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Knowledge, Attitude and Practice Towards Coronavirus Among Medical Students. A Descriptive Study from Jharkhand

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Abstract
Introduction: *Coronaviruses (CoVs) belong to the* Nidovirales *order of the* Coronaviridae *family that are positive-sense single stranded non-segmented RNA viruses. CoVs are divided based on their antigenicity into four groups: alpha-, beta-, gamma-, and delta CoVs. All four groups infect primarily mammals and birds and are associated with deadly illnesses that greatly impacted poultry industry.*
Materials and Methods: *This cross-sectional survey was conducted among the medical students from Department of General Medicine, Shahid Nirmal Mahto Medical College, Dhanbad, Jharkhand, from 22th March to 25th March 2020, the week immediately before the lockdown of India. As we all know, social-distancing is the best way of prevention from COVID-19, therefore, instead of conducting a community-based survey, this study collected the data using Google form platform as an online survey. The link of Google form was posted and circulated using various social media platforms like Whatsapp Group and e-mail address of the students. The study participants were informed about the details of the study objectives for filling the questionnaire and confidentiality at the beginning of the survey, and informed consent was obtained from each participant. It has been disclosed to all the participants that their identity will keep confidential and the results will be used only for research purposes. Among these 360 responses, 6 were incomplete, therefore, our final samples were 354.*
Results: *Frequency and percentage of all the demographic characteristics like gender, age, and religion are represented in Table 1. Out of the 354 participants, 50.3% were males while the rest were female (49.7%); the majority of them were 21-23 years old while only 10% were ≥24 years old. Almost 88% of the participants belonged to the religion of 'Hindu' while only 3.4% belonged to the other religions.*
Conclusion: *The majority of the participants had good knowledge, positive attitude, and sufficient practice. Females and males have significantly different practices. Although the results are very positive, it is suggested that people should continue to strengthen knowledge, attitude, and practice towards COVID-19, so that India can win the battle against the disease.*
Key Words: *Coronaviruses*, Nidovirales, *attitude, Practice.*

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I. Introduction

Coronaviruses (CoVs) belong to the *Nidovirales* order of the *Coronaviridae* family that are positive-sense single stranded non-segmented RNA viruses. CoVs are divided based on their antigenicity into four groups: alpha-, beta-, gamma-, and delta CoVs. All four groups infect primarily mammals and birds and are associated with deadly illnesses that greatly impacted poultry industry. Alpha- and beta-CoVs infect humans as well and cause a wide variety of infections ranging from common cold seen with 229E and OC43 CoVs, to croup, bronchiolitis, and pneumonia seen with NL63 and HKU1. Some CoVs, which were considered enzootic infections, have jumped across animal-human species barrier to become a zoonotic infection affecting humans.[1] CoVs, such as the Severe Acute Respiratory Syndrome (SARS) and the Middle East Respiratory Syndrome (MERS), caused by SARS-CoV and MERS-CoV, consecutively, led to virulent infections in humans. The SARS outbreak occurred in Southern China in November 2002 and spread to 17 countries infecting 8,089 people with a case-fatality rate of 9.6%. MERS, which occurred in 2012 in Saudi Arabia and spread to 21 countries around the globe, infected 2,506 people with 34.0% case-fatality rate. Despite having these near pandemic infections no specific antiviral drug or vaccine has been made available for coronaviruses.[2]

In 2020, a new global pandemic has emerged, caused by a new strain of CoV called SARS-CoV-2. This pandemic started in Wuhan, China in December 2019, possibly due to cross-species transmission, and involved almost every country in the world causing mostly mild upper respiratory tract symptoms and in a minority of cases lower respiratory tract infections (LRTI) called coronavirus disease-19 (COVID-19).[3] As of May 25th, 2020, more than 5,305,000 cases were reported and more than 342,000 deaths with a case fatality rate of 6.4%. The SARS-CoV-2 virus is different from its previous predecessors in that it is highly contagious and easily transmitted from human to human via respiratory droplets and direct contact which led to this enormous number of infected people.[4] The day-to-day numbers are still on the rise especially in Europe, and the magnitude of rising numbers of new cases and deaths is hitting the global population hard.[5]

People's observance of the prevention measures is essential for controlling the spread of COVID-19, which is affected by their knowledge, attitudes, and practices (KAP) towards COVID-19. Therefore, we conducted a survey to investigate the KAP towards COVID-19 among the medical students of a government medical college during the rapid rise period of the COVID-19 outbreak.

II. Materials And Methods

Participants and data collection: This cross-sectional survey was conducted among the medical students from Department of General Medicine, Shahid Nirmal Mahto Medical College, Dhanbad, Jharkhand, from 22th March to 25th March 2020, the week immediately before the lockdown of India. As we all know, social-distancing is the best way of prevention from COVID-19, therefore, instead of conducting a community-based survey, this study collected the data using Google form platform as an online survey. The link of Google form was posted and circulated using various social media platforms like Whatsapp Group and e-mail address of the students. The study participants were informed about the details of the study objectives for filling the questionnaire and confidentiality at the beginning of the survey, and informed consent was obtained from each participant. It has been disclosed to all the participants that their identity will keep confidential and the results will be used only for research purposes. Among these 360 responses, 6 were incomplete, therefore, our final samples were 354.

Questionnaire A self-designed questionnaire was prepared, which comprised two parts to collect demographic details of the participants along with KAP towards COVID-19. The questions were established on the basis of some published literature and the authors' experience of KAP. After the preparation of the questionnaire, it was sent to some experts to consult their opinions regarding the validity of the questionnaire followed by a small pilot study to test its simplicity and difficulty. However, the results of the pilot study were not included in the actual samples used for the study. The first part of the questionnaire covered demographic information of the participants and the second part contained questions for KAP assessment. Demographic variables included age, gender, and religion. The self-designed questionnaire comprised 11 questions regarding knowledge, 4 for attitude, and 8 for practice. Knowledge questions mainly dealed with the participants' knowledge regarding clinical symptoms, transmission routes, prevention, and control of COVID-19. These questions were responded on a true/false basis with an additional "I don't know" option. The true answer was assigned with 1 point and false/I don't know answers were assigned with 0 point. Higher scores represented a better knowledge of COVID-19. Similar options were assigned for the questions related to attitude while only two options namely 'Yes' and 'No' were assigned for the questions related to practice towards COVID-19. Cronbach's alpha coefficient of the knowledge statements was 0.71.

Statistical analysis: Statistical analyses were performed using SPSS, version 22. Knowledge, attitude, and practice scores were tested for normality of distribution using a one-sample Kolmogorov Smirnov test. Measurement data were expressed as mean ± SD and categorical data were expressed as frequency and percentage. Parametric tests (t and ANOVA) were used for comparison between different subgroups of the participants pre-intervention. Comparisons of KAP scores among the students with respect to gender, religion, and age-category are done using independent samples t-test and one-way analysis of variance (ANOVA), as appropriate. The statistical significance level of the test was expressed as α=0.05.

III. Results

Frequency and percentage of all the demographic characteristics like gender, age, and religion are represented in Table 1. Out of the 354 participants, 50.3% were males while the rest were female (49.7%); the majority of them were 21-23 years old while only 10% were ≥24 years old. Almost 88% of the participants belonged to the religion of 'Hindu' while only 3.4% belonged to the other religions.

S.No	Variables	N	Percentage (%)
1	Gender		
2	Male	178	50.3
3	Female	176	49.7
4	Age (years)		
5	18-20	125	35.3
6	21-23	193	54.5
7	≥24	36	10.2
8	Religion		
9	Hindu	309	87.3
10	Muslim	33	9.3
11	Others	12	3.4

Table 1: Demographic information of the participants

The results of the knowledge survey are presented in Table 2.The majority of the participants (86.7%) had correct knowledge about the main symptoms of COVID-19. Furthermost, 92.4% of the participants awarded that early symptomatic and supportive treatment can help most patients recover from the infection.

The majority of the students had correct knowledge about the transmission routes of the virus, however, only half of the total participants agreed that ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus.

Consciousness about the prevention and treatment was high among the participants, such as nearly everyone (96.9%) knew that COVID-19 can be prevented by avoiding crowded places such as train stations and avoiding public transportation. Furthermore, 97.2% of participants realized that people who have contacted with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 day.

Table 3 shows that the high percentage of the students (76.6%) agreed that media coverage (e.g. newspaper, television, online) give much exposure to news about COVID-19 virus. In addition, the majority of the participants (94.1%) supported the lockdown of the major cities, and more than 75% were in favor of "Janta Curfew" as well.

Table 4 presents the health-seeking behavioral intentions and prevention practices of the participants. A high percentage of the participants (98.6%) avoided unnecessary travel or outing during the outbreak. Maintaining social distance during the outbreak was the second most prevalent behavior reported by the participants. Also, a high percentage of participants used hand sanitizer, washed their hands, used a mask, covered a cough and sneeze with a tissue, which represented a good practice of the participants towards COVID-19. However, it is recommended to store helpline number so that they can find help in case of any emergency.

S.No	Questions	True (n (%)	False (n (%)	I don't know (n (%)
1	The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia.	307 (86.7)	16 (4.5)	31 (8.8)
2	There currently is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection.	327 (92.4)	12 (3.4)	15 (4.2)
3	Not all persons with COVID-2019 will develop severe cases. Only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases.	304 (85.9)	18 (5.1)	32 (9.0)
4	Eating or contacting wild animals would not result in the infection by the COVID-19 virus.	198 (55.9)	76 (21.5)	80 (22.6)
5	Persons with COVID-2019 can transmit the virus to others when a fever is not present.	312 (88.1)	16 (4.5)	26 (7.3)
6	The COVID-19 virus spreads via respiratory droplets of infected individuals.	328 (92.7)	12 (3.4)	14 (4.0)
7	Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus.	178 (50.3)	109 (30.8)	67 (18.9)
8	It is necessary for children and young adults to take extra precautions to prevent the infection by the COVID-19 virus.	336 (94.9)	12 (3.4)	6 (1.7)
9	To prevent the infection by the COVID-19 virus, individuals should avoid going to crowded places such as train stations and avoid taking public transportation	343 (96.9)	9 (2.5)	2 (0.6)
10	Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus	342 (96.6)	7 (2.0)	5 (1.4)
11	People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days	344 (97.2)	6 (1.7)	4 (1.1)

Table 2: Results of the knowledge survey (n=354)

S.No	Questions	True (n (%)	False (n (%)	I don't know (n (%)
1	Media coverage (e.g. newspaper, television, online) gives much exposure to the news about the COVID-19 virus?	271 (76.6)	31 (8.8)	52 (14.7)
2	"Janta Curfew" will help India to win the battle against the COVID-19 virus?	279 (78.8)	27 (7.6)	48 (13.6)
3	Lockdown of major cities will help India to control the COVID-19 virus?	333 (94.1)	7 (2)	14 (4)
4	The COVID-19 virus finally will be successfully controlled?	259 (73.2)	25(7.1)	70 (19.8)

Table 3. Results of the attitude survey (n=354)

S.No	Questions	True (n (%)	False (n (%)
1	Did the outbreak of the COVID-19 virus make you increase the frequency of washing hands?	342 (96)	12 (3.4)
2	Did the outbreak of the COVID-19 virus make you use hand sanitizer more frequently?	328 (92.7)	26 (7.3)
3	Did the outbreak of the COVID-19 virus make you use personal protective equipment (e.g. mask) more often than you used to?	322 (91)	32 (9)
4	Did you carry hand sanitizer with you during the outbreak in India?	325 (91.8)	29 (8.2)
5	Did you write down or store in your phone any helpline number to contact in case you suspected that you or someone you know had the COVID-19 virus?	215 (60.7)	139 (39.3)
6	Did you maintain social distance during the outbreak?	348 (98.3)	6 (1.7)
7	Did you cover cough and sneeze with a tissue, handkerchief, etc. during the outbreak?	343 (96.9)	11 (3.1)
8	Did you avoid unnecessary travel or outing during the outbreak?	349 (98.6)	5 (1.4)

Table 4: Results of the practice survey (n=354)

IV. Discussion

In the present study, the knowledge, attitude, and practice of the medical students of the Shahid Nirmal Mahto Medical College, Dhanbad, Jharkhand towards COVID-19 were assessed. We found that, during the COVID-19 pandemic, 92.7% of the participants had extensive knowledge of COVID-19. In addition, more than 80% of the participants had a positive attitude towards COVID-19.[6]

However, no significant difference was found in mean knowledge or attitude scores with respect to all demographic variables, but gender played a significant role in mean practice scores, and this result is similar to the studies conducted in China, which also reported that practice scores were affected by gender. It is worth mentioning that sufficient COVID-19 knowledge scores, positive attitude, and adequate practice were found among the students. Considering that the present study assessed only three demographic variables, so it is recommended that more demographic factors should be included in further studies.[7]

Demographic factors, especially the association between gender and KAP towards COVID-19 are generally consistent with previous studies on COVID-19 and SARS in 2003. Although the results are very positive towards KAP, we still have some suggestions for both the government and residents of India as well: (1) Few participants stored the helpline number issued by the government, therefore, it is recommended that Indian authorities should raise the awareness about helpline number among the residents; (2) 9% of the participants still not used protective items (like masks, etc.) even the medical students, therefore, the importance of these items should be emphasized more; (3) The results of this study can help to make public-health policies targeting the specific groups with low KAP and increase their KAP through well-planned, appropriate and tailored strategies.[8] Consequently, health promotion activities are vital in improving KAP towards COVID-19, and it is recommended to conduct interventional studies using the results of this study. Positively, In the near future, India will be able to tackle COVID-19 through joint efforts of the Indian governments and all Indian residents.[9]

The major limitation of the present study is that the sample sizes are limited to the students of a Shahid Nirmal Mahto Medical College, Dhanbad, Jharkhand, and hence the results based on the used sample sizes could not be generalized to all the populations of Jharkhand and India as well, although it can certainly help the state and the country to enhance the awareness regarding KAP in the general population.[10] Due to the questionnaire being self-answered by the participants, there is also a high chance of errors or misrepresentation of information. Less demographic variables is also a limitations. In view of these, more studies should be conducted in the near future to investigate the KAP for COVID-19 at various states and countries.[11]

V. Conclusion

The majority of the participants had good knowledge, positive attitude, and sufficient practice. Females and males have significantly different practices. Although the results are very positive, it is suggested that people should continue to strengthen knowledge, attitude, and practice towards COVID-19, so that India can win the battle against the disease.

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