

## SHORT ARTICLE

## Comparing knowledge, attitude, practice and stigma associated with SARS- COV-2 Infection among Healthcare students of Bangalore city: A cross sectional study

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### Article Cycle

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### Abstract

**Background:** In 2020, a new global pandemic has emerged, caused by a new strain of Corona virus called SARS-CoV-2. A poor understanding of the disease among healthcare students may implicate in delayed treatment and rapid spread of infection and development of complications. **Objectives:** 1) To estimate the knowledge, attitude, practice and stigma associated with SARS- CoV-2 infection among healthcare students. 2) To estimate the association between socio-demographic determinants with knowledge, attitude, practice and stigma of SARS- CoV-2 infection among healthcare students. **Methods:** A web-based cross-sectional study was undertaken among 493 healthcare i.e., medical, nursing and allied sciences students, during 1<sup>st</sup> May to 20<sup>th</sup> May 2020, using a pre-designed and semi-structured questionnaire. Data was analyzed using Chi square test, t-test, one-way Anova and Bonferroni test was used for assessing the association among the study variables. **Results:** The study revealed that, there were about 225(45.64%) medical, 165(33.46%) nursing and 103(20.89%) allied sciences students. Majority were females 349(70.79%), majority were Hindus 333(67.54%). Mean knowledge score of medical, nursing and allied sciences students were 15.66 (2.518), 14.16 (2.92) and 14.46 (3.11) respectively. Practice score was good among nursing than allied sciences students at 'p' (0.003). **Conclusion:** Even though the overall knowledge was less in our study participants, majority of them had followed good practices for preventing SARS- CoV-2 infection.

### Keywords

SARS- CoV-2; Knowledge; Stigma; Infection; Healthcare Students

### Introduction

Corona virus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease, or cancer are more likely to develop serious illness. (1) In 2020, a new global pandemic has emerged; caused by a new strain of CoV called SARS-CoV-2. (2) Multiple epidemic outbreaks occurred during 2002 (SARS) with ~800 deaths and 2012

MERS-CoV with 860 deaths.(3,4) Approximately eight years after the MERS-CoV epidemic, the current outbreak of novel corona virus in Wuhan City of China, has emerged as a global outbreak and significant public health issue.(5) There is rapid surge of cases since the pandemic has started with 39,279,462 cases and 586,431 deaths globally as on 27/6/2021 (7) The virus spreads from one person to another by droplets or by direct contact, and it could take up to 14 days since the infection by the virus to develop symptoms.(6-10) Patients and suspected persons should be isolated to protect them and others around them. Because it is a virus, antibiotics are not effective against it,

and the first line of treatment is supportive treatment. (6, 10)

A poor understanding of the disease among healthcare students may implicate in delayed treatment and the rapid spread of infection and development of life-threatening complications. Hence the study aimed to investigate the knowledge, attitude, practice and stigma of healthcare students about COVID-19.

### Aims & Objectives

1. To estimate the knowledge, attitude, practice and stigma associated with SARS- CoV-2 infection among healthcare students.
2. To estimate the association between socio-demographic determinants with knowledge, attitude, practice and stigma of SARS- CoV-2 infection among healthcare students.

### Material & Methods

**Study Type** - A web-based cross-sectional study

**Study Population** - First- and second-year healthcare i.e., medical, nursing, and allied sciences students enrolled under Rajiv Gandhi University.

**Study Area** - Bangalore

**Study Duration** - 1<sup>st</sup> May to 20<sup>th</sup> May 2020

**Sample Size Calculation** - A pre-designed semi-structured questionnaire (6) was distributed to 600 health care students of first and second year using Google forms through social media networks like WhatsApp and e-mail address (only one response was accepted from each email address) of the students. Out of the 493 students 225 were medical, 165 nursing and 103 allied sciences students.

**Inclusion Criteria** - Students who were willing to participate and completely responded to our questionnaire.

**Exclusion Criteria** - Students who were not willing to participate in the study.

**Strategy for collection, Working Definition** - The questionnaire consisted of five main sections: socio-demographics, knowledge questions included topics on history, age groups affected and age group more likely to develop complications, vulnerable groups, transmission of infection, common signs and symptoms, questions on prevention of spread of infection and treatment. Attitude questions included availing vaccine against COVID- 19 infection, contribution of lockdown in preventing the spread of infection, sufficiency of information to fight against current pandemic etc. Practice questions included participant's recent practices like attending social events, avoiding crowded places and shaking hands, following social distancing, frequent washing of hands using soap and water, stored helpline number to contact in case of emergency and about self medication. Stigma questions included maintaining confidentiality about COVID-19 infection in their family member etc. Each correct answer

was given a score of '1' and for wrong answer a score of '0'.

**Ethical Approval** - Institutional Ethics Committee.

**Data Analysis** - Data was further processed and analyzed using Open Epi Info statistical software (V 7.0). Data was expressed as frequencies and percentages for qualitative data. Mean and standard deviations for quantitative data. Chi square test, independent sample t-test, one way Anova and Bonferroni test (Multiple comparison test) was used for assessing the association among the study variables. A "p" value of <0.05 and <0.001 are considered as significant and highly significant respectively. We included only those students who

### Results

The study revealed that, out of 493 students, there were about 225(45.64%) medical, 165(33.46%) nursing and 103 (20.89%) allied sciences students. There were about 349(70.79%) females and 144(29.21%) male students. Majority were Hindus 333(67.54%) followed by Christians 112(22.71%), Muslims 44(8.92%) and students belongs to other religion 4 (0.81%).

(Table 1) Mean knowledge, attitude, practice and stigma score was calculated by using one way Anova test and the mean knowledge (standard deviation) score of medical, nursing and allied sciences students were 15.66 (2.518), 14.16 (2.92) and 14.46 (3.11) respectively and this difference is statistically significant at 'p' value 0.0001. Mean practice (standard deviation) score is 5.09 (1.01), 5.32 (0.96) and 4.88(1.24) and stigma (standard deviation) score 2.00(0.91), 1.78(0.94) and 2.01(0.93) and this difference is statistically significant at 'p' value 0.004 and 0.045.

(Table 2) Using Bonferroni test the knowledge, attitude, practice and stigma score were compared with medical, nursing and allied sciences students. Knowledge score was high among medical students when compared to nursing and allied sciences students and this difference is statistically highly significant at 'p' value 0.0001 and 0.001. Practice score was high among nursing than allied sciences students at 'p' value 0.003.

(Table 3) Independent sample "t" test was used to test the association. Knowledge score was good among males than females at 'p' value 0.001. Practice score was good among females than males at 'p' value 0.0001.

One way Anova test was used to test the association of knowledge, attitude, practice and stigma score with religion of healthcare students. Knowledge score was higher among Muslim students followed by Hindus, others and Christian students. Attitude score was high among other students followed by Hindus, Muslims and Christian students and this difference is statistically significant at 'p' value 0.024. Practice score was high among Christian students followed by Hindus, Muslims and others. Stigma score was more among Muslim students followed by Hindus, Christian and students belonging to other religion.

Bonferroni test was used to test the association of knowledge, attitude, practice and stigma score with religion of healthcare students. Good attitude was practiced among Hindus when compared to Muslims and Christians at 'p' value 0.031.

## Discussion

The current study assessed the knowledge, attitudes, practice and stigma of healthcare students in Bangalore city regarding SARS-CoV-2 infection. In this study, majority of the study participants were female students (70.79%), similar findings were reported from studies conducted by Khasawneh Al et.al,(2) in Jordan in the year 2020 (59.5%) and Zhong BL et.al,(11) in China in the year 2020 (65.7%) , where as in the studies conducted by Maheshwari S et.al,(12) Uttarakhand in 2020 (50.3 %), Bhagavathula AS et.al,(13) conducted among health care workers globally in 2020 (51.6%) and Krishna PR et.al,(14) among the public of India in 2020 (57.58%) majority of the study participants were males. In our study, majority of the study participants were Hindus (67.54%) followed by Christians (22.71%), Muslims (8.92%) and students belongs to other religion (0.81%). Almost similar findings were reported in a study conducted by Maheshwari S et.al, (12) majority were Hindus (87.3%) followed by Muslims (9.3%) and students belongs to other religion (3.4%).

Present study revealed that mean knowledge (standard deviation) score of medical, nursing and allied sciences students were 15.66 (2.518), 14.16 (2.92) and 14.46 (3.11) respectively and this difference is statistically significant at 'p' value 0.0001, mean knowledge score was highest among medical students this is because of their exposure to information about SARS –CoV- 2 virus infection by attending virtual webinars, sensitization program, information education and communication activities and reading articles about the latest updates when compared to nursing and allied sciences students. Similar findings were reported from the study conducted by Wahed WY et.al.(15) Correct answers were mostly identified for all items by more than half of participants with a significantly higher percent in medical students than in allied science students and this difference was statistically significant at  $p = 0.001$ . Mean practice (standard deviation) score is 5.09 (1.01), 5.32 (0.96) & 4.88 (1.24) this difference is statistically significant at  $p = 0.004$ , practice score is high among nursing students in our study when compared to medical and allied health sciences students, this is because nursing students were posted to hospital and health education regarding hygienic practices was given to them, whereas medical and allied health students had only online classes. Stigma (standard deviation) score 2.00 (0.91), 1.78 (0.94) & 2.01 (0.93) and this difference is statistically significant at  $p = 0.045$ , stigma was more among allied sciences students this may be because poor updating of knowledge regarding the current pandemic by

these students and also because of the cultural practices practiced by their family members.

Present study revealed that knowledge score is high among males than females at 'p' value 0.001. Similarly, results were noted by Wahed WY et.al, (15) with no statistically significant difference, while study conducted by Bai Y et.al, (3) reported that females had significantly more knowledge score than males at  $p = 0.001$ . In our study attitude towards controlling SARS- CoV-2 infection was almost similar among males and females and this difference is statistically not significant, this is because of regular updating of knowledge regarding current pandemic by the students. Where as in study conducted by Zhong BL et.al, (11) attitude towards controlling SARS-CoV-2 significantly differed across genders. While in a study conducted by Maheshwari S et.al, (12) attitude towards controlling SARS- CoV-2 infection was high among females than males and this difference is statistically not significant. In our study, female students had more practice score regarding prevention and spread of SARS CoV – 2 infection than males and this difference is statistically highly significant at 'p' value 0.0001, the study conducted by Maheshwari S et.al, (12) also showed similar results. Therefore, it is recommended that males should pay more attention to practice towards prevention of SARS- CoV-2 infection. In present study, stigma regarding SARS CoV-2 infection was less among females than males, this difference was not significant.

In present study, knowledge regarding SARS Cov-2 infection is high among Muslim students followed by Hindus, others and Christian students and this difference is not significant. Attitude regarding prevention of SARS Cov-2 infection was high among students belonging to other religion followed by Hindus, Muslims and Christian students and this difference is significant, this is because of updating knowledge about the current pandemic. Practices regarding prevention of SARS Cov-2 infection was high among Christian students followed by Hindus, Muslims and others and this difference are not significant. Stigma regarding SARS Cov-2 infection was more among Muslim students followed by Hindus, Christian and students and others, this difference is not significant, this may be because of religious practices followed in the family. Study conducted by Maheshwari S et.al, (12) reported almost similar findings except that the attitude score difference among various religions was significant.

## Conclusion

Our study concluded that medical students had more knowledge than nursing and allied sciences students. Majority of the study participants had followed good practices for preventing SARS- CoV-2 infection.

## Recommendation

Our study recommends that focus group discussion and symposiums from authentic sources can improve the knowledge among the healthcare students which in turn

will change their attitude towards COVID – 19 infections and will help to adapt better practices for preventing the infection.

**Limitation of the study**

Due to pandemic, we could not interview the students directly. Hence a web-based study was carried out.

**Relevance of the study**

It help us to understand the importance of updating the recent knowledge on COVID-19 infection to health care students, in order to deliver proper patient care.

**Authors Contribution**

BNK– Concept and design of the study, data collection, searching the literature related to the study, data analysis, manuscript preparation, editing and should be considered as ‘Guarantor’. SN– Concept and design of the study, data collection, searching the literature related to the study, data analysis, manuscript preparation and editing. BK– Statistical analysis.

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**Tables**

**TABLE 1 MEAN KNOWLEDGE, ATTITUDE, PRACTICE AND STIGMA SCORE OF STUDY PARTICIPANTS**

Score	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	P Value	
					Lower Bound	Upper Bound				
Knowledge Score	Medical	225	15.667	2.518	0.168	15.336	15.997	9	22	0.000
	Nursing	165	14.164	2.929	0.228	13.713	14.614	7	20	
	Allied Sciences	103	14.466	3.118	0.307	13.857	15.075	0	20	
	Total	493	14.913	2.872	0.129	14.659	15.167	0	22	
Attitude Score	Medical	225	3.400	1.232	0.082	3.238	3.562	0	6	0.060
	Nursing	165	3.121	1.046	0.081	2.960	3.282	1	5	
	Allied Sciences	103	3.330	1.158	0.114	3.104	3.556	0	6	
	Total	493	3.292	1.162	0.052	3.189	3.395	0	6	
Practice Score	Medical	225	5.098	1.017	0.068	4.964	5.231	2	6	0.004
	Nursing	165	5.321	0.963	0.075	5.173	5.469	1	6	
	Allied Sciences	103	4.883	1.247	0.123	4.640	5.127	0	6	
	Total	493	5.128	1.062	0.048	5.034	5.222	0	6	
Stigma	Medical	225	2.009	0.916	0.061	1.889	2.129	0	3	0.045
	Nursing	165	1.788	0.942	0.073	1.643	1.933	0	3	

	Allied Sciences	103	2.010	0.934	0.092	1.827	2.192	0	3
	Total	493	1.935	0.933	0.042	1.853	2.018	0	3

**TABLE 2 COMPARISON OF KNOWLEDGE, ATTITUDE, PRACTICE AND STIGMA SCORE WITH BRANCH OF HEALTHCARE STUDENTS**

Score	(I) Branch	(J) Branch	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
<b>Knowledge Score</b>	Medical	Nursing	1.503	0.286	0	0.816	2.19
	Medical	Allied Sciences	1.201	0.332	0.001	0.403	1.998
	Nursing	Allied Sciences	-0.302	0.351	1	-1.144	0.54
<b>Attitude Score</b>	Medical	Nursing	0.279	0.119	0.057	-0.006	0.564
	Medical	Allied Sciences	0.07	0.138	1	-0.261	0.401
	Nursing	Allied Sciences	-0.209	0.145	0.454	-0.558	0.14
<b>Practice Score</b>	Medical	Nursing	-0.223	0.108	0.116	-0.482	0.036
	Medical	Allied Sciences	0.214	0.125	0.263	-0.086	0.515
	Nursing	Allied Sciences	0.438	0.132	0.003	0.12	0.755
<b>Stigma</b>	Medical	Nursing	0.221	0.095	0.062	-0.008	0.45
	Medical	Allied Sciences	-0.001	0.11	1	-0.266	0.265
	Nursing	Allied Sciences	-0.222	0.117	0.173	-0.502	0.058

"I" and "J" are represented as groups for comparison

**TABLE 3 ASSOCIATION OF KNOWLEDGE, ATTITUDE, PRACTICE AND STIGMA SCORE WITH GENDER OF HEALTHCARE STUDENTS**

Score	Sex	N	Mean	Std. Deviation	" t " Value	P Value
<b>Knowledge Score</b>	Male	144	15.59722	2.764205	3.436	0.001
	Female	349	14.63037	2.87244		
<b>Attitude Score</b>	Male	144	3.3125	1.161556	0.25	0.802
	Female	349	3.283668	1.163275		
<b>Practice Score</b>	Male	144	4.847222	1.236504	3.819	0.000
	Female	349	5.243553	0.959373		
<b>Stigma</b>	Male	144	1.909722	0.952826	0.388	0.698
	Female	349	1.945559	0.925323		