

Awareness about Prevention of Spread of COVID-19 Infection among College Going Students

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ABSTRACT

Introduction: SARS COV- 2 virus causes COVID-19 disease, is a novel strain which spreads through respiratory droplets. Recent data suggests an increasing transmission rate of infection in India. With India having high young productive age group, risk of transmission in them can devastate country in several ways. Assessment of knowledge and practices regarding prevention of COVID-19 spread among college going students is therefore important.

Material and methods: This cross-sectional study was conducted as an online survey on college going undergraduate students (18-25 years) residing in state of Uttarakhand, Uttar Pradesh and New Delhi. Study tool consisted of 11 questions regarding knowledge of COVID-19 and 6 questions regarding practices to prevent transmission of infection. Analysis by stratification across medical, non-medical and paramedical group of students was performed to identify differences regarding knowledge and practices.

Result: Total 608 students participated in the survey, 95.7% students who responded to the survey were of 18-25 years of age with equal proportion of male and female students. Results of present study show that medical undergraduates scored higher in the knowledge component and percentage of students having adequate knowledge was 31.4%, 19.8% and 16.2% respectively among medical, non-medical and paramedical students. Practices regarding recommended hand washing were inadequate.

Conclusion: Medical undergraduates are more aware about COVID- 19, however level of adequate knowledge is equally poor in all three sub-groups. Almost all practices regarding infection control were optimal in all three subgroups, besides regular washing of hands and downloading of Arogya Setu app.

Keywords: COVID-19, Awareness, Pandemic, Students

down by gravity on the surfaces in immediate environment.⁶ As per study by Li et al. in 425 confirmed cases of corona infection, symptoms of this infection appear after a mean incubation period of approximately 5.2 days [C.I 4.1-7.0].⁷ Patient infected with COVID-19 presented with range of symptoms varying from fever, coughing, fatigue, running nose, headache and later breathlessness and a chest CT scan classical of a pneumonia.^{8,9,10}

Recent estimate predicts a monthly transmission to more than 400 subjects by a single infected person.¹¹ With this kind of transmission rate, the likelihood of thousands getting infected within very short period is extremely high. With the evident respiratory droplet / surface contact type of transmission and a high rate of transmission it is likely to spread virulently in Indian subcontinent due its large population, high density, a close net society and traditional habits. Various other worsening conditions co-exist in the population like overcrowding, pollution, malnutrition and shared accommodation that can fuel the transmission to an extreme rate. Recent data of COVID-19 in India suggest an increasing proportion of infection in younger age group- 36% followed by young adults of 40-60 years – 40%.¹² With most of the productive age group at a higher risk of this infection, transmission in them can devastate country in several ways. India has taken stringent measures to help delay the transmission of virus by strategically lock down the country, promoting hand hygiene and respiratory hygiene methods and ensuring the testing of COVID-19 by RT PCR for all symptomatic cases and those with contact history of COVID-19 positive and those with history of travel abroad from February.¹³

Since college going students in age group of 18-25 years are most active yet vulnerable and have higher chance to come in close contact with each other (for studies, entertainment

INTRODUCTION

Corona virus (COVID -19) is a new virus, outbreak of which has been declared pandemic by WHO on March 11, 2020.¹ It is one of the members of zoonotic coronavirus family that primarily targets the respiratory system.² Transmission of this virus is primarily via direct contact or through droplet nuclei of >5 micro meter³ spread by coughing and sneezing by infected individuals.⁴ So, one can be infected by breathing in the virus if he is within 1 metre of a person who has COVID-19 infection or by touching a contaminated surface and then touching your eyes, nose or mouth before washing your hands. Since the virus is heavy hence, the transmission by air borne is less likely⁵ as the respiratory droplets with more than 5 micrometer which can hold this virus drops

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playing etc), when the lockdown will be lifted, Hence, this becomes crucial to know their knowledge and practice regarding prevention of COVID-19 spread. This will help in strategizing appropriate methods for increasing their knowledge and improving practices.

MATERIAL AND METHODS

This cross-sectional study was conducted on college going undergraduates' students (18-25 years). Both male and female students were included in the study. Study was conducted as online survey, through what's app message to students residing in state of Uttarakhand, Uttar Pradesh and New Delhi. Data collection was done during April- May 2020, after taking approval of Institutional Ethics Committee AIIMS, Rishikesh.

Sample size was determined using a margin of error of 5%, a confidence interval of 95% assuming population of $\geq 20,000$ and an expected response rate of 70% to most of the questions. The minimum sample size estimated for the study was 380. Considering high non-response rate 20% more sample collection was attempted. Informed consent from participants was obtained and it was ensured to keep confidentiality of information provided by participants.

Self-administered questionnaire was developed and validated by a pilot study to collect information on Knowledge and Practice regarding control of spread of recent COVID-19 infection. Questionnaire was administered in English language. It included questions related to demographic information like age, gender and educational status of participants, Basic knowledge of COVID-19, method of hand hygiene, social distancing, use of sanitizer, quarantine etc. There were 12 questions regarding knowledge of COVID-19. Participant's knowledge was scored by assigning one mark for correct response and zero for incorrect response. Students were considered having adequate knowledge if they scored ten or more. Practice domain was scored as per six the criteria. (1) Hand washing was defined adequate if it is done for 10 or more times in a day. (2) Using any method for immunity boosting, (3) Number of Persons visiting your home restricted to 2 or less in a day, (4) Number of visit you take outside your house restricted to 1-2 times in a day, (5) Use of alcohol or hypochlorite disinfectant for house hold items and (6) use of 'Aarogyasetu' app. (Practice criteria defined by bulletin of UNICEF and news bulletin of ministry of health & family welfare, India and guidelines issued for general population for control & prevention of spread of

corona infection).¹⁴

STATISTICAL ANALYSIS

Data was analysed using Microsoft Excel. Descriptive analysis for demographic variable -age gender, education, variables of knowledge and practice was presented in frequency and proportion in form of tables & figures. Knowledge and practice domain were stratified across medical, non-medical & paramedical group of students to identify difference in knowledge and practice about COVID-19 across different groups.

RESULTS

Total 608 students participated in the survey for assessment of their knowledge and practice regarding controlling spread of COVID-19 infection. Survey result showed that only 27.7% (169/608) were adequately aware of the present epidemic (figure 1) and its preventive measures (Achieved score 10 or more).

Table 1 show that 95.7% students who responded to the survey were of 18-25 years of age with equal proportion of male and female students. Maximum medical undergraduates responded this online survey (72.2%).

The responded volunteers of the survey were categorized into three groups of those perusing medical, paramedical, and non-medical courses. Assessment of knowledge about the COVID-19 epidemic and its prevention strategies across these three groups was done considering a score of more than equal to 10 out of maximum of 11 in domain of knowledge 68.5% of medical students and 83.8% of paramedical students were not completely aware of corona virus and preventive directives of the epidemic Fig 1. Less than 50% of medical & paramedical students and non-medical were aware of the correct way of hand washing as described by World Health Organisation. Guidelines for the testing for COVID -19 infection as per the directives of MOHFW, govt of India was not known to 40% of students. Median Incubation period of the corona virus in the present epidemic not known to more than 70% of the students (83% of medical students) were not aware of it. Nearly 50% of the students from para medical and non-medical students and 61% of medical were aware of the kind of mask to be worn by general population but 70% were aware of how to wear the mask. More than 60% of Non-medical & paramedical students were aware about correct definition of social distancing. Knowledge about when to say a person as corona positive was known to 75% of non-medical students as compared to only 55.8% if

Parameters	Categories	Frequency	
		Number	Percentage
Age (Years)	Less Than 18	26	4.3
	18 – 25	582	95.7
Gender	Male	304	50.0
	Female	304	50.0
Education	Under Graduate (Non-Medical)	101	16.6
	Under Graduate (Medical)	439	72.2
	Under Graduate (Paramedical)	68	11.2

Table-1: Demographic profile of the survey volunteers (n = 608)

S. No.	Parameters	Correct Knowledge on different COVID-19 parameters		
		Non - Medical n = 101(%)	Medical n = 439(%)	Paramedical n =68(%)
1.	Type of agent causing COVID-19	73 (72.2)	392 (89.2)	42 (61.7)
2.	Commonest mode of transmission of COVID-19	72 (71.2)	386 (87.9)	35 (51.4)
3.	Most predicted incubation period of infection	12 (11.8)	70 (15.9)	17 (25)
4.	Target organ of human body by COVID-19	99 (98)	433 (98.6)	63 (92.6)
5.	People who must be tested under India’s latest guidelines	54 (53.4)	270 (61.5)	39 (57.3)
6.	Most important method for confirming person is COVID-19 positive	76 (75.2)	384 (87.4)	38 (55.8)
7.	Strategies for controlling spread of infection in community	74 (73.2)	401 (91.3)	46 (67.6)
8.	Social distancing	65 (62.3)	372 (84.7)	47 (69.1)
9.	Kind of mask should be used to prevent the spread of COVID-19 by common public	54 (53.4)	269 (61.2)	37 (54.5)
10.	Correct way of wearing the three layer mask	77 (76.2)	341 (77.6)	51 (75)
11.	Steps of hand washing	30 (29.7)	191 (43.5)	19 (27.9)

Table-2: Distribution of Non – Medical, Medical and Paramedical students’ having correct knowledge on different parameters about COVID-19 (n = 608)

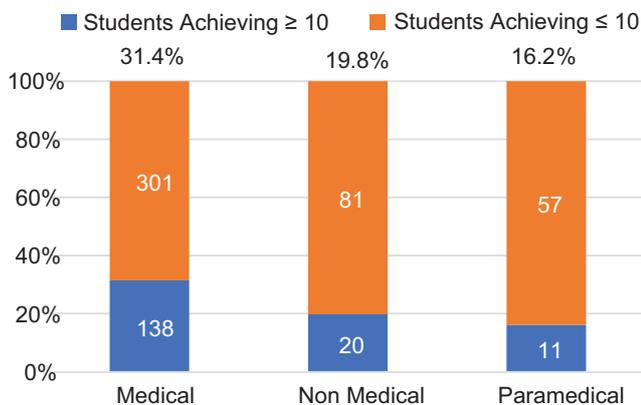


Figure-1: Proportion of students with adequate knowledge (≥ 10 score) about Covid-19 among Non-Medical, Medical & Paramedical students (n=608)

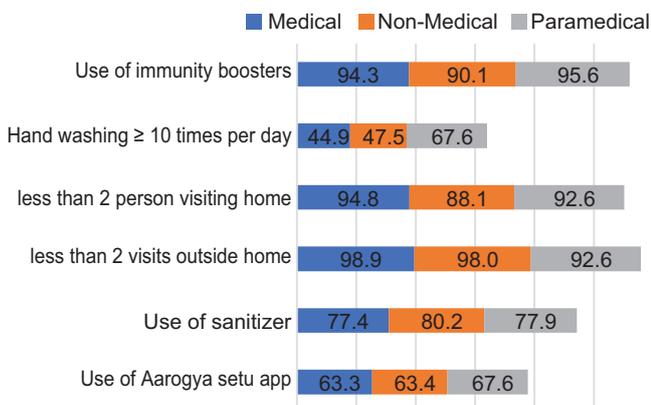


Figure-2: Percentage of students correctly practicing COVID-19 infection control measures

paramedical students (Table 2).

Table 3 & Fig 2 describe the proportion of students who are following correct practices for the prevention & spread of corona virus as per the ICMR and Government directives. Less than 50% of medical and non-medical students were practicing hand wash for more than 10 times in day as compared to 67% by para medicals students. More than 90% of students in each group were taking some or the other substances or doing exercise for improving their immunity. More than 60% of the students from each group reported no visitor at their home with ~ 25% reporting visit of 1-2 persons to their house each day suggesting that people are strictly practicing directives of government to stay at home. More than 60% of students from each of the groups did not went out of their house abiding the stay at home guidelines issued by government of India, though ~30% did go out but for necessary reasons. More than 70% of Medical & para medical students are practicing use of correct disinfectant for household items, as compared to only 60% of non-medical students Fig 2 . Most of the students are aware of the Aarogya setu app but only 65% of students are using this app.

DISCUSSION

SARS COV- 2 virus causes COVID-19 disease which is a novel strain. The virus spreads from person to person through respiratory droplets and inhaled into lungs. The incubation period lies between 1-14 days, most commonly 5-6 days.¹⁴ Most effective ways to prevent the spread of infection are washing hands frequently for at least 20 seconds with soap

S.No.	Parameters		Non-Medical n = 101(%)	Medical n = 439(%)	Paramedical n = 68(%)
1.	Frequency of washing hands per day	Less than 5 times	6 (5.9)	25 (5.7)	3 (4.4)
		5-10 times	47 (46.5)	217 (49.4)	19 (27.9)
		10-15 times	29 (28.7)	145 (33)	24 (35.3)
		More than 15 times	19 (18.8)	52 (1.2)	22 (32.3)
2.	Measure taken for boosting immunity	Dietary changes	34 (33.7)	180 (41)	18 (26.5)
		Exercise and yoga	49 (48.5)	212 (48.3)	45 (66.1)
		Supplements	2 (1.98)	20 (4.6)	1 (1.5)
		Medication	6 (5.9)	2 (0.5)	1 (1.5)
		None	10 (9.9)	25 (5.7)	3 (4.4)
3.	Number of persons visiting house per day.	None	64 (63.4)	295 (67.1)	50 (73.5)
		1-2	25 (24.8)	121 (27.6)	13 (19.1)
		3-4	8 (7.9)	12 (2.7)	3 (4.4)
		5 and above	4 (3.9)	11 (2.5)	2 (2.9)
4.	Number of visit(s) taken outside home per day during lockdown period	None	69 (68.3)	284 (64.7)	36 (52.9)
		1-2	30 (29.7)	150 (34.2)	27 (39.7)
		3-4	2 (1.9)	3 (0.7)	1 (1.5)
		5 and above	0	2 (0.5)	4 (5.9)
5.	Method of sanitizing house hold item	Alcohol sanitizer	69 (68.3)	282 (64.2)	45 (66.2)
		Paper napkins	3 (2.97)	16 (3.6)	2 (2.9)
		Dry cloth	5 (4.9)	31 (7.1)	5 (7.4)
		Sodium –Hypo-chlorite	12 (11.9)	58 (13.2)	8 (11.8)
		None of the above	12 (11.9)	52 (11.8)	8 (11.8)
6.	Use of 'Aarogyasetu' application	Yes	64 (63.3)	278 (63.3)	46 (67.6)
		No	27 (26.7)	126 (28.7)	16 (23.5)
		Do not know about the app	10 (9.9)	35 (8)	6 (8.8)

Table-3: Distribution of Non – Medical, Medical and Paramedical students' having correct practices about COVID-19 (n = 608)

and water or alcohol hand rub, following cough etiquette and maintaining a distance of at least 1 meter (3 feet) from people.¹⁴ The government of India recommends people may use handmade reusable face cover, particularly when they step out of their house.¹⁵ Surgical mask and N95 should be used by the infected people and health care workers as appropriate.

While wearing surgical mask it should be made sure metal strip is on the top side with coloured side of the mask outwards and mask should properly cover the nose, mouth and chin.¹⁴ Ministry of AYUSH, Government of India advised Yoga and some dietary recommendations to boost immunity to prevent COVID- 19 infection.¹⁶ So, far there is no vaccine or medicine available to prevent or treat COVID- 19 infection.

Only symptomatic treatment is given to affected people.¹⁴ Government of India launched 'Arogya Setu' mobile application on 2 April 2020 under Digital India to enable people to assess the risk of catching coronavirus infection using Bluetooth, algorithms and artificial intelligence. The application detects other devices with the app that comes in the proximity to calculate the risk of infection.¹⁷

So far very limited numbers of studies have been published on this issue of assessing knowledge and practices of college going students about prevention of spread of COVID-19 infection. Results of present study show that medical undergraduates scored higher than the other undergraduate students regarding knowledge component and percentage of students having adequate knowledge was 31.4%, 19.8% and 16.2% respectively among medical, non-medical and para-medical students. Considering large number of non-medical students in our country it is imperative that centralized body like University Grants Commission must start efforts for building up of knowledge in this group. This can easily be done through online courses, webinars or through appropriate social media platform. It can be made mandatory for students to pass through basic course on COVID-19 before starting regular classes, once lockdown is lifted.

A study conducted in Mumbai also showed similar results, where highest number of correct responses were registered from the medical undergraduates (74.1%) and lowest from the non-clinical/administrative staff (53.6%).¹⁸ In few studies conducted outside our country reported better knowledge status, even among medical students. In a Survey conducted among Iranian medical students with average age around 23.7 years, higher level of correct knowledge (86.96%) was reported than in current study.¹⁹

A study from China among medical residents also found an overall correct response rate of 90% on the knowledge questionnaire. In this study vast majority of the participants had not visited any crowded place (96.4%) and wore masks when going out (98.0%).²⁰ In our study even higher percentage of medical students (98.9%) went out of home less than twice per day during lockdown. More than 60% of students from each of the groups did not go out of their house abiding the stay at home guidelines issued by government of India. Similarly in Iranian study, a substantial percentage (94.47%) of students reported practicing preventive behaviour.¹⁹

In context of our population, this study clearly indicates that Medical undergraduates are more aware about COVID-19 than non-medical and para-medical students, however level of adequate knowledge is equally poor in all three sub-groups. Although, almost all practices regarding infection control were optimal in all three subgroups, besides regular washing of hands and downloading of Arogya Setu app.

It is expected that Government of India will slowly end lockdown period and colleges will reopen, hence it is important to prepare students with adequate knowledge and correct practices, so they can continue learning without becoming prey to this deadly virus and also do not become potential tool for spreading infection. The only way to prevent spread is to practice the basic infection control

methods like hand washing, cough etiquette and physical distancing, which must be taught to them before restarting colleges.

Further, it is important to have consolidated mitigation plans for managing students once colleges reopen. Infection control committees can be formed at the college level to look after this and proper reporting should be done in case of any symptomatic student. For hostels separate guidelines should be made to prevent any kind of havoc and fear among students, in case of outbreak of infection. Planning should be done for appropriate referral, quarantine, isolation of students if need arises, any time.

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