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COVID-19 AND CHANGING BEHAVIORS: A CROSS-SECTIONAL ONLINE SURVEY AMONG STUDENTS IN BANGLADESH

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ABSTRACT

The knowledge, attitudes and practices (KAP) toward COVID-19 play an important role in defining a society's eagerness to accept behavioral change measures from health authorities. This study was a cross-sectional online survey regarding the knowledge, attitudes and practices of participants towards COVID-19. It was conducted from the 6 to 17 August, 2020. As it was not viable to do an institutional-based sampling, so it was decided to collect the data online. A total of 378 participants participated in the study. Out of the total, the mean age was 17.03 years (SD = 0.168, range = 17-18), 255 (67.5%) were female. A total of thirteen questions were used to measure knowledge on the COVID-19 virus. The mean knowledge score for participants was 10.77 (SD = 0.588, range 8–12). Participants were asked eleven questions in assessment of attitudes. The attitude of successfully controlling COVID-19 was significantly associated with age group, region and occupation. In order to assess the practices followed by the participants to prevent COVID-19 infection, all of the participants shared their agreement on avoiding meetings with friends, eating-out and sport events, as well as avoiding places where a large number of people would gather. The present study showed a good knowledge, positive attitudes and suitable practices in students of Dhaka. The health awareness programs, that are designed after pandemic declaration by WHO, played a vital role in improving the knowledge of the population, attitudes encouragement and sustaining the safer practices towards this COVID-19. In fact, this disease played a role of game changer in changing KAP in student.

KEYWORDS: Changing Behaviors, Knowledge, Attitudes, Practices, COVID-19 Pandemic.

INTRODUCTION

The knowledge, attitudes and practices (KAP) toward COVID-19 play an important role in defining a society's eagerness to accept behavioural change measures from health authorities.[1,2] KAP studies provide several important baseline information to determine the type of intervention that may be required to change misapprehensions about the virus.[2-4] Assessing the KAP related to COVID-19 among the student would be helpful to provide better insight to address poor knowledge about the disease and the development of preventive strategies and health promotion programs.[5, 6] Among the lessons learned from the SARS outbreak is that knowledge and attitudes are associated with levels of panic and emotion which could further complicate measures to contain the spread of the disease.[7, 8]

The success of the world's battle against COVID-19 depends upon people's adherence to the control measures which is largely affected by their Knowledge, Attitudes and Practices (KAP) towards the disease as suggested by the KAP theory.[9,10] The level of panic emotion among the population determines the knowledge and attitudes towards infectious diseases, which were learned from the previous infectious disease outbreak and this can further challenge to diminish the spread of the disease.[11,12]

There is a need to understand the awareness of the public regarding the COVID-19 at this critical moment. In this study, we have investigated the KAP of Bangladeshi students towards COVID-19 during the rapid rise period of the COVID-19 outbreak.

MATERIALS AND METHODOLOGY

This study was a cross-sectional online survey regarding the knowledge, attitudes and practices of students towards COVID-19. It was conducted from the 7 to 18 August, 2020. As it was not viable to do an institutional-based sampling, so it was decided to collect the data online. Relying on the authors' networks with people living in Bangladesh, this Google forms-based survey shared also on various social media applications like

Facebook, WhatsApp and Viber was done. Facebook and WhatsApp were selected as two of the most popular communication and social platforms in Bangladesh.[13-15] Inclusion criteria was students of any gender studying from 11th grade to 12th grade and must be read in any institution situated in Bangladesh.

Participants who gave consent to willingly participate in the survey would be directed to complete the self-administered questionnaire. Total 378 participants were included in the study. A brief introduction on the objective, inclusion criteria of participants, voluntary nature of participation, declarations of anonymity and confidentiality was given prior to filling the questionnaire. It was about the demographic data, series of question pertaining to their knowledge of COVID-19 and queries regarding their attitudes towards the outbreak of the disease and the disease itself.[16-19] Demographic information included age, gender, and level of education. The questionnaire was rounded off by questions which were related to the practices that the participants were adopting.[16-19]

RESULT

A total of 378 participants participated in the study. Out of the total, the mean age was 17.03 years (SD = 0.168, range = 17-18), 255 (67.5%) were female, and all the participants have completed secondary school certificate examination.

A total of thirteen questions were used to measure knowledge on the COVID-19 virus. The mean knowledge score for participants was 10.77 (SD = 0.588, range 8–12). The overall correct answer rate of the knowledge questionnaire was 82.85% (10.77/13×100) while the range of correct answer rates for all participants were between 62% to 92%. About 97.9% of participants were able to obtain scores above 10, representing an acceptable level of knowledge on COVID-19.

Most participants knew that people who had contact with an infected person should be immediately isolated for a period of 14 days (98.1%) and that this is an effective way to reduce the spread of the virus (94.7%). Even so, there was noticeable confusion among participants regarding transmission of the virus. About 91.3% of participants answered correctly when asked if the virus was airborne and all answered correctly when asked if eating and touching wild animals could result in infection **(Table 1).** Differences in knowledge scores among different demographic characteristics were assessed using t-tests and ANOVA **(Table 2).**

Participants were asked eleven questions in assessment of attitudes. A majority of participants disagreed that COVID-19 would successfully be controlled (97.9%). Even so, a smaller number of participants agreed that it would be successfully controlled (2.1%). The attitude of successfully controlling COVID-19 was significantly associated with age group, region and occupation. The majority of participants didn't have confidence that Bangladesh would be able to win the battle against COVID-19 (95.8%), while a small percentage had that confidence (4.2%). The confidence that Bangladesh would be able to win the battle against COVID-19 was associated with age group and occupation. About 60.6% participant didn't agree that the Bangladesh government was handling the COVID-19 health crisis well. Agreement that the Bangladesh government was performing well in handling the COVID-19 crisis was significantly associated with gender, age group, region and occupation. All participants were in the agreement of hand washing as a necessary personal hygiene for prevention of infection, about 85.2% of the participants believed that staying home policy might prevent infection. Moreover, 100.0% and 96.3% of the participants agreed that smoking and antibiotics will not prevent infection respectively. All of the participants agreed that infection is not a stigma and they will not hide their infection and 93.1% agreed to visit the hospital if infected. Around 90% of the participants agreed that despite their strong immunity and beliefs, they can contract infection from COVID-19 patients. About 97.4% of the participants bought masks and 57.4% had knowledge of cough and sneezing etiquettes **(Table 3).**

In order to assess the practices followed by the participants to prevent COVID-19 infection, all of the participants shared their agreement on avoiding meetings with friends, eating-out and sport events, as well as avoiding places where a large number of people would gather. 97.9% reduces the use of public transportation, 92.1% of the participants supports cleaning and disinfecting items that can be easily touched with hands like door handles and surfaces, 19.6% participants favour the use of alcoholic rub, 96.0% discuss about COVID-19 prevention with their family and friends, 93.9% participants give their consent on using tissues during coughing or sneezing and disposing it in waste bin, 67.7% use cleaning and disinfecting agent in their house. All participants accept wearing cloth made mask while going out followed by surgical mash (95.0%) and N95/K99 mask (3.7%) and all of them change the mash after using about one week., 88.9% participants choose to drink ginger with honey and 96.3% participants agreed eating garlic as an effective measure against COVID-1 **(Table 4).**

TABLES

Table 1: Participant knowledge of COVID-19 (N = 378)

Questions	True	False
The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and body aches	378 (100%)	0
Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus.	365 (96.6%)	13 (3.4%)
There currently is no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection.	378 (100%)	0
Not all persons with COVID-2019 will develop to severe cases. Only those who are elderly and have chronic illnesses are more likely to be severe cases.	332 (87.8%)	46 (12.2%)
Eating or touching wild animals would result in the infection by the COVID-19 virus.	378 (100%)	0
Persons with COVID-19 cannot infect the virus to others if they do not have a fever.	40 (10.6%)	338 (89.4%)
The COVID-19 virus spreads via respiratory droplets of infected individuals.	371 (98.1%)	7 (1.9%)
The COVID-19 virus is airborne.	345 (91.3%)	33 (8.7%)
Ordinary residents can wear face masks to prevent the infection by the COVID-19 virus.	378 (100%)	0
It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus.	378 (100%)	0
To prevent the infection by COVID-19, individuals should avoid going to crowded places and avoid taking public transportations.	378 (100%)	0
Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.	358 (94.7%)	20 (5.3%)
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 14 days.	371 (98.1%)	7 (1.9%)

Table 2: Demographic characteristics of participants and knowledge score (N = 378)

Characteristics		No of participants	Knowledge Score (SD)	t/F	p
Gender	Male	123 (32.5%)	10.80 (0.507)	F= 0.552	0.205
	Female	255 (67.5%)	10.76 (0.624)		
Age	17	367 (97.1%)	10.78 (0.589)	F= 1.691	0.788
	18	11 (2.9%)	10.55 (0.522)		

Table 3: Prevalence of attitude among the participants (answered agree or yes), n = 378

Items	Percentage
Do you agree that COVID-19 will be successfully controlled? **(Agree)**	2.1
Do you have confidence that Bangladesh can win the battle against the COVID-19 virus? **(Yes)**	4.2
The government of Bangladesh is handling the COVID-19 health crisis very well. **(Agree)**	39.4
Do you follow stay home policy? **(Yes)**	85.2
Do you follow hand hygiene protocols? **(Yes)**	100.0
Do you follow cough & sneezing etiquettes? **(Yes)**	57.4
Have you bought face masks? **(Yes)**	97.4
Do you know that smoking will not prevent infection? **(Yes)**	100.0
Do you know that antibiotic will not prevent infection? **(Yes)**	96.3
Do you know that virus is not a stigma and I should not hide my infection? **(Yes)**	100.0
If symptoms of COVID-19 develop, what will you do?	
Self-isolation **(Yes)**	91.0
Go hospital immediately **(Yes)**	93.1
Inform Authorities **(Yes)**	95.2

Table 4: Prevalence of practice among the participants (answered yes), n = 378

Items	Percentage
I cancelled or postponed meetings with friends, eating-out and sport events. **(Yes)**	100.0
I reduced the use of public transportation. **(Yes)**	97.9
I went shopping less frequently. **(Yes)**	100.0
I reduced the use of closed spaces, such as library, theatres and cinema. **(Yes)**	100.0
I avoided coughing around people as much as possible. **(Yes)**	100.0
I avoided places where a large number of people are gathered. **(Yes)**	100.0
I increased the frequency of cleaning and disinfecting items that can be easily touched with hands (i.e. door handles and surfaces). **(Yes)**	7.9
I washed the hands more often than usual with water and soap **(Yes)**	100.0
I use alcoholic hand rub **(Yes)**	19.6
I discussed COVID-19 prevention with my family and friends. **(Yes)**	96.0
I minimized touching environment **(Yes)**	100.0
I cough and sneeze in a tissue and throw it in waste bin **(Yes)**	93.9
I used to cleaning & disinfecting house/workplace **(Yes)**	67.7
I wear mask while going out **(Yes)**	100.0
Type of mask that you wear	
K95/K99 **(Yes)**	3.7
Surgical mask **(Yes)**	95.0
Cloth mask **(Yes)**	100.0
I used to change the mask to new one after	
Few hours **(Yes)**	100.0
Few days **(Yes)**	10.6
Few week **(Yes)**	100.0
I drink ginger with honey **(Yes)**	88.9
I eat garlic **(Yes)**	96.3

DISCUSSION

In this cross-sectional study, a random total of three hundred and seventy-eight participants, showed a good sense of knowledge, attitudes and practices towards the current pandemic of COVID-19.

The current study showed more females adhered to wearing masks as well as disinfect their houses, these results are consistent with previous study done in China during COVID-19 outbreak (1). The education, profession of participants and knowledge of social distancing did not show significant correlation with the practices, similar findings were also observed in a study done in Malaysia.[17] It has been found in present study that people having the knowledge of hands cleansing and use of hand sanitizers are more worried about the protocols of social distancing than those, who wash their hands with soap this association is quite new and significantly observed among participants. According to current study, the participants having enough knowledge regarding hand hygiene were also following the practices of social distancing, hand washing, minimal touching, disinfecting house and wearing of masks significantly. The participants knowing about the fact that virus could be transmitted via air droplets, tried to follow more social distancing and minimizing contact with their surroundings. All these facts are consistent with the results of a multinational cross-sectional survey.[12]

One alarming fact is that only 10.6% participants practice to discard a mask after using few hour according to the guidelines provided by the WHO and only they were more aware about the KAP regarding COVID-19 (20). A significant association was found between stay at home policy and social distancing. Those who follow hand hygiene were more careful in their attitudes towards COVID-19, this association is consistent with the results of surveys in Chinese nationals.[21]

The main variables of current study were the type of masks and their usage amongst participants. Majority of participants were using cloth masks especially during outdoor activities in this study. CDC also recommends covering faces with masks, when going outside in order to prevent the COVID-19 infection from spreading.[22]

Due to lack of related literature, we compared the results of the present study with previous ones about MERS. In the discussion of COVID-19 related knowledge items, the average of correct answers was 82.85%, which was higher than the previous studies[23, 24] and similar to another study which reported 87.1%.[25]

As per the findings, it is necessary for the government to come up with good efforts in delivering knowledge, attitude and practices about COVID-19 to a specific community particularly on specific control measures such as wearing masks, role of a few herbs in preventing infection and aware the ineffectiveness of antibiotics in

COVID-19 treatment. The latter is important as it will surely help in fighting the bacterial resistance, a major health problem globally.[26,27,28,29] and providing proper advice regarding using of herbs. We believed that the Ministry of health and general practitioners should pay enormous efforts in educating the people about COVID-19 on social media and television which represent the core source to get information by more than half of the study population. Providing awareness about the disease in large population may help in rectifying some incorrect information perceived by the people regarding the knowledge or attitudes towards the disease as noticed in this study where a few participants believed that smoking or use of antibiotics will prevent the infection and some considered COVID-19 infection and their quarantine as a stigma therefore, will hide their infection. They may serve as a source of infection and probably results in death.

CONCLUSIONS

The health awareness programs, that are designed after pandemic declaration by WHO, played a vital role in improving the knowledge of the population, attitudes encouragement and sustaining the safer practices towards this COVID-19. In fact, this disease played a role of game changer in changing KAP in student.

LIMITATION

Due to lockdown we have collected data on google survey and it is not possible to do an institutional-based survey, so we have decided to collect the data online.

DECLARATIONS

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REFERENCES

1. Zhong B, Luo W, Li H, Zhang Q, Liu X, Li W, 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: 1745–1752. https://doi.org/10.7150/ijbs.45221.
2. Giao H, Nguyen TNH, Tran VK, Vo KN, Vo VT, Pham LA. Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City. Asian Pac J Trop Med, 2020; 13. https://doi.org/10.4103/1995-7645.280396.
3. Shi Y, Wang J, Yang Y, Wang Z, Wang G, Hashimoto K, et al. Knowledge and attitudes of medical staff in Chinese psychiatric hospitals regarding COVID-19. Brain Behav Immun Health, 2020; 4. pii: S2666354620300296. https://doi.org/10.1016/j.bbih.2020.100064 PMID: 32289123.
4. Wong KK, Cohen AL, Norris SA, Martinson NA, von Mollendorf C, Tempia S, et al. Knowledge, attitudes, and practices about influenza illness and vaccination: a cross-sectional survey in two South African communities. Influenza Other Respir Viruses, 2016; 10(5): 421–428. https://doi.org/10.1111/irv.
5. Hamzah MR, Mohamad E, Abdullah MY. Influence of health literacy on health information seeking behavior among students in public university. J Komun Malays J Commun. 2016; 32(2):405–424.
6. Mohamad E, Azlan AA. COVID-19 and communication planning for health emergencies. J Komun Malays J Commun, 2020; 36(1): 1–2.
7. Person B, Sy F, Holton K, Govert B, Liang A. Fear and stigma: the epidemic within the SARS outbreak. Emerg Infect Dis, 2004; 10: 358–63. https://doi.org/10.3201/eid1002.030750 PMID: 15030713.
8. Tao N. An analysis on reasons of SARS-induced psychological panic among students. J Anhui Inst Educ, 2003; 21: 78–9.
9. Ajilore K, Atakiti I, Onyenankey K. College students' knowledge, attitudes and adherence to public service announcements on Ebola in Nigeria: Suggestions for improving future Ebola prevention education programmes. Health Educ J, 2017; 76 (6): 648-60.
10. Tachfouti N, Slama K, Berraho M, Nejjari C. The impact of knowledge and attitudes on adherence to tuberculosis treatment: A case-control study in a Moroccan region. Pan Afr Med J, 2012; 12(1): 52-6.
11. Haque T, Hossain KM, Bhuiyan MM, Ananna SA, Chowdhury SH, Ahmed, et al. Knowledge, attitude and practices (KAP) towards COVID-19 and assessment of risks of infection by SARS-CoV-2 among the Bangladeshi population: An online cross-sectional survey. 2020. Med Rxiv. 2020. [Epub ahead of print].
12. Naser AY, Dahmash EZ, Alwafi H, Alsairafi ZK, Al Rajeh AM, Alhartani YJ et al. Knowledge and practices towards COVID-19 during its outbreak: A multinational cross-sectional study. Med Rxiv. 2020. [Epub ahead of print].
13. Stat Counter (Global Stats), Social Media Stats Bangladesh, available at: https://gs.statcounter.com/social-media-stats/all/bangladesh
14. The Financial Express, Social media users 30 million in Bangladesh: Report, 2019 Available at: https://thefinancialexpress.com.bd/sci-tech/social-media-users-30-million-in-bangladesh-report-1521797895.
15. The Daily Asian Age, Social media trends usages in Bangladesh, 2018. Available at: https://dailyasianage.com/news/46958/social-media-trends-usages-in-bangladesh.
16. Alzoubi, H. et al. (2020) 'Covid-19 - Knowledge, attitude and practice among medical and non-medical university students in Jordan', Journal of

Pure and Applied Microbiology, 14(1): 17–24. doi: 10.22207/JPAM.14.1.04.

17. Azlan, A. A. et al. (2020) 'Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia', PLoS ONE, 15(5): 1–15. doi: 10.1371/journal.pone.0233668.
18. Sadiq, A. et al. (2020) 'How COVID-19 is Changing Behaviors of Population - A Study from Punjab?', Biomedica, 36: 239–245. Available at: http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=144452240&site=ehost-live.
19. Taghrir, M. H., Borazjani, R. and Shiraly, R. (2020) 'COVID-19 and iranian medical students; A survey on their related-knowledge, preventive behaviors and risk perception', Archives of Iranian Medicine, 23(4): 249–254. doi: 10.34172/aim.2020.06.
20. Coronavirus disease (COVID-19) advice for the public. Available online at: https://www.who.int/emergencies/diseases/novel-Coronavirus-2019/advice-for-public/when-and-how-to-use-masks. [Last accessed on March 29, 2020].
21. Chen Y, Jin YL, Zhu LJ, Fang ZM, Wu N, Du MX, et al. The network investigation on knowledge, attitude and practice about novel Coronavirus pneumonia of the residents in Anhui province. Chin J Prev Vet Med, 2020; 54(0): E004-7.
22. Recommendation regarding the use of cloth face coverings, especially in areas of significant community-based transmission. Available online at: https://www.cdc.gov/Coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover.html. [Last accessed on March 24, 2020].
23. Kim JS, Choi JS. Middle East respiratory syndrome–related knowledge, preventive behaviours and risk perception among nursing students during outbreak. J Clin Nurs, 2016; 25(17- 18): 2542-9. doi: 10.1111/jocn.13295.
24. Khan MU, Shah S, Ahmad A, Fatokun O. Knowledge and attitude of healthcare workers about middle east respiratory syndrome in multispecialty hospitals of Qassim, Saudi Arabia. BMC Public Health, 2014; 14: 1281. doi: 10.1186/1471-2458-14-1281.
25. Nour MO, Babilghith AO, Natto HA, Al-Amin FO, Alawneh SM. Knowledge, attitude and practices of healthcare providers towards MERS-CoV infection at Makkah hospitals, KSA. Int Res J Med Med Sci, 2015; 3(4): 103-12.
26. McEwen SA, Collignon PJ. Antimicrobial resistance: A One Health perspective. Microbiol Spectr, 2018; 6: 1-26. https://doi.org/10.1128/microbiolspec.ARBA- 0009-2017.
27. Hossain, I., Mullick, A. R., Khan, M. H., Ahmad, S. A., Rahman, S. and Aktaruzzaman, M. M. (2020) 'Epidemiology Distribution of 48 Diagnosed COVID-19 Cases in Bangladesh : A Descriptive Study', *Texila International Journal of Academic Research*, 1–8. doi: 10.21522/TIJAR.2014.07.01.Art020.
28. Hossain, I., Mullick, A. R., Khan, M. H., Ahmad, S. A., Rahman, S. and Aktaruzzaman, M. (2020) 'Epidemiology of Coronavirus Disease : Past , Present , Future Prospects and Its Journey Towards Bangladesh', *International Medical Journal*, 25(06): 2517–2529.
29. Hossain, I., Khan, M. H., *et al.* (2020) 'The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China', *Journal of Medical Science And clinical Research*, 41(2): 145–151. doi: 10.3760/cma.j.issn.0254-6450.2020.02.003.