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Research Article

ASSESSMENT OF KNOWLEDGE AND PERCEPTIONS ABOUT COVID-19, IT'S PREVENTION AND CONTROL AMONG MEDICAL STUDENTS IN A TERTIARY CARE HOSPITAL, KURNOOL

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ABSTRACT

Introduction: Coronavirus disease (COVID-19) is an infectious disease caused by Novel-coronavirus. The virus spreads through droplets of saliva or from the nose of infected person. The best way to prevent the transmission of COVID-19 is, be well informed about the cause, spread and prevention. Medical students with good knowledge regarding disease can serve as information providers to the community. **Objectives:** To assess the knowledge and perceptions regarding COVID-19 among medical students, so as to involve them in prevention and control of COVID-19 pandemic. **Materials and Methods:** Cross-Sectional Web-based study, conducted during September 2020 among Undergraduate medical students, Kurnool medical college. Sample size was 400 using formula 4pq/l2, (p -50%, l as 10% of p); 100 per each professional year have been included in the study and data was obtained by structured questionnaire based on W.H.O course materials on COVID-19. Analysis done by Microsoft excel 2010 & SPSS Version 21. Chi-square test & One-way Anova tests were applied for statistical significance. **Results:** A total of 400 medical students participated, 56.25% were males. Mean age of the participants was 21.19±1.84yrs. Majority (80%) of the students have good knowledge about causative agent, infectious nature of disease, incubation period and those who are at risk. All the participants were aware of the symptoms of COVID-19. Social media was reported as the predominant source of information (95.5%) and 58% of the study participants attended awareness programme conducted in the college. **Conclusion:** Medical students had adequate awareness about COVID-19. Social media was the main source of information. Study revealed gaps in the knowledge of students about diagnosis and prevention. The current study identifies that students can be used as information providers to the community after addressing the gaps in their knowledge through orientation programmes.

INTRODUCTION

Coronavirus infections are emerging respiratory viruses that are known to cause illness ranging from the common cold to severe acute respiratory syndrome (SARS).[(1)] COVID -19 is a zoonotic disease that can be transmitted between animals to humans and humans to humans via droplet, feco-oral and through direct contact with an incubation period of 2–14 days.[(2,3)] COVID -19 has rapidly spread to most countries and responsible for high mortality and morbidity subsequent to its first report in Wuhan, Hubei Province in China in December 2019. On January 30, 2020, the World Health Organization (WHO) has declared COVID-19 as a public health emergency of international concern. [(4)] In the 1st week of March, a devastating number of new cases were reported globally, and subsequently on March 11, 2020, the WHO has declared the COVID-19 to be a pandemic. COVID-19 pandemic is one of the major global threats of the 21st century. The pandemic has also resulted in an overwhelming and unprecedented workload on the health-care systems across the world. Applying preventive measures to control COVID-19 infection is one of the crucial interventions. Guidelines for the prevention and control of COVID-19 for health-care workers were published by the WHO and Ministry of Health and Family welfare (MoHFW, India) and also to further strengthen preventive strategies, including raising awareness and training health-care workers in preparedness activities, the WHO and MoHFW (India) has initiated several online training sessions and materials on COVID-19 in various languages.[(7-10)]Health care workers (HCWs) are the primary sector in contact with patients and are an important source of exposure to infected cases in health care settings.

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Each country adopted various responses to COVID-19 to slow down transmission and issued a set of guidelines to prevent oversaturation of health care systems including the closure of borders, educational institutions, and shopping malls; introduction of remote working rules; restriction of public movement; and implementation of personal hygiene measures including using face masks, social distancing, mass screening of asymptomatic cases, and contact tracing.[11] Effectiveness of these measures depends on people's knowledge, attitude, and practices (KAP) towards COVID-19.[12,13] It includes acceptance of immunization, beliefs about the causes of the disease, risk factors, identification of symptoms, and available methods of treatment and their consequences. [14] These beliefs come from different sources, including preconceptions concerning similar viral diseases, governmental information, social media and the internet, previous personal experiences, and medical sources. Knowledge can influence the perception. Most governments are contemplating training medical students to cater to the increase demand. The students received information regarding COVID-19 by online lectures, webinars, university websites, LinkedIn, WhatsApp groups, Facebook pages and Newsletters. Hence, this global health crisis of COVID-19 pandemic offers a unique opportunity to investigate the level of knowledge and perceptions among undergraduate medical students and also exploring the role of their involvement as information providers to the community about the disease prevention and control.

MATERIALS AND METHODS

This web- based, cross- sectional study was conducted during the month of September 2020 among undergraduate medical students at Kurnool Medical College, Kurnool district, Andhra Pradesh. Sample size was calculated as 400 using formula 4pq/l2, (p -50%, l as 10% of p), 100 from each professional year have been included in the study. The purpose of the study was explained and informed consent was obtained. Study tool was developed based on W.H.O course materials on COVID-19 structured questionnaire which covered the domains of knowledge, information sources and perceptions related to COVID- 19. Questionnaire comprised two sections; Section 1: students' sources of knowledge and awareness about COVID- 19. Section 2: students' in- depth knowledge about COVID- 19 including sources of origin, route of transmission, symptoms, incubation period, high- risk Groups. Section 3: students' beliefs or perception about COVID- 19. questions were designed based on a 5- point Likert scale. The collected data were tabulated and analyzed usingIBM SPSS Statistics Version 21.0. Categorical variables were presented as percentage (%). The variables with quantitative data were presented as mean (SD), Chi-square test & One way ANOVA test were used to compare the knowledge and perception scores of participants in various batches and p value of < 0.05 was accepted as statistically significant.

RESULTS

A total of 400 undergraduate medical students have been participated in the web-based study. The mean age of the study participants was 21.19 ± 1.84years. Males were 56.25% and females 43.75%.

Knowledge about COVID -19

Knowledge about causative agent, infectious nature of the disease, its incubation period and individuals who were at risk of getting the disease was good (80 -100%) among all professional years. Almost all participants (95-100%) were having good knowledge about disease transmission and its symptoms. Knowledge about diagnosis and prevention was 65 -80% (Fig1 &2). Social media was the common source that most students employed to seek information about COVID-19 (95.5%) and 58% of participants have attended awareness program.

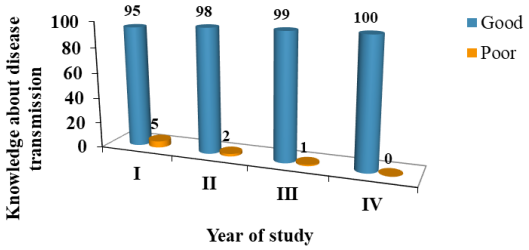

Fig 1 level of knowledge about COVID-19 among different professional year students.

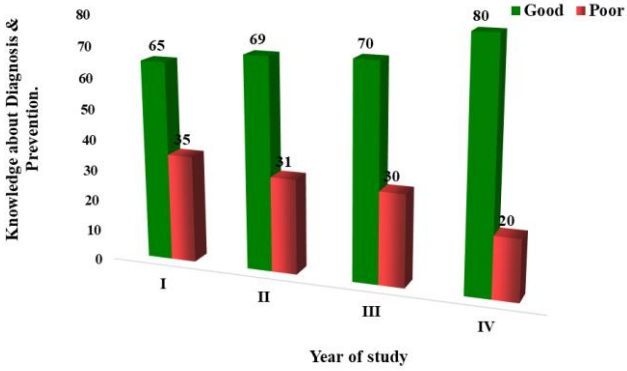

Fig 2 level of knowledge about COVID-19 among different professional year students.

Mean score of knowledge about covid 19 among study participants was 16.04±1.76. A significant difference in the level of knowledge was observed with the year of study among the study participants (p<0.05) (Table: 1)

Table 1 Overall knowledge score Vs Year of study

Year Of Study	Over all Knowledge Score		Total (N=400)	x^2, p Value
	Good (>15)	Poor (<15)		
I	65	35	100	41.039 P=0.0001
II	69	31	100	
III	91	9	100	
IV	94	6	100	
Total	319	81	400	

The perception of students toward COVID-19 (Fig:3)

One third (33%) of the students perceived that Covid -19 is a highly fatal disease. Almost all students (>95%) perceived that it was a serious public health issue and 88.5% opined that the patients should share their health status. Most of them (84%) believed that symptoms will appear in 2-14 days but 20.5 to 48% agreed that covid -19 can be diagnosed and have no specific treatment. More than half (58.3%) of the participants believe that masks are protective against COVID 19 and no role for antibiotics (39%) and traditional medicines (31.5%). Covid 19 as stigmatising condition was perceived by more than half (60.8%).

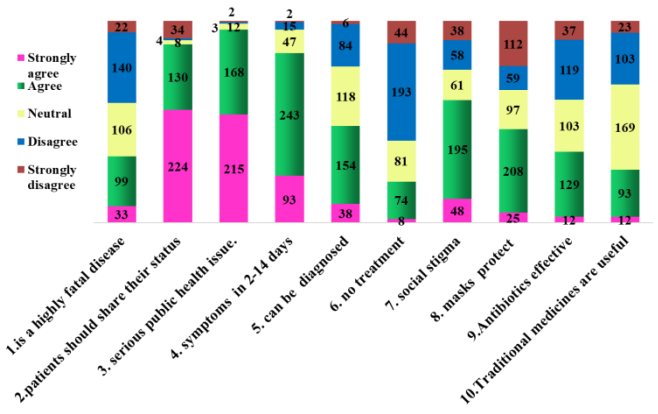

Fig 3 Perception of students toward COVID-19

Good Perceptions were observed about hand hygiene, social distancing, wearing mask (99.3%), using PPE (93.8%) and daily disinfection (98.3%) which can protect from COVID 19. Measures that could not help to prevent or cure COVID-19 like adding garlic to food (15.3%); using hand driers and UV rays to kill the virus was found among 32.5%. Most (72.8%) of the participants knew that thermal scanners were used to assess fever. Public negligence was agreed to be one of the important factors by 58% for getting COVID 19 whereas 55.3% believed that vaccine would be effective in COVID 19 prevention. Nearly 1/4th (24.3%) of the participants avoids going to COVID wards. Almost all participants (97.5%) saying there is a need for having research in matters of COVID 19 (Fig:4).

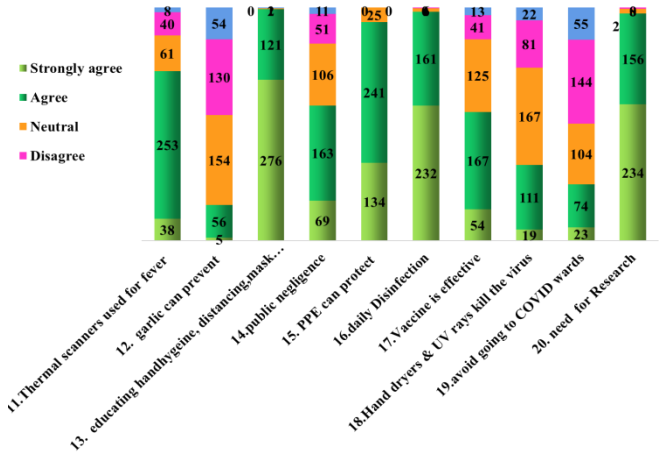

Fig 4 Perception of students toward COVID-19

Mean score of perception of the study participants is 73.23±4.89. The study year was another factor significantly associated with students' perception scores (p<0.05) (Table:2)

Table 2 Perception mean score Vs Year of study

Perception mean score	Sum of squares	df	Mean score	F	sig
Between groups	188.068	3	62. 689	2.650	0.049
Within groups	9367.310	396	23. 655		
Total	9555.377	399			

DISCUSSION

COVID- 19 is a global topic of discussion in the media and among the public, especially among health- care workers and patients. Good knowledge, attitude and practices among medical undergraduates and widespread public measures are a key to timely control of the infection.

Knowledge about COVID -19

In the present study the mean age of the study participants was 21.19 ± 1.84years. Males contribute 56.25%; Knowledge about causative agent, incubation period, symptoms, mode of transmission, infectious nature of the disease and individuals at risk of getting the disease was 80 -100% among study participants. More than two thirds (65 -80%) knew the diagnosis and preventive measures. Social media was found to be the common source (95.5%) of information about COVID-19 and 58% have attended awareness programme. Mean score of knowledge was 16.04±1.76 and there was a significant difference in knowledge in relation to the year of study of the participants (p<0.05). Baniyas N *et al* in their study among medical students reported knowledge about causative agent was 80%, mode of transmission 76%,correctly recognized its symptoms(95%), average incubation period(85%),and 57% have attended webinars to learn more about COVID-19,whereas the majority of respondents (87%) obtained COVID-19 information from multiple sources.[20] Similar results were observed in a study conducted by Rao LN *et al* among dental students and practitioners in 2020 in relation to their knowledge on disease transmission (96.9%), symptoms (93.7%) at risk individuals (96.9%), preventable nature of the disease (89.9%).[21]; In the study conducted among university students in Vietnam regarding knowledge, attitude and practice towards COVID 19 it was observed that most (78.05%) of the participants aged from 18 to 20 years.Social networks and online newspapers were the common sources to seek information about COVID-19 (87.61%). Almost all students (>95%) were aware of the main ways of COVID-19 transmission and its symptoms. The average knowledge scores of all students were 18.16±4.54 (range: 0–32) and were positively correlated with the student's age and year of study (p<0.001). [22] In a web-based survey conducted by Gohel K H *et al* among the medical and allied health science students, Mean age of the participants was 21.81 ± 2.6years (Male 38.04 % and Female 61.96 %). The main source of information was social media (65.17%). Majority of the study participants (70.91%) correctly identified causative agent, have knowledge (85.31%) about contagious nature of disease and incubation period (70.77%). knowledge on at risk individuals, modes of transmission and diagnostic methods was observed to be 40.98%, 53.71% and 44.9% respectively. [23] In a study by Singh A *et al* among undergraduate medical students, mean age of the study participants was 20.71 ± 1.65 with males (51.3%) and Females (48.7%) in equal proportion. Majority (82.1%) of the participants reported that they heard about COVID- 19 through news media and overall, the study participants' knowledge regarding COVID- 19 was satisfactory. Around half of the participants (50.0%) believed that COVID- 19 is an air- borne disease, whereas four- fifth of the participants (80.5%) believed that it is spread by direct contact, furthermore, 97.6% of the participants stated that there is no vaccination against COVID- 19; While regarding preventive strategies for COVID- 19, more than four- fifth of the participants (89.6%) believed that wearing a face mask in a crowded place could prevent the transmission. knowledge on prevention was 94.7%, and on treatment antibiotics effective 7.7%, symptomatic and supportive treatment 55.1%. [24]

In a study conducted by Ashraf *et al* in Jordan among medical students identified that 30% of students use social media to gain knowledge, 45.6% occasionally, 35.0% of students used common online search engines such as Google to look for more information regarding COVID-19. Most students agreed that the virus is likely to be transmitted through direct physical interaction such as hand shaking (93.7%), kissing (94.7%), skin contact (73.8%), or exposure to contaminated surfaces (97.4%) and majority (95.0%) believed that people with chronic illnesses are highly susceptible to COVID. [25]

Perception of students towards COVID-19

One third (33%) of the students perceived that Covid -19 is a highly fatal disease. Almost all students (>95%) opined it as serious public health issue and 88.5% opined that the patients should disclose their status. Most of them (84%) believed that symptoms will appear in 2-14 days, 20.5 to 48% agreed that covid -19 can be diagnosed and has no specific treatment. More than half (58.3%) believe that masks are protective against COVID 19 and antibiotics (39%) and traditional medicines (31.5%) have no role. Nearly two thirds (61%) of the study participants felt COVID-19 as a stigmatising disease. Good Perceptions about educating hand hygiene, social distancing and wearing mask (99.3%) and also using PPE (93.8%) and daily disinfection (98.3%) can protect from getting COVID 19 were observed. Some wrong measures could not help to prevent or cure COVID-19 like adding garlic to food (15.3%); using hand driers and UV rays to kill the virus was observed to be 32.5%. most (72.8%) of the participants knew that thermal scanners were used to assess fever. Public negligence was agreed to be one of the important factors by 58% for getting COVID 19 whereas 55.3% believe that vaccine is effective in COVID 19 prevention. Nearly 1/4th (24.3%) of the participants avoids going to COVID wards. Almost all participants (97.5%) expressed need for research regarding COVID 19. Mean score of perception was 73.23±4.89. The study year was significantly associated with students' perception scores ($p<0.05$).

In a study conducted by Ashraf *et al* in Jordan among medical students a minority of the students (19.3%) believed that masks are protective against COVID-19 and when asked if they would want the matter to remain private or secret in case a family member contracted the virus, approximately a third of the students believed that it should remain private or secret (15.3 and 15.8%). Precautionary measures adopted by participants such as– wearing a mask (9.7%), washing hands regularly (87%), using disinfectants (68.8%), taking vaccine (75%) and paying more attention to personal hygiene (84%) was observed. significant relationship between the use of disinfectants and wearing a protective mask and the year of study was observed ($P < 0.05$). [25]

Baniyas N *et al* observed that 70% of the respondents were aware of the COVID-19 preventive measures, including methods to reduce viral spread, isolation of positive cases, N95 mask usage and the necessity precautions to be followed among young adults and children were 83%, 92%, 84%, and 87% respectively. Two thirds of the respondents thought that infection was associated with stigma and social distancing, Self-isolation, wearing face masks or avoiding crowded places can reduce the spread of COVID-19 (83%). [20]

Similar results were observed in a study conducted by Rao N *et al* among dental students and practitioners: taking vaccine (68.3%), wearing a face mask (87.5%) were the best ways to prevent coronavirus infection. More than four fifth (80.5%) said that they have cleaned or disinfected doorknobs, call bells and common landline phones and most of them (98.3%) have washed their hands with soap and water more often than usual and 99.7% believed that avoiding crowded places and isolation of person who is a primary contact (98.6%) would limit the spread of infection. [21]

In a study conducted among university students in Vietnam regarding COVID 19 observed some wrong measures like adding pepper, ginger, and garlic to food (26.9%) to prevent or cure COVID-19. Most (87.8%) of the students thought that COVID-19 was an extremely dangerous disease, 42.7% Antibiotics were the first choice to treat COVID-19 and 64.7% believe that risk of getting Covid was more among at risk individuals. A high proportion (94.5%) of students would always comply with the epidemic prevention by wearing face masks. Infection with the virus was agreed to be associated with stigma – 67%. A majority of students had positive attitudes (98.2%) and good practices (94.9%). The study year was significantly associated with students' practice scores. ($p<0.05$) [22]

Gohel K H *et al* conducted a cross sectional study among medical and allied health science students found that majority of the students (91.6%) positively agreed to the ways of preventing COVID-19 such as cleaning hands with alcohol-based sanitizer, avoid personal contact and maintaining at least 1 m distance, wearing a surgical mask (73.2%). More than half of the students (53.3%) were found to have a correct perception that antibiotics are not effective in COVID-19 treatment as well as 50.8% rightly agreed that vaccines are not sufficient to prevent COVID-19 transmission at present. one third of participants did not know that thermal scanner could help to detect fever, 37.8% believe that traditional herbal medicines effective for COVID, hand dryers effective in killing new Coronavirus 44.1% and eating garlic can help to prevent infection 33.6% with the new Coronavirus. [23]

In a similar study conducted in Haryana half of the participants (51.9%) strongly agreed that COVID- 19 is a fatal disease. The perception mean score among participants was 32.56 ± 5.01, and there was statistically significant difference in perception scores among various academic years. Majority (87.4%) believe that COVID-19 is currently not a serious public health issue, Sick patients should share their recent travel history (75.6%). Educating people (such as washing hands with soap and water or social distancing) about COVID-19 is important to prevent the spread of the disease (90.3%), not going for any postings in a hospital where COVID-19 patients are seen in 64.5%. more than 3/4th (80%) believes that there is no need of extensive research regarding the prevention, management, and treatment of COVID-19 and total perception score was 32.56±5.01. [24]

CONCLUSIONS

Most of the medical students had good knowledge on disease causation, nature and on the presentation of the disease with main source of information being the social media. Perception regarding COVID -19 was found to be satisfactory. Adequate training and counseling for undergraduate medical students via structured teaching program can act as a potential reservoir to fill the gaps in health- care services in the hour of need.

Limitations

This research has some limitations. Using a self-reported questionnaire for collecting data can result in reporting bias/recall bias, and some questions can be dishonestly answered because of social desirability. By virtue of using a non-probability convenience sampling technique and only collecting data in one institution, the results cannot be generalised.

Ethical considerations

Institutional ethical committee clearance obtained.

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Conflicts of Interest

None declared.

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