Original research article

Knowledge, Attitude and Behavior on Infection Prevention and Control Practices of Undergraduate Medical and Paramedical Students.

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Abstract

Background: With increasing demand of healthcare professionals to manage COVID – 19 pandemic, involvement of healthcare students with sufficient knowledge and skills can support the struggling health system. The present study was undertaken to investigate the knowledge, attitude and behavior on infection prevention and control practices for COVID – 19 among undergraduate medical (MBBS), physiotherapy, nursing and medical laboratory students (MLT).

Methods: A prospective cross – sectional study was conducted between 28th January and 13th March 2021 at a tertiary care teaching hospital of Gujarat, India. Knowledge, attitude and behaviour on COVID - 19 was assessed through Google forms using self-designed, pre-validated questionnaire consisting of 35 questions. Descriptive statistics like mean, standard deviation and median was calculated for different variables. ANOVA test and Two-tailed T test were used to detect the significance among different groups for a variable. P value less than 0.05 was considered statistically significant.

Results: Total 465 undergraduate medical and paramedical students participated with an overall knowledge score of 71.38%, attitude score of 77.27% and behaviour score was 81.24%. MLT students had significantly lower scores compared to students of other fields. No significant difference in scores was observed among various age, gender and phase of undergraduate study.

Conclusion: There is acceptable but suboptimal level of knowledge and attitude but good level of practices of preventive measures regarding the COVID-19. We recommend incorporation of additional educational training programmes in the curriculum of medical and paramedical field to prepare students for supporting crumbling healthcare systems during pandemics.

Keywords: knowledge, attitude, behavior, undergraduate medical and paramedical students, COVID-19

Introduction

The COVID – 19 pandemic has become a great threat to public health since two years, and with recent discovery of highly mutated Omicron corona virus variant it seems that this pandemic is far from over. Healthcare professionals, being frontline workers, are at increased risk of developing infections while managing the patient (5) and there is shortage of healthcare professionals in many developing countries like India. Considering the spread of the pandemic, healthcare across the globe is struggling to manage patient load, both with regards to resources and manpower (2,5) Before the healthcare system reaches a breakpoint, this pandemic situation necessitates involvement of other individuals such as medical and paramedical undergraduate students in patient care, a strategy employed by several countries across the globe as their educational background and basic understanding about COVID-19 can play important role by helping healthcare professionals and by spreading awareness in community regarding the seriousness of this pandemic (1,4). In the past, there was active participation of medical student at the time of Spanish flu at Pennsylvania and also during Polio epidemic in Denmark (2) This approach will help to reduce doctor-population ratio and can support the existing health system to the great extent. Most of the HealthCare students are in the learning phase of their career not having license to practice. So, to involve them in management of COVID-19 patients as volunteers, it is out most important to assess their basic knowledge regarding understanding of the causative pathogen, transmission, their attitude towards the current situation, anxiety and fear to present situation and how they are taking precautionary measures in their day-to-day life, especially when students are dependent on social media rather than scientific resources (3,4). Studies have shown that there is basic need of implementation of periodic educational training programs, webinars for students, etc. so that they can be updated with proper knowledge and attitude and good precautionary measures in the present pandemic. (1,2) After having experienced the pandemic for 10 months, we conducted the present study to assess the current knowledge, attitude and behavior on infection prevention and control practices of healthcare students towards COVID – 19 so as to identify the need for further training in order to strengthen the work practices and thereby reduce the risk of acquiring infection.

MATERIAL AND METHODS

The study was approved by Institutional Ethics Committee [Registration number: IEC/HMPCMCE/2020/Ex.64/297/20, Date: 18/12/2020] as well as by Clinical Trial Registry – India (ICMR – NIMS) [Registration number: CTRI/2021/01/030319].

Source of data and place of study: The study was conducted at a Shree Krishna Hospital, Karamsad, Gujarat which is a tertiary care teaching hospital of Gujarat. Shree Krishna Hospital is affiliated with Medical College, Physiotherapy College, Nursing College and Medical Laboratory Technology College. The institute is a 900 bed teaching hospital in Gujarat, India. The hospital has been identified as designated COVID hospital by Government of Gujarat. The hospital has a separate building consisting of 102 beds that were dedicated for admitting suspected as well as confirmed COVID – 19 patients, which eventually was extended up to 600 beds. At the time of writing this manuscript, more than 7000 patients of suspected COVID – 19 have been admitted of which more than 4000 patients have turned out to be positive for COVID – 19.

Type of the study: The study was a prospective cross – sectional study conducted between 28th January 2021 and 13th March 2021.

Inclusion criteria: The undergraduate medical and paramedical students including physiotherapy, medical laboratory technology and nursing were included in the study. There were no specific exclusion criteria for the study.

Knowledge, attitude and behavior questionnaire:

The assessment of knowledge, attitude and behavior was done using an anonymous questionnaire through Google forms (Table – I). The participation of the student in the study was voluntary. The informed consent was displayed on the initial page of the Google form-based questionnaire. The questionnaire consisted of two parts. The first part collected the undergraduate students' general information and demographic variables including age, gender, marital status, field of study, year of the study (first/second/third) and detail about presence of elderly and children in the family. The second part of the survey consisted of 35 questions to assess the students' knowledge, attitude and behavior on COVID – 19. Fifteen questions pertaining to knowledge on transmission of the virus and basic infection prevention practices, 10 questions pertaining to attitude reflecting their stress, beliefs and facts about COVID - 19 and 10 questions pertaining to their behaviour, reflecting the practices followed by them to prevent from getting infected, were used. The questions were self-designed and were validated prior to be used for the assessment. For validation, the questionnaire was first circulated to the faculties of Microbiology, Infection Control Nurses and one representative from each field of undergraduate students.

Responses were recorded on a Likert scale having five responses (Strongly agree, Agree, Neutral, Disagree, strongly disagree). The responses of Strongly agree and agree were given a score of '1' (correct) whereas Neutral, Disagree and Strongly disagree were given a score of '0' (incorrect). The total score, thus ranged from 0 to 15 for knowledge, 0 to 10 for attitude and 0 to 10 for behaviour.

Descriptive statistics included mean for central tendency, standard deviation for variability and median was calculated for different variables. Two – tailed T test was used to determine the significance where means of two groups were compared for a variable whereas ANOVA test was used to determine the significance where means of more than two groups were compared for a variable. A p - value of less than 0.05 was considered statistically significant.

Table I: Knowledge, Attitude and Behaviour questionnaire

KNOWLEDGE QUESTIONAIRE
COVID-19 infection is caused by SARS-CoV-2 virus
The minimum concentration of alcohol in hand sanitizers to kill the corona virus should be 70%
Corona virus is transmitted by respiratory droplets and contact with infected person
Antibiotics can not cure corona virus infection
Corona virus cannot be transmitted with contact of blood
Corona virus cannot be transmitted by touching the patient such as feeling the temperature with the hand provided hand hygiene is performed after touching the patient
The portal of entry of the virus in a person's body is through nose, mouth and eyes
The virus does not enter a person's body through the skin
Corona virus is not transmitted through water
Handling of mask is equally important as wearing the mask
Hand hygiene is to be performed each time after touching the mask
When a patient is wearing a mask, the risk of transmission to the healthcare worker is reduced
One should not go closer than 1 meter without a mask while examining a patient of suspected or confirmed COVID – 19
Hand washing with soap and water is equally effective as an alcohol base hand rub
Hand washing with soap and water should be done for at least 20 seconds

ATTITUDE QUESTIONNAIRE:

I will not feel any stress, when colleges will be started again and students will be asked to join clinical postings in hospital.

I believe that if my country needs my service, I am willing to serve as front-line warrior

I believe that an important measure to protect myself from COVID-19 is to avoid crowded places

I believe every patient can potentially be a COVID - 19 patient

I believe that it is best to avoid unnecessary travel or outing during this pandemic time

I believe that using public transportation during this pandemic is not safe

I believe frequent hand hygiene is important for protection during the current pandemic of COVID – 19

I believe the staff who have worked in areas where COVID - 19 patients are admitted, do not pose a risk to other healthcare workers provided they have followed all precautions

I believe every healthcare worker can potentially be a COVID - 19 patient

I will not be hesitant to disclose COVID status of myself or my family members in case of acquiring infection with COVID-19

BEHAVIOR QUESTIONNAIRE:

I perform hand hygiene frequently especially while visiting public places.

I ensure that my family members perform hand hygiene frequently at home

I don't completely rely on information from social media regarding the current COVID-19 pandemic

I have started following precautions more vigilantly compared to pre pandemic times

I follow precautions while interacting with my friends/relatives as stringently as while interacting with strangers

I do not avoid interacting with staff who have been working in COVID

I always ensure that the other individual is wearing a mask before I go close to him/her

I always ensure that mask is discarded in appropriate manner

I only rely on information that has strong scientific evidence

I insist my colleagues to follow all necessary precautionary measures whenever | see them not complying with these measures

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RESULTS:

A total of 465 undergraduate medical and paramedical students from different field of study had voluntarily participated in the study and completed all the 35 questions included in the google form. Out of the 465 participants, 73.11% were females (n = 340) and 26.88% were males (n = 125).

The mean score for knowledge was 10.71 ± 2.57 out of 15 with a median score of 11, for attitude it was 7.73 ± 1.99 out of 10 with a median score of 08 and for behaviour it was 8.14 ± 2.22 out of 10 with a median score of 09.

There was no significant difference found in knowledge, attitude and behaviour scores of males and females.

Age group

All the undergraduate healthcare students participated in this study belonged to the age group of 17 to 24 years (n=465). There was no significant difference noted in knowledge, attitude and behavior scores based on the age of the participants.

Field of study

A total of 465 undergraduate healthcare students included in the study belonged to four various fields: (i) Medical (n=170, 36.56%), (ii) Physiotherapy (n=74, 15.91%), (iii) Nursing (n=182, 39.14%) and (iv) Medical laboratory technology (MLT) (n=39, 8.39%). With regards to knowledge, MBBS undergraduate students (11.22 ± 2.87) scored significantly higher than Nursing (10.56 ± 2.16) and MLT students (9.08 ± 2.93) with a P value of less than 0.05 in both the cases. There was no significant difference noted in the scores of knowledge between MBBS and Physiotherapy students. Knowledge score of physiotherapy students (10.77 ± 2.17) and knowledge score of nursing students (10.56 ± 2.16) was higher than score of MLT students (9.08 ± 2.93) with a P value of 0.002 and 0.004 respectively. So, in terms of knowledge, MLT students scored lowest compared to students of other healthcare fields.

With regards to attitude, there was no significant difference noted among undergraduate students of four fields. In terms of behaviour, MBBS students (8.26 ± 2.45) and Physiotherapy students (8.45 ± 1.99) scored significantly higher compared to MLT students (7.31 ± 2.60) with a P value of 0.04. There was no significant difference noted in behaviour of Nursing and MLT students.

There was no significant difference observed in knowledge, attitude and behaviour of MBBS students of each phase of their degree course.

There was no significant difference noted in terms of knowledge, attitude and behaviour of students having children at their home and those who didn't have children at home. Students who had elderly person in their family, scored significantly higher in terms of behaviour (8.43 ± 4.16) than students who didn't have elderly person in their family (8.03 ± 4.51) with P value of 0.04 whereas there was no significant difference observed in knowledge and attitude.

Table – II: Knowledge, attitude and behaviour scores of healthcare students

Groups	Total participants n (%)	Knowledge Score out of 15 Mean ± 2SD [Median]	p value	Attitude Score out of 10 Mean ± 2SD [Median]	p value	Behavior Score out of 10 Mean ± 2SD [Median]	p value	Total Score out of 35 Mean ± 2SD [Median]	p value
Gender									
Female	340 (73.11%)	10.82 ± 4.83 [11]	0.057	7.75 ± 3.74 [8]	0.320	8.22 ± 4.22 [9]	0.085	26.80 ± 10.44 [28]	0.078
Male	125 (26.88%)	10.4 ± 5.87 [11]		7.65 ± 4.55 [8]		7.91 ± 4.93 [9]		25.96 ± 13.31 [27]	
Presence of children in the family									
Yes	213 (45.80%)	10.68 ± 5.18 [11]	0.426	7.72 ± 3.98 [8]	0.484	8.12 ± 4.26 [9]	0.422	26.53 ± 11.49 [28]	0.430
No	252 (54.19%)	10.73 ± 5.11 [11]		7.73 ± 3.97 [8]		8.16 ± 4.57 [9]		26.62 ± 11.15 [28]	
Presence of elderly person in the family									
Yes	338 (72.68%)	10.67 ± 5.25 [11]	0.301	7.64 ± 3.99 [8]	0.081	8.03 ± 4.51 [9]	0.0423	26.35 ± 11.50 [27]	0.080
No	127 (27.31%)	10.81 ± 4.84 [11]		7.93 ± 3.88 [8]		8.43 ± 4.16 [9]		27.18 ± 10.67 [28]	

DISCUSSION

Covid-19, is an extremely aggressive virus since its outbreak in epicentre Wuhan- December 2019, China, that has caused global pandemic and has led to devastating socioeconomic impact all over the world. (20,21,22). The novelty and uncertainties of this Covid-19 pandemic and newly emerging variants of novel corona virus along with overwhelming patients, has made it difficult for health care authorities to plan and implement appropriate strategies in a timely manner due to limited health care worker force (9) Since almost two years, health care system is under great pressure and focusing on global burden and have been forced to recruit undergraduate medical and paramedical students as the last backup workforce. (18) Various studies have shown that many countries have prepared and recruited their undergraduate

medical and paramedical students as voluntary task force for various hospital-based roles to help frontline healthcare workers and to overcome healthcare worker shortage. (6,7,16,18,19,22) As these students are very raw in terms of their knowledge and skills required for patient management, assessing their knowledge, attitude and behaviour before putting them as volunteers, would help us to get an insight on how to bridge a gap in their knowledge and skills, alleviate their anxiety and prepare a competent taskforce to fight against COVID-19 pandemic. (18,20)

The present study was thus conducted to assess the knowledge, attitude and behaviour of the students on COVID – 19 at our institute. The overall correct response rate of knowledge questions of undergraduate students of medical and paramedical field was 71.38% (n = 465) with the mean score 10.71 ± 2.57 and median score of 11 which is satisfactory and comparable with other studies conducted (Table **III**). In the studies conducted in China, Vietnam and Saudi Arabia, knowledge scores were higher compared to present study. (12,19,21,25) In context of different settings, in a study conducted in Egypt, most (43%) of the participants were final year students which could affect the overall knowledge score of the study. (16)

The overall correct response to attitude questions in the present study was (77. 27%, n = 465) with mean score 7.73 ± 1.99 which was quite optimistic and satisfactory compared to previous studies (Table **IV**). Whereas compared to other studies the overall correct response to behaviour questions was 81.24% (n=465) showing their positive and hopeful outlook towards overcoming Covid-19 pandemic (Table **V**).
The present study was conducted between January 2021 and March 2021, which was after the first wave of Covid-19. As most of the teaching sessions were conducted through online sessions, no formal trainings, orientation or teaching sessions were conducted for students regarding COVID-19 at the time of or before this study. So whatever knowledge and awareness they were having at the time of collecting response from the students, was most probably obtained through social media, newspaper, internet and other official website. This could have influenced the difference in results for knowledge, attitude and practice score compared to other studies.

Table III: Knowledge score comparison of various studies

No.	Author	Country	No of participant	Total no. of Knowledge questions	Knowledge score (mean/median/% overall correct answer rate)
1	Nisha Jha E*t al*[2]	Lalitpur, Nepal	565	30	70% overall correct answer score (median score 21)
2	Dr Farzana Begum[9]	Saudi Arabia	124	15	72% overall correct answer score (mean score 10.8)
3	K.P.Joshi E*t al*[10]	Telangana, India	407	25	75.58% overall correct answer score
4	Alian A Alrasheedy E*t al*[12]	Saudi Arabia	232	12	82% overall correct answer score (Mean score=9.87 ± 2.04)
5	Hesham Elsayed Emara E*t al*[16]	Egypt	439	23	74.3% overall correct answer score (Mean score=17.1 ± 1.9)
6	Juxia Zhang E*t al*[18]	China	1595	12	Mean score= 8.88 ± 0.97
7	Pham Le An E*t al*[19]	Vietnam	2351	6	86.6% overall correct answer score
8	Bao-Liang Zhong E*t al*[25]	China	6910	12	90% overall correct answer score, Mean score= 10.8 ± 1.6
9	Eddy Lincango-Naranjo E*t al*[22]	Ecuador	309	23	Median score 17
10	Yaling Peng E*t al*[21]	China	4360	5(1 point for correct & 0 for incorrect answers	82.3% overall attitude rate Mean score 4.1 ± 0.7
11	Present study	Gujarat, India	465	15	Mean score 10.71 ± 2.57 Median score 11 71.38% overall correct answer score

Table IV: Attitude score comparison of various studies

No.	Author	Country	No of participant	Total no. of Attitude questions	Attitude score
1	Imam Adli Et al[15]	Indonesia	4870	12	64.9% overall attitude rate
2	Juxia Zhang Et al[18]	China	1595	10	67.8% overall attitude rate
3	Pham Le An Et al[19]	Vietnam	2351	8	68.8% overall attitude rate
4	Yaling Peng Et al[21]	China	4360	5(2 for positive, 1 for neutral and 0 for negative options)	73.81% overall attitude rate 8.5 ± 1.2
5	Sonam Maheshwari Et al[24]	Dehradun, India	354	4	80% overall attitude rate
6	Present study	Gujarat, India	465	10	77.27% overall attitude rate

Table V: Behavior score comparison of various studies

No.	Author	Country	No of participant	Total no. of behavior questions	Behavior score
1	Benzon K Et al[14]	Bangladesh	1822	12 (total score 36)	Mean score= 23.39 (always = 3" or "frequently = 2" or "sometimes = 1" or "never = 0")
2	Imam Adli Et al[15]	Indonesia	4870	12	51.5% overall behavior rate
3	Juxia Zhang Et al[18]	China	1595	14	58.6% overall Behavior rate Mean score= 7.96 ± 2.51
4	Pham Le An Et al[19]	Vietnam	2351	8	92.8% overall behavior rate
5	Yaling Peng Et al[21]	China	4360	5(2 for proactive, 1 for neutral and 0 for passive options)	87.9% overall attitude rate 8.9 ± 1.4
6	Taghrir MH Et al[26]	Iran	240	9	94.47% overall behavior rate
7	Present study	Gujarat, India	465	10	81.44% overall behavior rate Mean score= 8.14 ± 2.21

Participation of male students (26.88%, n =125) was less compared to female students (73.11%, n =340) in the present study. Previous studies have also shown a higher participation of females ranging from 59.6% to 73% compared to participation of males. (2, 19, 20) Female gender is more concerned about their surrounding and families and so they always try to seek information and knowledge about COVID-19 to deal with anxiety. (17, 20)

As shown in Table – 1, there was no significant difference in knowledge, attitude and behaviour scores between males and females in the present study. This difference has been variable in previous studies. No significant difference was found in knowledge score between male and female in the studies conducted in Uganda and Saudi Arabia. (4,9) Also, no statistical significance was found in attitude and behaviour score between male and female in the same

study conducted in Uganda (4) On the contrary, in a study conducted in Uttar Pradesh, India, demonstrated higher score in males in terms of attitude and behavior than that of females (P <0.05) (6) whereas previous studies conducted in Vietnam, Indonesia, China, Japan and Yemen demonstrated that females scored higher than males in terms of adhering to preventive and precautionary practices. (1,11,12,17,19,20,21). It was an encouraging finding in present study as there was no significant gender difference in terms of knowledge, attitude and behaviour towards COVD-19.

In the present study, the age of undergraduate healthcare students ranged from 17 years to 24 years. There was no significant difference observed in knowledge, attitude and behavioural scores among different ages in the present study. In previous studies there was no significant difference noted in terms of knowledge, attitude and behaviour among participants of different ages. (2, 9, 6, 12)

In the present study, field of the study influenced the knowledge of the participants. Students of MBBS, Physiotherapy and Nursing had significantly higher knowledge compared to students of Medical Laboratory Technology (MLT) (P<0.05). A study conducted in China demonstrated that medical students had deeper level of knowledge compared to non-medical students and in a study conducted in Japan, students with Bio-backgrounds had a higher level of knowledge compared to students with non-Bio-backgrounds (1,11). Similarly, in an Indian study, knowledge of undergraduate medical students was found to be higher compared to non-clinical / administrative staff. (3) The exposure of the students of MBBS in clinical setups and different case scenarios as a part of their routine learning curriculum may be one of the reasons for their highest level of knowledge compared to other three fields. On the contrary to this finding, studies conducted in China and Vietnam, there was no significant difference found in terms of knowledge, attitude and behaviour according to speciality/field of study (P>0.05). (18,19) Reason for this finding may be due to timings of the studies conducted in relation to COVID-19 Waves. The above-mentioned China and Vietnam studies were conducted during first wave of Covid-19 (2020) whereas the present study was conducted after the first wave when several guidelines were available to students where they could get authentic information. Students of MBBS, Physiotherapy and Nursing would have a better understanding of the guidelines owing to their involvement in direct patient care compared to MLT students whose training is restricted to laboratory work. Moreover, MBBS students might keep themselves updated with their knowledge from research articles, lectures and other authentic literature (1) whereas MLT students mostly learn technical part of the laboratory testing. Knowledge definitely affects behaviour of the students and that was quite obviously seen with present study findings where a significant difference was observed in students of MBBS and MLT field. Surprisingly no significant difference noted in attitude between students of different fields in present study.

There was no significant difference observed in knowledge, attitude and behaviour scores of students from different phases/years of their curriculum in MBBS. Sharing of frequent authentic information by the Government of India through various media sources as well as experience with the first wave of pandemic would have allowed the students from various phases to have acquired balanced knowledge about the pandemic. A study conducted in Saudi Arabia also did not found significant difference in knowledge, attitude and behaviour scores of students as per their year of education. (12) These findings were contrary to findings from studies from Iran and Nepal where knowledge score greatly varied according to years of study. Findings of a study in Nepal also showed significant difference between first- and fourth-year students, with fourth year student having more knowledge compared to first year student. (2)

Similarly, findings of study conducted in Iran showed that knowledge and risk perception/attitude level of interns and passed out students were higher compared to students of who are younger (26). Studies conducted in Japan, Indonesia, Egypt and Bangladesh also demonstrated that senior students/graduated students compared to undergraduate students were significantly more knowledgeable and more confident compared to younger students (11, 15, 16, 17). Again the above studies were conducted in the early phase of the pandemic where more experienced students would have been better equipped in terms of accessing information about COVID - 19. The result of the present study also shows the key to develop institutional training and learning programmes/training to deal medical emergencies including pandemic as a part of the curriculum for students of all the academic years (17,18)

There was no significant difference in knowledge and attitude of the participants having elderly person in the family to those participants who did not have an elderly person in their family. A similar observation was made in a study conducted in Indonesia. (15) The studies conducted in Kanpur, India, in Saudi Arabia and in Telangana, India showed that 91.1% medical students ,96.8% and 87.47% of nursing students respectively, believed that older people were at high risk of developing COVID-19. (6, 9, 10) A study conducted in Japan demonstrated that 77.9% of participants were self-conscious about their preventive and safety measures for the family members (11). Surprisingly, one unanticipated finding in present study was that the participants not having an elderly person in the family showed positive and higher scores of behaviour (P<0.05) compared to participants having elderly person in the family.

In the present study, no significant difference was observed in knowledge, attitude and behaviour between participants having a child in family and those not having a child in their family. Similar findings were seen in the study conducted in Indonesia (15). In the study conducted in Kanpur, India, 89.7% medical students believed that children are at risk of developing COVID-19 as much as adults. (6) This lack of significance in the present study may be due to the fact that there was no significant morbidity and mortality reported among children worldwide.

Conclusion

The knowledge, attitude and behaviour survey was very necessary and informative during such time of crisis for understanding and to shed light on the participant's level of knowledge and awareness to deal with this pandemic. In present study, we found that overall knowledge, attitude and behaviour on infection control practices during COVID – 19 among healthcare students was found to be satisfactory. It helped us to identify the gaps in students' knowledge, attitude and behaviour, addressing which would eliminate any wrong information and negative attitude as well as inappropriate behaviour towards COVID – 19 among participants and thereby address unnecessary distress and panic. Despite having satisfactory results, there was a strong need to provide authentic information and recent updates through periodic educational activities and training programmes to bridge gaps in knowledge and attitude. Thus, by improving their knowledge, confidence, rational thinking and ensuring correct infection prevention practices followed by students, they can be easily utilized as a resourceful manpower to provide right care to patients in this advancing pandemic of COVID – 19. The educational curriculum of healthcare students should also be developed and improved and in such a way so that they can deal with such healthcare emergencies.

Limitations

All the respondents are from single Medical College of Gujarat and do not truly represent all undergraduate students of medical and paramedical field of entire state and country. As we did not have a background study involving students at the time of beginning of the pandemic, we

were unable to comment upon whether the knowledge, attitude and behaviour of the students showed any significant change during the course of the pandemic.

Acknowledgement

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