 December 2019, in Wuhan City, Hubei province in China.[1] Patients with clinical symptoms of dry cough, dyspnea, and fever were presented with a positive travel history to Wuhan's Huanan Seafood Wholesale Market.[2] On 7 January 2020, the causative agent for this unknown disease was identified as a novel type of coronavirus, and on 11 February 2020, the International Committee on Taxonomy of Viruses (ICTV) named it as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).[3] Later, the World Health Organization (WHO) announced "COVID-19" as the name of the disease on 11 February 2020.[3] On 30 January 2020, the WHO declared this epidemic as a Public Health Emergency of International Concern (PHEIC) under International Health Regulation (2005).[4] On 11 March 2020, the WHO declared the COVID-19 outbreak as a pandemic.[5] By Mid-September of 2020, this disease had spread to over 216 countries and territories across the world infecting more than twenty nine million people and nearly a million deaths. As the disease is still evolving, the magnitude of the infection and death are yet to be known.[6]

Nepal is no exception to this global threat. Nepal is particularly vulnerable as it borders with China from where the infection started and India where the disease is rapidly spreading.[7] Likewise, thousands of Nepalese migrant workers are scattered throughout the world, including Gulf countries, European nations, USA, and Australia, who are struggling with COVID-19. In the Global Health Security Index, Nepal ranks 111th among 195 countries and do not have adequate human and medical resources and weak health system to act upon such a medical emergency.[8] As expected, the COVID-19 virus entered Nepal and the first case was confirmed on January 23, 2020[9] in a 32-year-old male Nepalese student who returned from Wuhan, China on January 13, 2020.[10] The second case was detected on 22 March 2020 in a Nepalese female who returned to Nepal on 17 March 2020 from France via Doha, Qatar.[11] After that, more than 64,000 confirmed cases and over 400 deaths have been identified until September 20.[12]

A study on knowledge, attitude, and practices (KAP) to understand the perception and behavior of people during an infectious disease outbreak can be pivotal to improve awareness and communication efforts by clinicians and public health officials.[13] This study was undertaken to assess the knowledge, attitude, and practices associated with COVID-19 preventive measures among high school students in the Chitwan district of Nepal.

MATERIALS AND METHODS

Study Design, Sample Size and Sampling Protocol

This is a cross-sectional study conducted using a pre-tested structured questionnaire among 101 urban students of grade 8 and 9 of in one of the schools in Bharatpur, Chitwan district during the second week of March 2020.

Questionnaire Design and Administration

Questionnaire was prepared by medical students analyzing the scenario of COVID19 in Nepal and target population. Questionnaire was validated by pretesting in 10% of the students. At first school was purposively selected and teachers and school principle were explained about our study. They agreed to conduct the survey among their students. The following information was collected: demographic profile of the students such as age and sex; knowledge about COVID-19 such as to cause, signs and symptoms, mode of transmission, incubation

period, vaccination and treatment; information related to the outbreak and situation in Nepal and attitudes and perceptions towards the disease, its prevention, and control measures were assessed. Besides, participant's perception of government actions and precautions to be followed by the infected person was assessed through twelve statements with choices given as "strongly agree," "agree," "neutral," "disagree," or "strongly disagree." The questions were close-ended. Questions were designed in English but asked in the Nepali language. After the questionnaire was filled, an awareness session was conducted on COVID-19 for an hour by veterinary interns. Ethical approval of the study was obtained from the Institutional Review Committee at Chitwan Medical College. Informed consent was obtained from the students and data were anonymized and analyzed at the aggregated level.

Data Management and Analysis

Collected data were entered in Microsoft Excel 2016, and statistical analysis was conducted using Epi Info 7.2.3.1 developed by the Center for Disease Control of the United States. Means were calculated for continuous variables, while frequencies were calculated for categorical responses.

RESULTS

A total of 101 students (58 male and 43 female) participated in the survey. The mean age of the respondents was 14.8 years (Range 13-17 years). The survey showed that 67.3% of respondents had heard about COVID-19. The majority of the respondents (73.3%) were aware that COVID-19 is a viral infection while 8.9% of students thought it was caused by bacteria while 7.8% of students believed that it is caused by both virus and bacteria. More than two-thirds of the participants (69.3%) first came to know about COVID-19 from social media, while 8.9% heard from television and 5.9% from family members. Half of the participants (50.5%) were aware that the case of COVID-19 was also detected in Nepal. The majority (92.1%) were aware that this disease started in Wuhan, China.

Two participants had family members/relatives abroad who were infected with COVID-19. More than half of the participants considered it a fatal disease (58.4%) with respiratory signs (65.5%). The majority of students (54.5%) responded that they do not fear to go outside in public areas. Above 40% respondents (43.6%) believed that people with a weak immune system are at high risk of the disease, while 26.7% believed older people are at higher risk. A large part of the respondents (73.3%) were aware that the duration of the hand-washing should be at least 20 seconds to prevent the disease. Around one-third (28.7%) students believed that COVID-19 could be transmitted through infected animal to healthy human, carrier human to a healthy human, infected human to healthy human or carrier animal to healthy human. Nearly 40% respondents (39.6%) were neutral regarding the increasing risk of disease having pet animals in the home, while 17.8% strongly agreed, 18.8% agreed, 15.8% disagreed and 7.9% strongly disagreed. The majority of the respondents (59.4%) were not sure about treatment, and the maximum (41.6%) believed there is no vaccination of the disease (Table 1). Majority of the students believed that COVID-19 could be transmitted through the animal source (87.1%), contact with infected people who had no symptoms (53.5%), touching of contaminated surfaces (75.2%), infected droplets (96.0%), contaminated food and water (77.2%), contaminated fomites (64.4%), physical contact with an infected person (84.1%) and bite of the mosquito (50.5%) (Table 2).

Students' attitude regarding prevention and control of COVID-19 were found generally positive. More than half of the students strongly agreed to avoid contact with unhealthy people (57.4%), boosting immunity (52.5%), following hygienic practices (59.4%), use of proper medical service (53.5%), quarantine (51.5%) and hand wash with soap and water (59.4%) as prevention and control of the disease. Less than half of the respondents strongly agreed, avoiding touching of eyes, nose, and mouth with unwashed hands (39.6%), awareness (46.5%), education (46.5%), practice food safety (49.5%) and use of hand sanitizer (37.6%) for prevention and control. In total, 31.7% strongly agreed, 33.7% agreed, 24.8% were neutral, 5.9% disagreed and 3.9% strongly disagreed regarding unprotected contact with live wild or farm animals. 23.8% strongly agreed, 12.9% agreed, were neutral 28.7%, 19.8% disagreed and 14.9% strongly disagreed to avoid contact with healthy people for the prevention and control COVID-19 (Table 3).

Little above 50% of the students (52.5%) were adopting a high level of precautions, while 24.8% were following minimal precautions, 11.9% did not follow any precautions, and 10.9% believed in supernatural power to fight against COVID-19. More than half of the respondents (52.5%) left eating meat products; 60.4% were avoiding normal activities; and 73.3% were avoiding frequent touching of mouth, eye, and nose. A large number of students (77.2%) were reported using a face mask and adopting hand-washing measures (79.2%) to be protected from the COVID-19. The vast majority of the students (81.2%) were covering mouth and nose with a tissue while sneezing and using tissue paper while coughing (70.3%) and disposing of it in the trash after its use (Table 4).

More than half of the students (57.4%) strongly agreed that the government should restrict travel, isolate positive cases (34.7%), close the educational institutions if positive cases increases (47.5%), and restrict people arrival from the infected areas (46.5%). Likewise, one-third of the study population (38.6%) agreed on the isolation of positive cases. Less than half of the population (41.6%) strongly agreed, 15.8% agreed, while 20.8% were neutral and 14.9% strongly disagree on staying at home during a pandemic. (Table 5). The majority of the students strongly agreed on covering mouth and nose while cough and sneeze (63.4%) and seeking medical services (65.3%) if they are sick. Less than half of the respondents (41.68%) strongly agreed and 38.6% agreed to follow cleanliness and disinfection of frequently touched objects and surfaces. Almost half of the students (51.5%) strongly disagreed on travel of sick people (Table 6).

DISCUSSION

This is the first KAP study towards COVID-19 among Nepalese students to the best of our knowledge. This study found that there is a significant knowledge gap related to COVID-19 among high-school students in Chitwan, Nepal and fair proportion of students were aware regarding the protective measures they need to take to prevent the spread of the disease. The finding showed that a good proportion of students need awareness regarding knowledge, their attitudes and practices.

This study shows that more than 72% of students were aware that virus is the causative agent for the COVID-19. In a similar survey conducted among high school students in Nepal on avian influenza, 52.5% student had correctly answered virus as the cause of the disease.[14] This shows that though this disease is relatively new, even good number of high school students are already aware on this. In our study, the majority of the students

had general knowledge about COVID-19 like first outbreak, cases in Nepal, type of disease symptoms, and hand wash duration. This shows that most of them had good knowledge of the disease which might be due to the increased access to social media, from where 69.3% of responded acquired information on COVID-19. Similar to our study, undergraduate medical and dental students in Lalitpur, Nepal also had good knowledge about COVID19 pandemic.[15] However, a study conducted among Nepalese residents highlighted the need of awareness and education on COVID-19.[16] Consistent with our study, social media was the most pursued platform (74.8%) to acquire COVID-19 information among the young adults of Karachi, India.[17] In a study conducted in China, the mean knowledge score was 90%,[18] which makes sense as this disease started in China and awareness level among Chinese were higher. In a web-based cross-sectional study among Nepalese people conducted by Singh et al., 2020, knowledge score was 10.0 (±3.0 IQR) and only half participants knew about quarantine concept and safe distance to prevent disease transmission.[19]

Only one-third of students correctly responded on the incubation period of the disease which indicates though they have heard the name of the disease and causative agent, their depth of knowledge is limited. As the knowledge of incubation period is important from public health point of view and limited knowledge observed among students, it warrants for increased awareness program among the students who are also major source of information in several households in low-income countries like Nepal. In our study, 32.67% students knew that there was no specific treatment for COVID-19, while 59.41% were not sure about treatment. In a study among Italian undergraduate students, 70% respondents suggested there was no treatment of COVID-19.[20]

Our study also showed that majority of students had never heard about term zoonosis. As more than 70% of infectious disease in humans originate in animal population, mostly wildlife, it would be helpful to include one lesson on zoonotic diseases in the high-school curriculum. The majority of students were knowledgeable on disease transmission routes such as touching of contaminated surfaces, infected droplets, contaminated fomites and physical contact with an infected person. Similar to our study, majority of young adults of Karachi were knowledgeable in source of transmission and preventive measure.[17]

This knowledge level shall be helpful if the disease spreads to their community. A large portion of the student believed COVID-19 could be transferred through the animal source, and half of them were avoiding meat products. In the study of Singh et al. (2020), 70% participants responded that restricting consumption of poultry and other meat can prevent the spread of COVID-19.[19] Though there is no scientific evidence that domestic animals play any role in COVID transmission, the fake news circulating in social media that the disease may be transmitted by eating meat might have contributed in this misconception. This has caused huge losses in the animal husbandry upon which the livelihood of tens of thousands of people depends on. This shows that government need to convince people that eating meat of domestic animal is safe. More than half of the students believed mosquitoes can transfer COVID-19 which may be due to a recent outbreak of dengue, mosquito-borne disease, in Chitwan district.[21]

The attitude of school students toward prevention and control suggests that the majority of them had positive attitude towards the precautionary measures they need to take to protect themselves from the disease. The majority of the students strongly agreed to avoid contact with unhealthy people, boosting immunity, following

hygienic practices, use of proper medical service, quarantine, and hand wash with soap and water as the preventive measure of the disease. Consonant to our study, majority of the respondents had positive perception towards universal preventive measure of COVID-19 in the study of Singh et al., 2020.[19]

The outbreak was rapidly spreading all over the world, and Nepal had only one recovered positive case when the survey was conducted. Many people were concerned about disease, they tried to acquire more knowledge about the disease through sources including social media. Online news was broadcasting about do's and don'ts of the disease. The reason for this observation might be associated with increased access of students to social media such as Facebook through smartphones.

In this study, the majority of the students claimed they were taking high precautions against COVID-19 which indicates practice level was satisfactory. The majority of them were using face masks (77.23%), a large portion of them claimed of regular hand-wash (79.21%) and were avoiding frequent touching of mouth, eye, and nose. However, it is not sure if they have been practicing it or not in real life. In a study among social media users in Jammu and Kashmir, India 87% participants reported washing hands with soap and water regularly and 73% reported wearing mask regularly.[22] In a study among medical students of Iran, 96.7% were washing hand more often, 93.8% decreased the use of public transportation, and 97.1% were avoiding coughing around people.[23] However, in a study among public of Malaysia, only 51.2% participants were wearing mask and 87.8% were practicing hand washing.[24]

Knowledge governs toward a positive attitude of the individual and their practices, but not always. Sometime fear may also play a crucial role as more than half think COVID-19 is a fatal disease, and 45.5% of students were already in fear to go in public areas. The majority of the students were highly concerned about the disease, (Table 5) and also most of them were aware of precautions need to be taken by an infected person (Table 6).

The limitation of this study is relatively smaller sample size and coverage of only one school. This was mainly due to the imposition of lockdown by the Government of Nepal on the second day of the survey, which restricted movement to survey students from other schools. As the sample size is relatively small that include 101 students from a single school, it may underestimate or overestimate the knowledge, attitudes, and practices among the high school students.

CONCLUSION

This study showed that the secondary level students had basic understanding of COVID-19, had a moderately positive attitude towards preventive measures, and a good proportion of participants were adopting appropriate practices and were concerned toward the COVID-19 outbreak. There were some fundamental gaps in knowledge and attitudes among the students indicating the necessity of awareness campaigns. Further, it is suggested to conduct a study in wider population including rural areas, people from different age group and education level is recommended to assess knowledge, attitude and practice toward the COVID-19 in Nepal.

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1 **TABLES.**

2 **Table 1**. Knowledge and understanding of students on COVID-19.

Characteristics		Frequency (Percentage %)	95% CI
Have your family members or relatives abroad suffered from COVID-19?			
	Yes	2 (1.98%)	0.24-6.97%
	No	99 (98.02%)	93.03-99.76%
Have you heard of COVID-19?			
	Yes	68 (67.33%)	57.28-76.33%
	No	33 (32.67%)	23.67-42.72%
Have there been any cases of COVID-19 in Nepal?			
	Yes	51 (50.50%)	40.36-60.60%
	No	50 (49.50%)	39.40-59.64%
What is the cause of COVID-19?			
	Virus	73 (72.28%)	62.48-80.72%
	Bacteria	9 (8.91%)	4.16-16.24%
	Both	8 (7.82%)	3.48-15.01%
	None	3 (2.97%)	0.62-8.44%
	All	8 (8.792%)	3.48-15.01%
From where did you learn about the COVID-19 for the first time?			
	Family	6 (5.94%)	2.21-12.48%
	Friends/Relatives	5 (4.95%)	1.63-11.18%
	Newspaper	2 (1.98%)	0.24-6.97%
	Radios	5 (4.95%)	1.63-11.18%
	School	2 (1.98%)	0.24-6.97%
	Social Media	70 (69.31%)	59.34-78.10%
	Teachers	2 (1.98%)	0.24-6.97%
	Television	9 (8.91%)	4.16-16.24%
Do you think COVID-19 is a fatal disease?			
	Yes	59 (58.42%)	48.18-68.14%
	No	42 (41.58%)	31.86-51.82%
What is coronavirus disease 2019 (COVID-19)?			
	Respiratory illness	66 (65.53%)	55.23-74.4%
	Gastrointestinal illness	1 (0.99%)	0.03-5.395%
	All	10 (9.90%)	4.85-17.46%
	Not sure	24 (23.76)	15.86-33.26%
Do you fear to go to the public areas due to COVID-19?			
	Yes	46 (45.54%)	35.69-55.76%
	No	55 (54.46%)	44.24-64.40%
Which group of people are at higher risk of getting very sick from this illness?			
	Children	8 (7.92%)	3.48-15.01%
	Old People	27 (26.73%)	18.41-36.46%
	People with chronic medical conditions, heart and lung disease and diabetes	22 (21.78%)	14.18-31.10%
	People with a weak immune system	44 (43.56%)	33.72-53.80%
Had you heard about Coronavirus before it became epidemic?			
	Yes	25 (24.75%)	16.70-34.33%
	No	76 (75.25%)	65.67-83.39%
Have you heard about MERS and SARS?			
	Yes	32 (31.68%)	22.78-41.69%
	No	69 (68.32%)	58.31-77.22%
How long should we wash our hands with soap water?			
	At least 20 seconds	74 (73.27%)	63.54-81.59%
	For 7 seconds	13 (12.87%)	7.04-21.00%
	Less than 7 seconds	4	1.09-9.83%

		(3.96%)	
	Not Sure	10 (9.90%)	4.85-17.46%
How can COVID-19 be transmitted?			
	From infected animal to healthy human (Zoonotic Disease)	25 (24.75%)	16.70-34.33%
	From carrier human to healthy human	2 (1.98%)	0.24-66.97%
	From infected human to healthy human	19 (18.81%)	11.72-27.81%
	From carrier animal to healthy human	4 (3.96%)	1.09-9.83%
	Both 1 & 2	16 (15.84%)	9.33-24.45%
	All	29 (28.71%)	20.15-38.57%
	Not Sure	6 (5.94%)	2.21-12.48%
What is the incubation period for COVID-19?			
	14-21 days after exposure	9 (8.91%)	4.16-16.24%
	1-7 days after exposure	19 (18.81%)	11.72-27.81%
	2-14 days after exposure	28 (27.72%)	19.28-37.52%
	Not Sure	45 (44.55%)	34.66-54.78%
Having a family pet increases your risk of contracting COVID-19, do you agree?			
	Strongly Agree	18 (17.82%)	10.92-26.70%
	Agree	19 (18.81%)	11.72-27.81%
	Neutral	40 (39.60%)	30.01-49.83%
	Disagree	16 (15.84%)	9.33-24.25%
	Strongly Disagree	8 (7.92%)	3.48-15.01%
Is COVID-19 the same as common cold/flu?			
	Yes	51 (50.50%)	40.36-60.60%
	No	50 (49.50%)	39.40-59.64%
What are the symptoms of COVID-19?			
	Cough	9 (8.91%)	4.16-16.24%
	High Temperature	4 (3.96%)	1.09-9.83%
	Runny Nose	10 (9.90%)	4.85-17.46%
	Shortness of Breath	3 (2.97%)	0.62-8.44%
	Sneezing	5 (4.95%)	1.63-11.88%
	Both high temperature and shortness of breath	12 (11.88%)	6.29-19.83%
	All	58 (57.43%)	47.19-67.21%
Is there a specific antiviral treatment for COVID-19?			
	Yes	8 (7.92%)	3.84-15.01%
	No	33 (32.67%)	23.67-42.72%
	Not sure	60 (59.41%)	49.18-69.07%
Is there a vaccine against COVID-19?			
	Yes	27 (26.73%)	18.41-36.46%
	No	42 (41.58%)	31.86-51.82%
	Not sure	32 (31.68%)	22.78-41.69%
Where did the COVID-19 outbreak occur?			
	Beijing, China	2 (1.98%)	0.24-6.97%
	Shanghai, China	3 (2.97%)	0.62-8.44%
	Shenzhen, China	3 (2.97%)	0.62-8.44%
	Wuhan, China	93 (92.08%)	84.99-96.52%
Have you ever heard about term zoonosis?			
	Yes	32 (31.68%)	22.78-41.69%
	No	69 (68.32%)	58.31-77.22

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Table 2. Students' knowledge about transmission of COVID-19.

SN	Characteristics		Frequency (Percentage %)	95% CI
1	**Animal Source**			
		Yes	88 (87.13%)	79.00-92.96%
		No	13 (12.97%)	7.04-21.00%
2	**Contact with infected people who had no symptom**			
		Yes	54 (53.47)	43.27-63.45%
		No	47 (46.53)	36.55-56.73%
3	**Touching of contaminated surfaces**			
		Yes	76 (75.25%)	65.67-83.30%
		No	25 (24.75%)	16.70-34.33%
4	**Infected droplets**			
		Yes	97 (96.04%)	90.17-98.91%
		No	4 (3.96%)	1.09-9.83%
5	**Contaminated food and water**			
		Yes	78 (77.23%)	67.82-84.98%
		No	23 22.77%)	15.02-32.18%
6	**Contaminated fomites**			
		Yes	65 (64.36%)	54.21-73.64%
		No	36 (35.64%)	26.36-45.79%
7	**Physical contact with an infected person**			
		Yes	85 (84.14%)	75.55-90.67%
		No	16 (15.84%)	9.33-24.45%
8	**Bite of mosquito**			
		Yes	51 (50.50%)	40.36-60.60%
		No	50 (49.50%)	39.40-59.64%

1 **Table 3.** Students' attitudes toward preventive measures and control of COVID-19.

SN	Characteristics		Frequency (Percentage %)	95% CI
1	**Avoid unprotected contact with live wild or farm animals**			
		Strongly Agree	32 (31.68%)	22.78-41.69%
		Agree	34 (33.66%)	24.56-43.75%
		Neutral	25 (24.75%)	16.70-34.33%
		Disagree	6 (5.94%)	2.21-12.48%
		Strongly Disagree	4 (3.96%)	1.09-9.83%
2	**Avoid contact with healthy people**			
		Strongly Agree	24 (23.76%)	15.86-33.26%
		Agree	13 (12.87%)	7.04-21%
		Neutral	29 (28.71%)	20.15-38.57%
		Disagree	20 (19.80%)	12.54-28.91%
		Strongly Disagree	15 (14.85%)	8.56-23.31%
3	**Avoid contact with unhealthy people**			
		Strongly Agree	58 (57.43%)	47.19-67.21%
		Agree	19 (18.81%)	11.72-27.81%
		Neutral	16 (15.84%)	9.33-24.45%
		Disagree	5 (4.95%)	1.63-11.18%
		Strongly Disagree	3 (2.97%)	0.62-8.44%
4	**Avoid touching your eyes, nose, and mouth with unwashed hands**			
		Strongly Agree	40 (39.60%)	30.01-49.83%
		Agree	31 (30.69%)	21.90-40.66%
		Neutral	24 (23.76%)	15.86-33.26%
		Disagree	4 (3.96%)	1.09-9.83%
		Strongly Disagree	2 (1.98%)	0.24-6.97%
5	**Awareness**			
		Strongly Agree	47 (46.53%)	36.55-56.73%
		Agree	26 (25.74%)	17.56-35.40%
		Neutral	16 (15.84%)	9.33-24.45%
		Disagree	9 (8.91%)	4.16-16.24%
		Strongly Disagree	3 (2.97%)	0.62-8.44%
6	**Boosting Immunity**			
		Strongly Agree	53 (52.48%)	42.30-62.51%
		Agree	20 (19.80%)	12.54-28.91%
		Neutral	24 (23.76%)	15.86-33.26%
		Disagree	3 (2.97%)	0.62-8.44%
		Strongly Disagree	1 (0.99%)	0.62-8.44%
7	**Early diagnosis and treatment**			
		Strongly Agree	34 (33.66%)	24.56-43.75%
		Agree	36 (35.64%)	26.36-45.79%
		Neutral	19 (18.81%)	11.72-27.81%
		Disagree	5 (4.95%)	1.63-11.18%
		Strongly Disagree	7 (6.93%)	2.83-13.76%
8	**Education**			
		Strongly Agree	47 (46.53%)	36.55-56.73%
		Agree	22 (21.78%)	14.18-31.10%
		Neutral	20 (19.80%)	12.54-28.91%

		Disagree	10 (9.90%)	4.85-17.46%
		Strongly Disagree	2 (1.98%)	0.24-6.97%
9	**Following hygienic practices**			
		Strongly Agree	60 (59.41%)	49.18-69.07%
		Agree	20 (19.80%)	12.54-28.91%
		Neutral	11 (10.89%)	5.56-18.65%
		Disagree	7 (6.93%)	2.83-13.76%
		Strongly Disagree	3 (2.97%)	0.62-8.44%
10	**Isolation**			
		Strongly Agree	28 (27.72%)	19.28-37.52%
		Agree	36 (35.64%)	26.36-45.79%
		Neutral	29 (28.71%)	20.15-38.57%
		Disagree	6 (5.94%)	2.21-12.48%
		Strongly Disagree	2 (1.98%)	0.24-6.97%
11	**Lockdown**			
		Strongly Agree	30 (29.70%)	21.02-39.61%
		Agree	27 (26.73%)	18.41-36.46%
		Neutral	32 (31.68%)	22.78-41.69%
		Disagree	8 (7.92%)	3.48-15.01%
		Strongly Disagree	4 (3.96%)	1.09-9.83%
12	**Proper medical service**			
		Strongly Agree	54 (53.47%)	43.27-63.45%
		Agree	18 (17.82%)	10.92-26.70%
		Neutral	19 (18.81%)	11.72-27.81%
		Disagree	6 (5.94%)	2.21-12.48%
		Strongly Disagree	4 (3.96%)	1.09-9.83%
13	**Monitoring and Surveillance**			
		Strongly Agree	31 (30.69%)	21.90-40.66%
		Agree	32 (31.68%)	22.78-41.69%
		Neutral	28 (27.72%)	19.28-37.52%
		Disagree	5 (4.95%)	1.63-11.8%
		Strongly Disagree	5 (4.95%)	1,63-11.18%
14	**Practice food safety**			
		Strongly Agree	50 (49.50%)	39.40-59.64%
		Agree	28 (27.72%)	19.28-37.52%
		Neutral	17 (16.83%)	10.12-25.58%
		Disagree	5 (4.95%)	1.63-11.18%
		Strongly Disagree	1 (0.99%)	0.03-5.39%
15	**Quarantine**			
		Strongly Agree	52 (51.49%)	41.33-61.55%
		Agree	30 (29.70%)	21.02-39.61%
		Neutral	16 (15.84%)	9.33-24.45%
		Disagree	0	0
		Strongly Disagree	3 (2.97%)	0.62-8.44%
16	**Use alcohol-based sanitizer**			
		Strongly Agree	38 (37.62%)	28.18-47.82%
		Agree	19 (18.81%)	11.72-27.81%
		Neutral	30 (29.70%)	21.02-39.61%
		Disagree	7 (6.93%)	2.83-13.76%

		Strongly Disagree	7 (6.93%)	2.83-13.76%
17	**Sealing the territory**			
		Strongly Agree	31 (30.69%)	21.90-40.66%
		Agree	33 (32.67%)	23.67-42.72%
		Neutral	24 (23.76%)	15.86-33.36%
		Disagree	7 (6.93%)	2.83-13.76%
		Strongly Disagree	6 (5.94%)	2.21-12.48%
18	**Stopping international flights**			
		Strongly Agree	37 (36.63%)	27.27-46.81%
		Agree	30 (29.70%)	21.02-39.61%
		Neutral	21 (20.79%)	13.36-30.01%
		Disagree	8 (7.92%)	3.48-15.01%
		Strongly Disagree	5 (4.95%)	1.63-11.18%
19	**Wash your hands with soap and water**			
		Strongly Agree	60 (59.41%)	49.18-69.07%
		Agree	21 (20.79%)	13.36-30.01%
		Neutral	13 (12.87%)	7.04-21.00%
		Disagree	4 (3.96%)	1.09-9.83%
		Strongly Disagree	3 (2.97%)	0.62-8.44%

1 **Table 4**. The practice of students toward COVID-19.

SN	Characteristics		Frequency (Percentage %)	95% CI
1	**Precautions**			
		Believing God	11 (10.89%)	5.56-18.65%
		Taking a High Level of Precautions	53 (52.48%)	42.30-62.51%
		Taking Minimal precaution	25 (24.75%)	16.70-34.33%
		Taking No Precaution	12 (11.88%)	6.29-19.83%
2	**Adopting meat products**			
		Yes	48 (47.52%)	37.49-57.70%
		No	53 (52.488%)	42.30-62.52%
3	**Avoiding normal activities during flu-like symptoms**			
		Yes	61 (60.40%)	50.17-69.99%
		No	40 (39.60%)	30.01-49.83%
4	**Avoiding frequent touching of mouth, eye, and nose**			
		Yes	74 (73.27%)	63.54-81.59%
		No	27 (26.73%)	18.41-36.46%
5	**Using a face mask**			
		Yes	78 (77.23%)	67.82-84.98%
		No	23 (22.77%)	15.02-32.18%
6	**Frequent hand washing**			
		Yes	80 (79.21%)	67.82-84.98%
		No	21 (20.77%)	15.02-32.18%
7	**Covering mouth and nose with a tissue while sneezing and coughing**			
		Yes	82 (81.19%)	72.18-88.28%
		No	19 (18.18%)	11.72-27.18%
8	**Disposal of tissue into the trash after its use**			
		Yes	71 (70.30%)	60.39-78.98%
		No	30 (29.70%)	21.02-39.61%

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1 **Table 5**. Concerns of students on the COVID-19 outbreak.

SN	Characteristics		Frequency (Percentage %)	95% CI
1	**The government should restrict travel from and to the areas of the disease**			
		Strongly Agree	58 (57.43%)	47.19-67.21%
		Agree	19 (18.81%)	11.72-27.81%
		Neutral	14 (13.86%)	7.79-22.16%
		Disagree	4 (3.96%)	1.09-9.83%
		Strongly Disagree	6 (5.94%)	2.21-12.48%
2	**The government should isolate positive cases**			
		Strongly Agree	35 (34.65%)	25.46-44.77%
		Agree	39 (38.61%)	29.09-48.82%
		Neutral	17(16.83%)	10.12-25.58%
		Disagree	3 (2.97%)	0.62-8.44%
		Strongly Disagree	7 (6.93%)	2.83-13.76%
3	**The government should be ready to close the educational institutions if the positive cases increases**			
		Strongly Agree	48 (47.52%)	37.49-57.70%
		Agree	25 (24.75%)	16.70-34.33%
		Neutral	18 (17.82%)	10.92-26.70%
		Disagree	6 (5.9%)	2.21-12.48%
		Strongly Disagree	4 (3.96%)	1.09-9.83%
4	**The government should stop inviting people from areas where the disease is frequent**			
		Strongly Agree	47 (46.53%)	36.55-56.73%
		Agree	27 (26.73%)	18.41-36.46%
		Neutral	13 (12.87%)	7.04-21.00%
		Disagree	5 (4.95%)	1.63-11.18%
		Strongly Disagree	9 (8.91%)	4.16-16.24%
5	**We should avoid leaving home**			
		Strongly Agree	42 (41.58%)	31.86-51.82%
		Agree	16 (15.84%)	9.33-24.45%
		Neutral	21 (20.79%)	13.36-30.01%
		Disagree	7 (6.93%)	2.83-13.76%
		Strongly Disagree	15 (14.85%)	8.56-23.31%

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1 **Table 6.** Concerns of students on measures to be applied by an infected person.

SN	Characteristics		Frequency (Percentage %)	95% CI
1	**Clean and disinfect frequently touched objects and surfaces**			
		Strongly Agree	42 (41.58%)	31.86-51.82%
		Agree	39 (38.61%)	29.09-48.82%
		Neutral	6 (5.94%)	2.21-12.48%
		Disagree	13 (12.87%)	7.04-21.00%
		Strongly Disagree	1 (0.99%)	0.03-5.39%
2	**Cover a cough or sneeze with a tissue**			
		Strongly Agree	64 (63.37%)	53.19-72.73%
		Agree	14 (13.86%)	7.78-22.16%
		Neutral	19 (18.81%)	11.72-27.81%
		Disagree	2 (1.98%)	0.24-6.97%
		Strongly Disagree	2 (1.98%)	0.24-6.97%
3	**Throw the tissue in the trash after using it**			
		Strongly Agree	43 (42.57%)	32.79-52.81%
		Agree	33 (32.67%)	23.67-42.72%
		Neutral	12 (11.88%)	6.29-19.83%5
		Disagree	12 (11.88%)	6.29-19.83%
		Strongly Disagree	1 (0.99%)	0.03-5.39%
4	**Follow medical services**			
		Strongly Agree	66 (65.35%)	55.23-74.54%
		Agree	13 (12.87%)	7.04-21.00%
		Neutral	8 (7.92%)	3.48-15.01%
		Disagree	7 (6.93%)	2.83-13.76%
		Strongly Disagree	7 (6.93%)	2.83-13.76%
5	**Make a group of sick people and travel**			
		Strongly Agree	11 (10.89%)	5.56-18.65%
		Agree	15 (14.85%)	8.56-23.31%
		Neutral	16 (15.84%)	9.33-24.45%
		Disagree	7 (6.93%)	2.83-13.76%
		Strongly Disagree	52 (51.49%)	41.33-61.55%
6	**Stay self-isolated**			
		Strongly Agree	57 (56.44%)	46.20-66.28%
		Agree	18 (17.82%)	10.92-26.70%
		Neutral	20 (19.80%)	12.54-28.91%
		Disagree	4 (3.96%)	1.09-9.83%
		Strongly Disagree	2 (1.98%)	0.24-6.97%

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