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Knowledge, Attitude and Practices towards COVID-19 among Medical Students

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ABSTRACT

Introduction: In late December 2019, COVID-19 was first seen in Wuhan, China which has been spreading to the whole world in subsequent months. Till the time this manuscript is written, COVID-19 has infected more than 2million people and killed more than 129843 people all around the world. First step in fighting against COVID-19 is to have appropriate knowledge and correct attitude and practices.

Methods: This study was done to know the knowledge, attitude and practices on COVID-19 amongst medical students of Kathmandu University School of Medical Sciences (KUSMS) using internet based structured questionnaires. The survey was conducted from April 2, 2020 to April 09, 2020 (one-week after lock down following COVID-19 spread in Nepal). Structured questionnaire was used by the Medical students of Kathmandu University Hospital. There were 19 questionnaires regarding Knowledge, three regarding Attitude and five regarding Practices.

Results: Out of 631 responders, the mean correct Knowledge score was 83.4%. Of the 19 Knowledge questionnaires, the mean score was 15.8 (Range 0-19). Regarding the Attitude questionnaire, 81.7% responders had a positive attitude toward COVID-19 being controlled globally in near future. Majority of the responders wore masks when going out in recent days (96%) and 97.6% of responders didn't go to crowded places during this period.

Conclusion: Medical Students have good knowledge, optimistic attitude and appropriate preventive practices towards COVID-19. Better knowledge is associated with online or onsite training obtained about COVID-19 outbreaks. Optimistic Attitude and appropriate preventive practices was associated with better knowledge of the responders.

Keywords: COVID-19; Knowledge, Attitude and Practices; Nepal.

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INTRODUCTION

In late December 2019, an unexplained mass pneumonia case occurred in Wuhan, China which later on January 7, 2020, the causative pathogen was identified as a new corona virus (2019-nCoV) [1] which was termed by WHO as COVID-19.[2]The rapid increase in incidence and spread proved that the virus is highly contagious.[3]

Chaolin Huang and colleagues [4] reported clinical features of fever, dry cough, and malaise in prodromal phase of infection in first 41 patients admitted to the designated hospital in Wuhan. Common laboratory findings were Lymphopenia and Bilateral Ground-Glass opacities on chest CT scan.

People adherence to safety measures is largely affected by the Knowledge (K), Attitude (A) and Practice (P) towards the COVID-19. To facilitate the management of outbreak of this disease in Nepal, it is needed to know the public awareness of COVID-19. In this study we aim to evaluate the KAP towards the COVID-19 among medical students of KUSMS during the early phase COVID-19 transmission.

METHODS

This survey was conducted from April 02 to April 09, 2020. This is the exact one-week period after the announcement of Lock Down in Nepal to fight against this viral spread. It was impossible to do community-based sampling at this time so we decided to do an online survey over the medical students of KUSMS Hospital. The Ethical committee of Kathmandu University School of Medical Sciences approved the study protocol.

We designed the questionnaire after reviewing various Guidelines. [5-8] The questionnaire had four parts, Demographic Variables, Knowledge, Attitude and Practice. A Google form was created with structured questionnaires and sent to all the medical students via the communication center of the Medical School, Class representatives and also via close contact with the authors.The participants had an option to agree or disagree with their participation in the study. Those participants who agreed were directed to the questionnaire form.

Collected data were entered and analyzed using SPSS 25.0 version. Descriptive Statistical analysis was done for Demographic variables. The Scalar Variables were expressed in Mean, along with Standard Deviation and Range. Frequency analysis was done in each KAP questionnaire and correct entries were expressed in percentage. For comparison of mean Knowledge score in group attending/Non attending training, independent Sample t test was done. The significance level (α) was set to 0.05 for all statistical tests. Chronbach's Alpha measure was used to determine the internal consistency of the questionnaire.[9]

RESULTS

Total of 631 Medical students participated in the online survey. Majority of the participants were in the age group of 18-65 Years. Among the participants 458 (72.6%) were Female and 228 (36.1%) participants had undertaken some sort of dedicated COVID-19 online or onsite course. Other Demographic characteristics are shown in Table 1.

The Mean COVID-19 Score was 15.85 (SD: 1.61, Range: 0-19). Overall, the correct rate on this knowledge test was 83.42%.The correct answer rate of the 19 Questions on COVID-19 Knowledge questionnaire was 40.7 (99.5%). (Table 2 - Table 4).

Mean knowledge score in participants who didn't attend online or onsite dedicated training on COVID-19 was 15.74 (SD 1.6, Range 10-19) while that in participants who had attended dedicated training was 16.04 (SD 1.47, Range 11-19). This difference was statistically significant (p=0.02). Further we classified the responders as Better Knowledge (Whose Knowledge Score was more than or Equal to 15) and Poor Knowledge towards COVID-19 (Whose Knowledge Score was less than 15). The correlation showed that two groups were statistically significant with p<0.01. (Table No. 5) In Figure 1, a bar diagram of the percentage of correct entries in different knowledge questionnaires is shown. We can observe K5 has least correct entries followed by K8 and K12.

The Majority of respondents showed positive attitude towards confidence of successfully controlling the COVID-19 (81.8%) globally however only 66.6% had confidence that Nepal will be able to win the battle against the COVID-19. 86.6% of responders didn't agree on a smaller number of cases till date due to any religious power. (Table No. 6).

The vast majority of participants had not visited any crowded place (97.6%). In our study, 96.0% of

responders mentioned that they wear a mask if they had to leave their house for any reason. Still there were 2.4 % of individuals who had visited crowded places even during lock down and 4.0 % of Participants didn't even wear masks when they were out of their house. Of the 4% responders who mentioned that they would not wear the mask while leaving their house, the mean K score was only 14.7 (S.D. 1.6, Range 12-17). Those individuals who practiced proper hand washing technique for 20 seconds were 97.3%. Responders have variable views on the type of mask to be worn for prevention of transmission of disease. We found that 69.6% of responders had a view on wearing a Surgical Mask, 16.6% thought that a local cloth made mask is enough for prevention and 12% thought N90/95 respirator mask was needed to prevent the transmission of disease. Interestingly, there were 11 individuals (1.7%) who didn't want to wear a mask if lockdown was over. Majority of responders were found to use soap and water followed by Alcohol based sanitizer for hand washing (65.6%) however 33.1% of the responders used only soap and water for hand sanitization. (Table No. 7)

Table 1. Demographic Characteristics of Participants

Characteristics		Frequency	Percentage
Gender	Male	173	27.4
	Female	458	72.6
Age Group	Less Than 18 Yrs	19	3.0
	More Than 18 Yrs	612	97
Marital Status	Married	12	1.9
	Unmarried	619	98.1
Province	Province 1	73	11.5
	Province 2	92	14.5
	Province 3	319	50.6
	Province 4	61	9.7
	Province 5	64	10.1
	Province 6	4	0.6
	Province 7	18	2.1
Dedicated Online/ On site Course Dedicated To COVID-19	Yes	228	36.1
	No	403	63.9

Table 2. Questionnaire of Knowledge towards COVID-19 (Symptoms)

Questions		Options	Number of entries (N=631)	Percentage
K1	**What Causes of COVID 19?**	Virus	628	99.4
		Bacteria	1	0.2
		Unknown organism	1	0.2
		I don't know	1	0.2
K2	**What are Symptoms of COVID 19?**	Dry cough	43	6.8
		Fever	87	13.8
		Running nose	1	0.2
		Sore throat	5	0.8
		I Don't Know	3	0.5
		All of the above	492	78.0
K3	**Which of the following symptoms is rarely seen in common cold but is very common in COVID-19?**	Sneezing	51	8.1
		Cough	25	4.0
		Fever	76	12.0
		Shortness of breath	476	75.4
		I Don't Know	3	0.5
K4	**How do people get COVID-19?**	Because of Improper Hygiene, not washing Hand Frequently	3	0.5
		Gets Transmitted from Disease People	39	6.2
		Recent Travel to the Epidemic area	8	1.3
		All of the above	579	91.8
		I Don't Know	2	0.3

Table 3. Questionnaire of Knowledge towards COVID-19: Transmission and Treatment

Questions		Options	Number of entries (N=631)	Percentage
K5	**Which part of the hand do you think is missed most commonly during proper hand washing?**	Tip of fingers	178	28.2
		Palm	5	0.8
		Wrist	132	20.9
		Back of palm	40	6.3
		In-between fingers	260	41.2
		I Don't Know	16	2.5
K6	**Early symptomatic and supportive treatment can help most patient recover from the infection.**	True	620	98.2
		False	5	0.8
		I Don't Know	6	1.0
K7	**Those who are elderly, have chronic illness or are obese gets serious illness?**	True	535	84.7
		False	83	13.2
		I Don't Know	13	2.1
K8	**Eating or Contacting Wild animals would result in high risk of COVID-19?**	True	257	40.7
		False	252	39.9
		I Don't Know	122	19.3
K9	**Patient with COVID-19 cannot infect others if fever is not present.**	True	19	3.0
		False	576	91.3
		I Don't Know	36	5.7
K10	**COVID-19 Virus spreads via respiratory droplets of infected individuals.**	True	614	97.3
		False	11	1.7
		I Don't Know	6	1.0
K11	**How can this disease be prevented?**	Regularly cleaning hands with alcohol-based sanitizer or soap water	4	6.0
		Maintain at least 1-meter distance when you meet someone	0	0.0
		Avoid touching Eyes, Nose and Mouth	0	0.0
		Cover your mouth and nose while coughing and sneezing	0	0.0
		Stay at home unless necessary	2	0.3
		Avoid Traveling to Pandemic Area	0	0.0
		All of the above	624	98.9
		I Don't Know	1	0.2
K12	**What Type of mask is required during this situation for the general public?**	General Surgical Mask*	349	55.3
		N95 mask and Respirator	272	43.1
		I Don't Know	10	1.6

Table 4. Questionnaire of Knowledge towards COVID-19: Prevention and Control

Questions		Options	Number of entries (N=631)	Percentage
K13	**It is not necessary for children and young adults to take Extra measures to prevent the infection by the COVID-19 virus.**	True	44	7.0
		False	581*	92.0
		I Don't Know	6	1.0
K14	**To prevent the infection by COVID-19, individuals should avoid going to crowded places such as stations and avoid taking public transportation**	True	619	98.1
		False	5	0.8
		I Don't Know	7	1.1
K15	**Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus**	True	628*	99.5
		False	1	0.2
		I Don't Know	2	0.3
K16	**People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the Isolation period is for 14 days.**	True	626*	99.2
		False	1	0.2
		I Don't Know	4	0.6
K17	**There has been Local transmission reported from infected persons in Nepal. What stage of Transmission is it?**	Stage 1	66	10.5
		Stage 2*	447	70.8
		Stage 3	20	3.2
		Stage 4	1	0.2
		I Don't Know	97	15.4
K18	**If you get a call from a suspected case of COVID-19 infection, what would you suggest?**	Get Isolated, put on a Surgical Mask and come to hospital for evaluation	629	99.7
		It will fade away, so you don't have to worry.	0	0
		Don't say anyone or you will be quarantined, hide from everyone	0	0
		I Don't Know	2	0.3
K19	**How Important is Contact Tracing?**	Contact Tracing is must in epidemic*	533	84.5
		Isolating and treating infected person is enough	29	4.6
		I Don't Know	69	10.9

Table 5. Correlation Between Better Knowledge Vs Poor Knowledge group

History of attaining training dedicated to COVID-19	Better knowledge group (More than equal to 15) N=507	Poor knowledge group (Less than 15) N=124	P=<0.01
No	309	94	
Yes	198	30	

Table 6. Questionnaire of Attitude towards COVID-19

	Questions	Options	Number of entries (N=631)	Percentage
A1	**Do you agree that COVID-19 Will be Globally Controlled?**	Yes	516	81.7
		No	32	5.1
		I Don't Know	83	13.2
A2	**Do you agree that it's the religious power that is saving our country from getting a high number of infections?**	Yes	40	6.3
		No	540	85.6
		I Don't Know	51	8.1
A3	**Do you have confidence that Nepal can win this battle against the COVID-19?**	Yes	420	66.6
		No	84	13.3
		I Don't Know	127	20.1

Table 7. Questionnaire of Practices towards COVID-19

Questions		Options	Number of entries (N=631)	Percentage
P1	**In Recent days, have you gone to crowded places?**	Yes	616	97.6
		No	15	2.4
P2	**In Recent days, have you worn a Mask When you go Out for any reason?**	Yes	606	96.0
		No	25	4.0
P3	**Do you wash your hand for 20 seconds when you come home from any reasons you have been out?**	Yes	614	97.3
		No	17	2.7
P4	**Which type of masks are you wearing (if lockdown measures are decreased) for prevention of COVID-19?**	Cloth Mask	105	16.6
		I won't wear a Mask	11	1.7
		N90/N95 Respirator Mask	76	12.0
		Surgical Mask	439	69.6
P5	**During this situation, what do you use to wash your hand with?**	Hand Sanitizer Only	7	1.1
		Soap and Water, Followed by Alcohol based Sanitizer	414	65.6
		Soap and water only	209	33.1
		Water Only	1	0.2

DISCUSSION

This study was done after the outbreak of COVID-19 to examine the KAP towards this pandemic among the medical students. The situation wouldn't allow for community-based surveys so we decided to see the KAP towards COVID-19 among the accessible group of individuals who have the facilities of the internet and also represent the different residential parts of the country. Thus, this cohort study was conducted on the medical students of age 18-30 years of age. In this predominantly well-educated group of participants, the majority were female. We found the overall correct rate of 83.42% on the knowledge questionnaire. Due to access to social media and sources relating to COVID-19 by all the participants, we expected more than 95% correct entries in the knowledge questionnaire. So, our finding indicates that there is still some group of responders who had poor knowledge about COVID-19. Zhong et al. did study in China about the KAP towards COVID-19 on 6919 participants in Hubei province immediately after the lock down in which they found that the overall correct rate was 90%.[10] Even after a couple of months of this pandemic globally the rate of correct answers in well-educated Nepali groups seems to be less than that study.

Since Literacy rate of Nepal is 65.9% and its 111th position in education rank in the world [11] we expect the percentage of correct entries in the knowledge questionnaire to be much lower if done in general.

Of the different knowledge questionnaires, a minimal number of participants correctly knew about K5 followed by K8 and K12. In K5, many participants thought that the region between the fingers was most commonly missed during regular handwashing. The studies however indicate that finger tips (48.1%) are the region where it is most commonly missed.[12]

In K8, participants thought that eating wild animals doesn't have effect on getting COVID-19. However, there were multiple evidence pointing that eating wild animals such as bats, snake linked with COVID-19 during the initial outbreak.[13]However, to date, there has been no consistent evidence of coronavirus reservoirs other than mammals and birds.[14] In one study results derived from evolutionary analysis suggested that 2019nCoV has most similar genetic information with bat coronavirus and has most similar codon usage bias with snake.[15]This however will be known in more detail after rigorous scientific studies. In K12, participants thought that N95 mask and respirator should be commonly used by general public but The Centers for Disease Control and Prevention (CDC) does not recommend that the general public wear N95 respirators to protect themselves from respiratory diseases, including coronavirus (COVID-19). Those are critical supplies that must continue to be reserved for health care workers and other medical first responders, as recommended by current CDC guidance, World Health Organization has repeatedly stating this fact.[16]

Interestingly we found that the mean correct score in knowledge questionnaire among those who had some dedicated online or onsite course on COVID-19 was 16.04 and those who didn't attend any such online or onsite course was 15.74 which is statistically significant (p=0.02). While dividing the responders into two groups: Better knowledge (Score>=15) and Poor Knowledge (Score<15) we found that there was a significant difference between two groups favoring groups who had attended dedicated training on COVID-19 (p<0.01). Access to the Ministry of Health online portal, Social Medias, Televisions and Telephone awareness seems to have an effect on knowledge improvement even during lock down.

Despite this significant difference, we expect that the knowledge level on COVID-19 will improve amongst all the participants as they are getting more information every day via social media, television and even via mobile phone. In Nepal, the Ministry of health has very cleverly opted to teach the general public on COVID-19 by implementing broadcasting of COVID-19 awareness message as caller ring back tone. In a study done by Regmi N in 2017, found that only 27.76% of population has access to Internet in rural Nepal but access to Television and Mobile phone was more than 95%.[17] Television and Mobile phone network can thus be used as a media to increase awareness on knowledge of COVID-19 with greater reach.

The optimistic attitude of the responders can be related to early measures taken by the Ministry of Health, Government of Nepal and also the World Health Organization (WHO) to strongly adhere with Lockdown and Social Distancing. During the peak of this epidemic, 81.8% of the responders believed

that the COVID-19 will be successfully controlled or prevented and 66.6% had confidence that Nepal can win the battle against COVID-19. There is a low percentage believing that Nepal can win the battle because of the lack of adequate health care facilities in Nepal. The critical care facilities in Nepal is alarming as it has only 2.8 ICU beds with Ventilator/ 100000 Population.[18] This is much lower compared to many developed countries like Germany has about 24.5 ICU beds per 100,000 population, the United States has 20, France has 8, and the United Kingdom has 3.5.[19]

Even though the attitude towards control of COVID-19 was optimistic, most of the responders were taking good precautions and safety measures. Good knowledge of Responders on COVID-19, Government strict rule of lock down and not gathering has led to strict preventive measures. Most of the responders were not going outside, were using masks and stayed at home. Majority of responders had knowledge that the infection could spread due to droplets of infected person even if he/she is asymptomatic however there were 4.0% of responders who did not wear a mask and were leaving home for crowded places. These potentially risky practices might be due to lower knowledge as this group of responders means K score was only 14.7.

Limited access to the internet, social media and the complicated geography of our country; vulnerable groups such as older adults and rural people are more likely to have poor knowledge, negative attitudes and inappropriate preventive practices towards COVID-19. Thus, KAP towards COVID-19 among community levels including a high number of diverse responders also needs to be done.

Limitations of the Study

Even during this period of uncertainty and a tight security system, gathering information with a small group but potentially representing all the provinces of the country determines the strength of this research. However, it doesn't include the general public including the vulnerable group such as elderly people, persons suffering from chronic disease, immunocompromised patients and people residing in rural areas. In addition to limited sample size, seemingly inadequate assessment of attitude and practices questionnaire also limits this study.

CONCLUSION

Medical students have good knowledge, optimistic attitude and appropriate preventive practices towards COVID-19. Better knowledge is associated with online or onsite training obtained about COVID-19 outbreaks. Optimistic Attitude and appropriate preventive practices was associated with better knowledge of the responders. Further study on larger numbers, diverse responders and at a community level will allow us to know the KAP towards COVID-19 and can be an important tool to plan on preventive measures.

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REFERENCES

1. Municipal Health Commission Wuhan. Report of Clustering Unknown etiology of pneumonia in Wuhan City Wuhan, China: Wuhan Municipal Health Commission, December 2019.
2. Health Organization World. Novel coronavirus - China. Geneva, Switzerland: World Health Organization, January 12, 2020. Https://www.who.int/csr/don/12-january-2020-novel-coronavirus-china/en/ .
3. Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. The Lancet. 2020 Feb 15;395(10223):470-3.
4. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu X, Cheng Z. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. The Lancet. 2020 Feb 15; 395(10223):497-506.
5. Coronavirus disease (COVID-19) outbreak updates & resource materials https://heoc.mohp.gov.np/recent_alert/update-on-novel-corona-virus-2019_ncov/
6. Technical Interim Guidance for Noval Corona Virus, WHO. https://www.who.int/health-topics/coronavirus#tab=tab_1

7. General Office of the National Health Commission of the People's Republic of China. Guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (The Third Trial Version). 2020.
8. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, Li Y. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. International Journal of Biological Sciences. 2020;16(10):1745.
9. Taber KS. The use of Cronbach's alpha when developing and reporting research instruments in science education. Research in Science Education. 2018 Dec 1;48(6):1273-96.
10. Zhong B-L, Luo W, Li H-M, Zhang Q-Q, Liu X-G, Li W-T, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. Int J Biol Sci. 2020;16(10):1745–52.
11. Dhakal B. Statistical Trends in Literacy Rates in Nepal. J Appl Chem. 2018;11(11):71–7.
12. Wong JSW, Lee JKF. The Common Missed Handwashing Instances and Areas after 15 Years of Hand-Hygiene Education. J Environ Public Health. 2019;2019.
13. Rothan HA, Byrareddy SN. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. J Autoimmun 2020;109(February):102433.
14. Bassetti M, Vena A, Giacobbe DR. The novel Chinese coronavirus (2019-nCoV) infections: Challenges for fighting the storm. Eur J Clin Invest. 2020;50(3):1–4.
15. Ji W, Wang W, Zhao X, Zai J, Li X. Cross-species transmission of the newly identified coronavirus 2019-nCoV. J Med Virol. 2020;92(4):433–40
16. Guidelines and Strategies for Optimizing the Supply of Facemasks . https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/face-masks.html
17. Regmi N. Expectations versus reality: A case of internet in Nepal. Electron J Inf Syst Dev Ctries. 2017; 82(1):1–20.
18. Phua J, Faruq MO, Kulkarni AP, Redjeki IS, Detleuxay K, Mendsaikhan N, et al. Critical Care Bed Capacity in Asian Countries and Regions. Crit Care Med. 2020;(January):1
19. Wunsch H, Angus DC, Harrison DA, Collange O, Fowler R, Hoste EA, de Keizer NF, Kersten A, Linde-Zwirble WT, Sandiumenge A, Rowan KM. Variation in critical care services across North America and Western Europe. Critical care medicine. 2008 Oct 1; 36(10):2787-e8.