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Original Research Article

Knowledge, attitude and practices regarding COVID-19 among school students of North India

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ABSTRACT

Coronavirus Disease (COVID-19), caused by SARS-CoV-2, is a novel virus which was detected for the first time in Wuhan city of China in December 2019 than rapidly spread to over 198 countries across the world, causing huge morbidity, mortality, grief and economic loss.

Aim: To assess knowledge, attitude and practices regarding COVID-19 among school students.

Materials and Methods: Cross sectional Study was conducted for a period of 1 Month. Two Hundred Eighty Three (283) school students of middle, high & senior secondary classes (8^{th}-12^{th}class) were enrolled in the study after obtaining their informed consent. Pretested semi structured online questionnaire using google forms was used for study. Data was entered and analyzed using MS excel.

Results: Out of 283 students enrolled, 60% were of age group 12-15 years and rest 16-19 years. Majority (89%) of students were from private school and rest from government. Maximum (98%) students were well versed with the disease and their main source of information were internet (42%) and television (37%). Student's knowledge about COVID-19 in context with, its causative agent (92%), mode of spread (80%), symptoms (79%) incubation period (74%) was found to be good. Also, knowledge about adoption of preventive measure like importance of hand washing (99%), benefit of using mask (79%) was found to be good. Student had good attitude and were using hand sanitizer (97%), practicing cough etiquettes (92%), hand washing (92%), wearing face mask (95%), avoiding crowded places (85%) etc.

Conclusion: Students were having good knowledge, positive attitude and practices for prevention against COVID-19 infection.

1. Introduction

Coronavirus Disease 2019 (COVID-19) is caused by SARS-CoV-2, novel virus which was detected first time in Wuhan city of China during December 2019 as respiratory infection. Then it spread rapidly to over 198 countries.[1,2] COVID-19 is highly contagious disease which manifest as respiratory illness (like the flu) with main clinical symptoms such as a dry cough, fever, and in more severe cases, difficulty in breathing.[3] World Health Organization (WHO) declared COVID-19 Public Health Emergency of International Concern (PHEIC) on 30th of January 2020 and called for collaborative efforts of all countries to prevent the rapid spread of COVID-19. COVID-19 was declared as a global pandemic by WHO on 8th March 2020.[4,5] China being the first country to report cases of COVID-19 has taken firm infection control measures, isolating the exposed and suspected cases according to international standards, constantly updated the diagnosis and treatment process, and carried out public awareness activities.[6] In India, a confirmed case of COVID-19 was reported on 30th January 2020, who was a student traveled from Wuhan, China, and has successfully recovered from the infection on 14th February 2020.[7–9] The fight against COVID -19 is still continuing in India and other countries. The final

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success will be guaranteed only if people adopt control measures drawn by Indian Council of Medical Research (ICMR) and WHO which is mostly influenced by citizens knowledge, attitude, and practices (KAP) towards COVID-19. During Pandemic, In India complete lockdown was imposed in March 2020 which continued till May 2020 to stop chain of transmission of COVID-19. During lockdown, Since all schools along with other teaching institutions were closed [10] and class room teaching of school was replaced by online teaching by use of various apps like Zoom, Webex, Google Meet etc. Lockdown is being gradually lifted with phase wise resumption of activities by unlock 1(June 2020), unlock 2(July 2020), unlock 3(August 2020), unlock 4(September 2020), and unlock 5 from 15th October 2020 with phase wise resumption of activities. [11–15] As per unlock 5 guidelines, schools started to reopen in gradual phase wise manner in different states of the country. [15] So, this study is planned to assess knowledge, attitude and practice of school students (8th-12th class) regarding COVID-19. This study will help to identify gap which will give direction to the school authority and government to prevent the transmission of COVID-19 in school premises. Understanding the knowledge, attitude and practices regarding COVID-19 among school will provide a basis for formulating relevant policies and directions to health education department for the resumption of classes. The study covers a wide range of topics with multiple dimensions and thus provides evidences for a comprehensive understanding of students regarding COVID-19.

2. Objective

1. Assessment of knowledge, attitude and practices regarding COVID-19 among school students.
2. Identification of gaps in awareness and practices regarding COVID-19.

3. Materials and Methods

It was a cross-sectional study conducted for a period of 1 month (October 2020) among middle, high & senior secondary class students (8^{th}-12^{th}class) of government & private school of north India.

As we all know, social-distancing is best practice of prevention from COVID-19 infection, therefore, instead of conducting a community-based survey, this study collected the data using Google form platform as an online survey. Schools were selected by convenient sampling and class teachers of respective classes (8^{th}-12^{th}) were contacted and list of students with their WhatsApp number and Email ID were obtained. The link of Google form was posted and circulated using WhatsApp and e-mail address of the students. The study participants were informed about the study and its objectives, and informed consent was obtained from each participant at the start of online survey. 300 middle, high & senior secondary class students (8^{th}-12^{th}class) of both government & private school were enrolled. 17 students filled form data was excluded due to incomplete and delayed response received. Finally, 283 student's data was compiled, analyzed and tabulated using Microsoft excel. Approval from Institutional research committee was taken prior to the start of the study.

3.1. Inclusion criteria

1. Each student response from each unique IP address.
2. Student responses where submission done in range of 1- 12 minutes were included.

3.2. Exclusion criteria

1. Student responses where submission done in less than 1 minutes or more than 12 minutes were excluded.
2. Two student's responses from one unique IP address were excluded from study.

3.3. Data collection tool

Study was conducted using a pretested semi structured online questionnaire devised on google form to assess their knowledge, attitude and practice during the COVID-19. The cover page of the questionnaire included a short introduction regarding the objectives, the voluntary nature of participation and confidentiality.

The items in the questionnaire included general demographic characteristics (gender, age, class, type of school i.e government/private) as well as COVID-19-related knowledge (pathogen knowledge, epidemiological knowledge, and awareness of prevention and control measures), attitude (degree of concern and seriousness of the epidemic situation and confidence in defeating the epidemic), and preventive actions (actual practices). The questionnaire included single-choice questions and multiple-choice questions.

4. Results

A total of 283 school students (8^{th}-12^{th} class) participated in this study comprising 151 males and 132 females. Out of 283, 60% of students were of age group 12-15 years and remaining were of age group between 16-19 years. Majority (89%) of students were from private school and rest(11%) were from government school.

Students were assessed about awareness regarding COVID-19 and it was found that majority (97%) of students have heard about COVID-19 and their major sources of information were Internet/Social Media (42%) and TV (37%) as mentioned in Table 1.

Majority (92%) of students were aware that COVID-19 is a viral disease, 79.8% of students were able to answer its mode of transmission, 84% of students were knowing

Table 1: Basic characteristics of study participants (n=283)

S.No.	Variable	Number (283)	Percentage (%)
	Gender		
1	Male	151	53.4
	Female	132	46.6
	Age (Years)		
2	12-15 Years	171	60.4
	16-19 Years	112	39.6
	Classes		
	8th	90	31.8
3	9th	22	7.8
	10th	36	12.7
	11th	79	27.9
	12th	56	19.8
	School		
4	Government	32	11.3
	Private	251	88.7
	Have you heard about COVID-19		
5	Yes	276	97.5
	No	7	2.5
	If Yes, what is the Source of Information? (276)		
	Friends	22	8.0
6	Internet/Social Media	116	42.0
	Newspaper	36	13.0
	TV	102	37.0

about most vulnerable population for COVID-19 infection, while 79% of students had knowledge about COVID-19 symptoms.74% of students were having knowledge about incubation period of COVID-19,although only 43% of students were aware about asymptomatic nature of COVID-19 patients as shown in Table 2.

Student's awareness about preventive measures against COVID-19 was assessed and it was found that 96% of students were aware about importance of home quarantine. Majority (88%) of students were aware that hand hygiene, cough etiquettes, and avoiding contacts with sick person can help in the prevention of its transmission. However only 79% of students were aware that early symptomatic and supportive treatment for COVID-19 can help to recover from infection. Best observation of the study was that 99% of students were aware that hand washing and sanitization are very important practices for COVID-19 prevention as mentioned in Table 3.

Student's attitude was explored towards COVID-19 and it was found that 98% of students were ready to share the COVID-19 related information with others. 79% of students were satisfied regarding media coverage of COVID-19 in India and were willing for their vaccination against COVID-19, if provided. Maximum number (97%) of students were following stay at home order given by government. One of the major finding was that only 56% of students were ready to allow recovered patients in their community which means stigma and fear exists against those previously infected. Approximately all (99)% of students were confident that India will win battle against COVID-19 as shown in Figure 1.

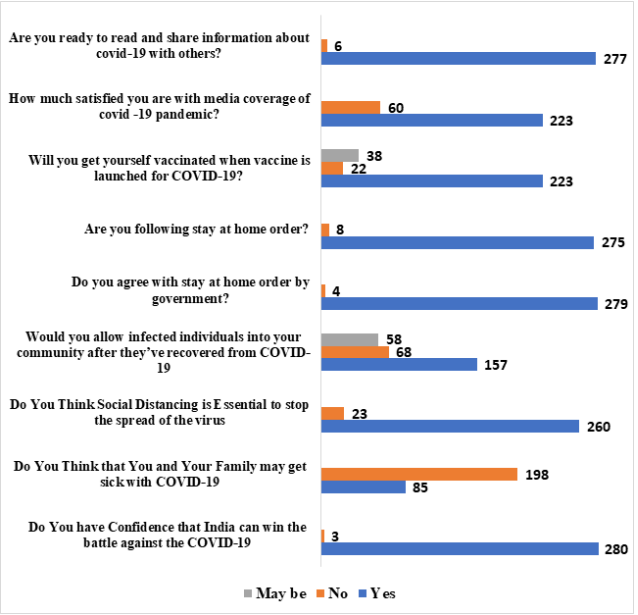

Fig. 1: Attitude of school students regarding COVID-19 (n=283)

Student's preventive practices were assessed and it was found that 98% students carried hand sanitizer during outbreak, and 92% Students practice sanitizing their hand after coughing & sneezing and wash hands after returning

Table 2: Knowledge of school students about COVID-19 aetiology

S. No.	Variable	Number (283)	Percentage (%)
	Covid-19 is caused by?		
	Bacteria	8	2.8
1	Fungus	1	0.4
	Virus	261	92.2
	None of the above	13	4.6
	How does the virus spread?		
	Air droplets (from patient sneezing/coughing)	9	3.2
2	Close contact with people who have the virus	35	12.4
	Contact with infected surfaces	13	4.6
	All of the above	226	79.8
	Who can get infected with COVID-19?		
	Adults (18-60 Years)	6	2.1
3	Old people (>60 years age)	36	12.7
	All of the above	238	84.1
	None of the above	3	1.1
	Whether elderly with any pre-existing illness are more at risk to develop severe disease?		
	Yes	185	65.4
4	No	18	6.4
	May be	54	19.1
	I do not Know	26	9.1
	Symptom of COVID-19?		
	Fever	15	5.3
	Runny Nose	2	0.7
5	Loss of smell and Taste	2	0.7
	Breathing Difficulty	35	12.4
	Dry Cough	6	2.1
	All of the above	223	78.8
	How long does it take to show symptoms after contact with virus (Incubation period)?		
	1–14 days	210	74.2
6	1–3 months	2	0.7
	14–21 days	19	6.7
	Less than 7 days	49	17.3
	None of the above	3	1.1
	Is it possible for a COVID-19 Positive person to show no symptoms?		
	Yes	123	43.5
7	No	52	18.4
	Maybe	89	31.4
	Do not Know	19	6.7

from public places. Majority (94%) of students practice changing their clothes after outside visit wears face mask outside. Only 15% students have visited crowded places recently which shows that students were following stay at home orders as shown in Figure 2.

5. Discussion

This study was conducted among 283 School students of north India. The questionnaire used for the study had 3 parts, first parts explored the demographic information, 60% students were of age group 12-15 years and remaining were of age group between 16-19 years and majority (89%) were from private school. Second part assessed the knowledge of the participants about COVID-19, its mode of transmission and method of protection against virus transmission. In the third part there was assessment of attitude & preventive practices against COVID-19.

Some of the major finding regarding knowledge was that 97% students have heard about COVID-19 and major sources of their information were Internet/Social Media (42%) and TV (37%) which was dissimilar to finding of a similar study done in Italy, where TV was main source of information followed by internet.[16]

Knowledge about viral nature of COVID-19 (92%), its mode of spread (79.8%), vulnerable population (84%), symptoms (79%), incubation period (74%) was good among students although only 43% of students were aware about asymptomatic nature of COVID-19 patients. Knowledge about preventive measure like importance of

Table 3: Knowledge of school students about COVID-19 prevention

S. No.	Variable	Number (283)	Percentage (%)
	Who should take precautions against COVID-19?		
1	Teenagers and children (< 18 years)	5	1.8
	Adults (18-60 Years)	7	2.5
	Old people (>60 years age)	30	10.6
	All of the above	235	83.0
	None of the above	6	2.1
	What can kill the virus?		
2	Clean surfaces with diluted chlorine	3	1.1
	Alcohol-based sanitizers	43	15.2
	all of the above	237	83.7
	Is hand-wash important?		
3	Yes	280	98.9
	No	3	1.1
	how long should you wash your hands to kill the virus?		
4	Less than 20 seconds	32	11.3
	20 seconds to 1 minute	200	70.7
	2 Minutes	44	15.5
	None of the above	7	2.5
	To prevent the COVID-19 infection, individuals should avoid going to crowded places?		
5	Yes	263	92.9
	No	12	4.3
	Do Not Know	8	2.8
	Face mask can prevent the covid-19 infection?		
6	Yes	224	79.2
	No	32	11.3
	May be	27	9.5
	There is no effective cure for covid-19, but early symptomatic and supportive treatment can help to recover from infection?		
7	Yes	225	79.5
	No	22	7.8
	May be	36	12.7
	Hand hygiene, covering nose and mouth while coughing, and avoiding sick contacts can help in the prevention of COVID-19 transmission.		
8	Yes	249	88.0
	No	34	12.0
	Do you know home quarantine is crucial to save others from COVID-19?		
9	Yes	272	96.1
	No	11	3.9

home quarantine (96%) hand hygiene and cough etiquettes (88%) use of face mask (79%) was good among students and approximately everyone (99%) were aware that hand washing and hand sanitization are very important for its prevention.

Attitude of student was explored and it was found that 98% of students were ready to share the COVID-19 related information with others and 79% of students were satisfied regarding media coverage of COVID-19 in India and were willing for their vaccination against COVID-19 whenever provided to them. Students had very positive attitude and 97% of students were following stay at home order given by government, one of the major finding was that only 56% students were ready to allow recovered patients in their community which mean stigma and fear exists from those previously infected.

Students preventive practices were assessed and it was found that 98% students carried hand sanitizer during outbreak, and 92% students practice sanitizing their hand after coughing & sneezing and wash hands after returning from public places and majority (95%) practice wearing face mask outside.

Schools were closed since March 2020 due to lockdown, despite that students had very good knowledge about COVID-19 and very inspiring attitude and preventive practices against COVID-19. It is all possible because of technological advancement. Technology played a crucial role in upgrading students' knowledge and development of good attitude and practice against COVID-19. This study has shown us a path that more attention should be given

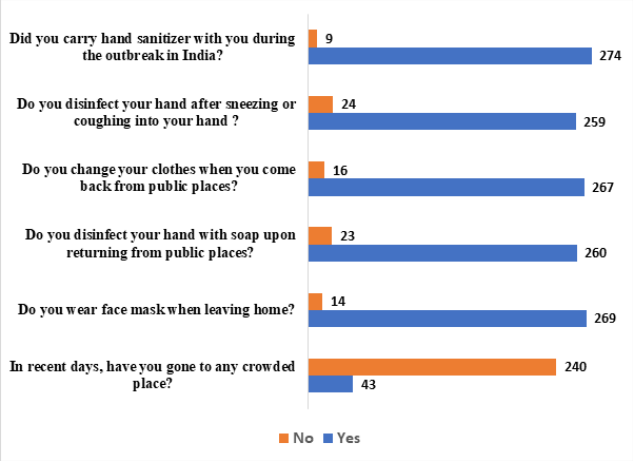

Fig. 2: Practices of school students during COVID-19 pandemic (N=283)

for utilization of technology particularly, social media for promoting public health education among adolescents, in collaboration with teachers and specialists.

6. Conclusion

Students were having good knowledge and very positive attitude and practices regarding preventive measured for stopping COVID-19 infection transmission. Similar studies should be conducted especially in rural areas to identify gap in awareness about COVID-19. Accordingly, IEC activities can be planned to increase awareness and inculcate positive attitude and practices.

7. Source of Funding

None.

8. Conflict of Interest

The authors declare that there is no conflict of interest

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