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## RESEARCH ARTICLE

### Knowledge, Awareness and Perception of COVID-19 Pandemic Among Health Care Workers in a Tertiary Care Teaching Hospital in Coastal South India

Bhaskaran Unnikrishnan<sup>1</sup>, Priya Rathi<sup>1\*</sup>, Suchitra M. Shenoy<sup>2</sup>, Gautam Nandan<sup>3</sup>, Meenakshi Sanil<sup>3</sup>, Shwetansh Saxena<sup>3</sup> and Harshit R. Rai<sup>3</sup>

<sup>1</sup>Department of Community Medicine, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, India

<sup>2</sup>Department of Microbiology, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, India

<sup>3</sup>Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, India

#### Abstract:

#### Background:

It is crucial for the frontline force such as health care workers to be up-to-date with the knowledge of the trend of COVID-19 pandemic and its epidemiology. We conducted this study to assess the knowledge, awareness and perception of health care workers towards the COVID-19 pandemic.

#### Methods:

We performed a cross-sectional survey in the hospitals of coastal Karnataka among health care workers from February to May 2020.

#### Results:

A total of 197 Health care workers responded. Most of them were females (64%), physicians (45%), with a working experience of 1-10 years (77%). Five percent had a prior experience of the outbreak. The survey showed that the study participants had knowledge about treatment and precautions to be taken. However, some of them were not aware of the recent updates on quarantine and sample testing. Most of them perceived this pandemic as an important public health issue and were concerned that they might get infected in the course.

#### Conclusion:

There is a partial knowledge among HCWs regarding recent updates on COVID-19 pandemic and its related epidemiology. Hence, frequent sessions with the help of virtual media may be utilized to provide updates, and counseling sessions by experts may be arranged to reduce the fear of the pandemic.

**Keywords:** SARS-CoV-2, COVID-19, South India, Physician, Nurses, Lab technician.

#### Article History

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## 1. INTRODUCTION

In January 2020, the World Health Organization (WHO) declared an outbreak of a new coronavirus disease in Hubei Province, China, to be a Public Health Emergency of International Concern. The agent responsible for the pandemic is severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and the disease is called Corona Virus Disease-19 (COVID-19) [1, 2]. Most of the people infected with the virus have a varied response in the form of mild to moderate respira-

tory illness and recover without requiring special treatment. However, the elderly population and those with additional comorbidity develop severe illness and complications associated with it. So far, as on May 2020, COVID-19 has claimed 305,976 deaths and millions of cases across the world, both in developed and developing countries.

India, being one of the largest democratic countries in the world and home to 1380 million people, had its first case as early as 30<sup>th</sup> January 2020 in the Kerala state. Currently, there are 586,244 active cases in India and 39,795 deaths have been reported. In Karnataka, currently, more than 73,854 cases and 2704 deaths have been reported [3 - 5].

\* Address correspondence to this author at Department of Community Medicine, Kasturba Medical College, Mangalore, Light House Hill Road, India; Tel: +91 9632534147; E-mail: priya.rathi@manipal.edu

**Table 1. Baseline characteristics of Study participants (N=197).**

General Information	n (%)
Mean(SD) Age Years	35 (9)
Gender	-
Male	71 (36.0)
Female	126 (64.0)
Designation	-
Physician	90 (45.0)
Nurse	40 (20.3)
Lab tech	59 (29.9)
Others	8 (4.1)
Work Experience in Year	-
<5 Years	112 (56.8)
5-10 Years	39 (19.7)
10-15 Years	21 (10.65)
>15 Years	25 (12.69)
Prior Experience of Outbreak	28(4.2)

Health Care Workers (HCWs) are one of the important warriors against this pandemic. They include doctors, nurses, paramedics, laboratory technicians, ground-level staff like sweepers, ambulance drivers, etc. Each one of them has a pivotal role in fighting against the COVID-19 pandemic. Past experiences of pandemics have shown that the key factors that determine favorable outcomes are pandemic knowledge, awareness and the perception of the HCW towards the disease and its epidemiology [6 - 8]. Health care workers play a vital role in controlling disease outbreaks by identifying new cases, implementing public health measures, and educating the public. This study aims at assessing the knowledge, awareness and perception of the COVID-19 pandemic among Health care workers working in hospitals affiliated with a teaching institution in coastal Karnataka, India.

## 2. MATERIALS AND METHODS

We conducted a cross-sectional study among the HCWs working in three hospitals affiliated with a tertiary care teaching institution. Currently, one of the hospitals has been designated as COVID-19 hospital and the attached laboratory has been approved by the Indian Council of Medical Research to test for the disease. The hospital has 250 bedded super-specialty ward to treat patients, 20 bedded AYUSH block to treat suspected cases, 705-bed block for admission of covid-19 patients. We included all the HCWs involved in the management of COVID-19 cases. These include doctors, nurses, paramedical staff, laboratory technicians, and other ground staff workers. The study duration was five months (January to May 2020). All those who are currently working in hospitals were approached to participate in the study (universal sampling).

### 2.1. Tools for Data Collection

A self-administered questionnaire was designed after extensive literature review and discussion with an expert. It has been content validated by an epidemiologist, a physician and a microbiologist. It consists of three sections: Section A includes the demographic characteristics of the study participants, Section B measures the knowledge and awareness of study

participants regarding COVID-19, while Section C assesses the perception of the study participants, which is measured using a 5-point Likert scale in the range of Strongly agree (SA,5), Agree (A,4), Neutral (N,3), Disagree (DA,2), Strongly Disagree (SDA,1). It was translated to vernacular language and then translated back to English.

### 2.2. Data Collection Methodology

The study protocol was submitted for approval from the Institutional Ethics Committee (IEC) of Kasturba Medical College, Mangalore. After obtaining the approval from the ethics committee, permission was obtained from the District Medical Officer and Medical Superintendent of mentioned hospitals to conduct interviews with HCWs. The purpose of the study was explained to them in their local language and an informed consent was obtained.

### 2.3. Data Management Analysis

Data were entered and analyzed by using statistical software Statistical Package for Social Sciences (SPSS) Version 25.0. Descriptive statistics like proportions and percentage were used for measuring knowledge and awareness, while perception was measured using median and IQR. Tables were used to present the results. For comparison between doctors and other HCWs, chi-square test and Mann Whitney U test were used, and a p-value of <0.05 was considered to be significant.

## 3. RESULTS

A total of 197 out of 221 HCWs participated in this study with a response rate of 89%. Their mean $\pm$ SD age was 35 $\pm$ 9 years. Most of the participants were women (126, 65%). Nearly half of them were physicians (90,45%), one-third of them were lab technicians, and one-fifth were the nurses. Almost 77% (151) had working experience of up to ten years. However, only 28 (5%) had prior experience of the outbreak (Table 1).

Tables 2 and 3 depict the awareness and knowledge regarding the epidemiology of COVID-19 pandemic. To

understand the difference of knowledge and awareness among different health care professionals, we divided the study group into doctors (90, 45%) and other Health Care Workers (HCWs) (107, 55%). The level of knowledge and awareness did not differ much among doctors and other health care workers like nurses, lab technicians, etc. The major findings were as follows: 83 (45%) doctors and 99 (54.4%) other Health Care Workers (HCWs) were aware of the place and 66(57.4%) doctors and 49 (42.6%) other HCWs knew about the time of origin of the pandemic. The number of confirmed cases was known to 59 (62.8%) doctors and 35(37.2%) other HCWs.

More than half *i.e.* 64 (53.8%) doctors mentioned the mode of transmission *via* direct contact. The fact that exposed individuals have to be quarantined was known to both equally. Fever and cough were the most commonly mentioned symptoms. The agent can be used as a potential bioterrorism weapon was believed by 72 (51.4%) Doctors and 68 (48.6%) Other HCWs. Vaccine, when developed, will be the most effective measure to control the pandemic was thought by 129 (65%), while 81 (47.6%) doctors and 89 (52.4%) other HCWs knew that washing hands and other personal hygiene methods are effective in the prevention of disease transmission.

**Table 2. Awareness regarding COVID-19 pandemic among study participants (N- 197).**

	Doctors n-90 n(%)	HCWs n-107 n(%)	P value
Place of origin for COVID-19 Infection	83(45.6)	99 (54.4)	1.000
Month when the outbreak started	66(57.4)	49 (42.6)	<0.0001
Number of confirmed cases of COVID-19 infection in India.	59 (62.8)	35(37.2)	<0.0001
Modes of Transmission	-	-	-
Direct Contact	64 (53.8)	55 (46.2)	0.884
Droplet	83 (47.4)	92 (52.6)	0.182
Probable Reservoir animal for COVID-19	66 (50.8)	64 (49.2)	0.051
Incubation Period of COVID-19 infection	.37 (45.7)	44 (54.3)	1.000
Cases that should be quarantined	49 (50)	49 (50)	1.000
Minimum Quarantine period as recommended by WHO	46 (47.4)	51 (52.6)	0.669
<b>Possible symptoms of the disease</b>	-	-	-
Fever	81 (46.8)	92 (53.2)	0.513
Cough	81 (48.2)	87 (51.8)	0.107
Myalgia	52 (52)	48 (48)	0.086
Shortness of breath	73 (51.8)	68 (48.2)	0.007
<b>Samples that should be collected for Lab Testing of COVID-19 infection</b>	-	-	-
Nasopharyngeal Swab	75 (49.3)	77 (50.7)	0.063
Oropharyngeal Swab	63 (47.7)	69 (52.3)	0.449
Tracheal Aspirate	26 (53)	23 (47)	0.250
Lab where initial test samples from hospital for COVID-19 infection to be sent	65 (51.6)	61 (48.4)	0.037
Fatality rate of COVID-19 Infection	40 (50)	40 (50)	1.000

**Table 3. Knowledge regarding COVID-19 pandemic among study participants (N- 197).**

Statements	Doctors n-90 n(%)	Other HCWs n-107 n(%)	P value
COVID-19 is similar to other coronaviruses in morphology and pathogenesis	44 (45.5)	53 (54.5)	1.000
COVID-19 virus outbreak has claimed more lives than the 2003-SARS virus outbreak.	52 (46.4)	60 (53.6)	0.885
COVID-19 can potentially be used as a weapon of bioterrorism.	72 (51.4)	68 (48.6)	0.012
Laboratory testing for COVID-19 is done only in Bio safety level-4 (BSL4) labs.	60 (48.8)	63 (51.2)	0.320
Vaccination against COVID-19 is available.	12 (32.4)	25 (67.6)	0.099
Treatment available for COVID-19 is only symptomatic	75 (49.7)	76 (50.3)	0.404
Acute Respiratory Distress Syndrome (ARDS) is one of the most common complications	74 (48)	80 (52)	0.229
Confirmed COVID-19 cases should remain in isolation for a period of 28 days or until they recover from clinical symptoms and viral detection tests are negative	62 (43.4)	81 (56.6)	0.337
Washing hands, social distancing and other personal hygiene methods are effective in the prevention of disease transmission.	81 (47.6)	89 (52.4)	0.213
Immune-compromised patients are at a higher risk of infection	80 (48.5)	85 (51.5)	0.083
Health care workers are at a higher risk of getting infected	75 (48.4)	80 (51.6)	0.165

**Table 4. Perception about COVID-19 pandemic among study participants (n- 197).**

Statements	Doctors n-107 Median (IQR)	Other HCWs n-107 Median (IQR)	P value
COVID-19 is a serious global issue.	5 (4-5)	5 (4-5)	0.373
COVID-19 symptoms do not require special attention.	2 (1-4)	2 (1-5)	0.025
Educating people about COVID-19 can prevent the spread of disease.	5 (4-5)	5 (4-5)	0.904
I am worried about the impending outbreak in Mangalore.	4 (3-4)	4 (4-5)	0.011
Diagnosed Patients should be transferred to Isolation Wards.	5 (4-5)	5 (4-5)	0.941
There is enough support from the Government to control the outbreak.	4(3-4)	4 (2-4)	0.248
Health Care Workers should be up to date on information regarding COVID-19.	4 (4-5)	4 (4-5)	0.274
Hospitals are prepared for the outbreak of COVID-19.	4 (3-5)	4 (2-4)	0.123
There is unnecessary paranoia about the COVID-19 outbreak among the local public.	2 (4-4)	2 (4-4)	0.897
I am worried about getting infected by this virus.	4 (3-4)	4(3-5)	0.001

1-Strongly Disagree, 2- Disagree, 3-Neutral, 4- Agree, 5-Strongly Agree

Table 4 represents the perception of HCWs regarding the current pandemic. It was measured using a five-point Likert scale. Fifty percent of the participants strongly agreed that the following-COVID-19 is a serious public health issue, and educating the general public on COVID-19 can prevent the spread of infection. They agreed that they are worried about the situation of pandemic and they can get the infection too (more among other health care workers as compared to doctors). They also agreed to the fact that the Government of India (GOI) is providing full support to curtail the spread and they should be up-to-date with all the recent guidelines from the GOI. They did not agree with the fact that people are paranoid due to the current situation.

#### 4. DISCUSSION

COVID-19 has taken a heavy toll on the world, claiming many lives. HCWs are one of the important pillars for the sustenance of lives; their knowledge and perception regarding the pandemic have become even more crucial at this moment. Hence, we conducted this study to assess the knowledge and perception of HCWs regarding COVID-19 and its epidemiology.

We found that the knowledge varied among the Health care professionals with respect to different aspects of the epidemiology of the disease. However, the levels of knowledge and awareness did not differ much between doctors and other health care workers in each of the aspects. New pandemic and its determinants of disease and its agent's characteristics were not known much during the time of the study. Most of the study participants were aware of the place of origin, mode of transmission and common symptoms of the diseases. Though they knew whom to quarantine, fewer knew regarding the duration. However, there were similar levels of knowledge among doctors and other HCWs. This could be due to the fact that during the time of the study, the disease and its epidemiological determinants were new and the source of knowledge was the same for most of the health care professionals. The reason for the overall lower level of knowledge could be due to continuous revision of guidelines from the advisory bodies, and with the workload, it might be difficult for them to keep up with changes [2, 3, 9]. It is evident that knowledge predicts attitude and practice [6, 10 - 12].

HCWs being the frontline defense against the pandemic should provide the best of patient care and adopt preventive measures against the spread of the infection. Though the knowledge was found to be adequate regarding the symptoms of the disease, it was not complete with respect to the management of suspects, vaccination, isolation, structure and similarity of the virus with the past existing coronaviruses strains. Ideally, they all should be well aware of the updates. This can be done by the infection control committee in the hospitals to organize frequent training sessions of new updates. Also, social media platforms can be utilized to pass on the new must-know guidelines for doctors, nurses and laboratory technicians [13 - 16].

Another important driving factor to work effectively in the current situation is perception towards the pandemic. Our study showed that HCWs consider the situation as very serious and are scared of being infected (more among other HCWs as compared to doctors). They also agreed that knowledge is the key to endure the pandemic. Political commitment is another very crucial component in managing the ever-increasing burden of the cases in the country, and the HCWs believed that they are being supported by the government [17]. It has been observed that the stress at work, along with fear of death can cause mental breakdown of the HCWs. Hence, the initiative of motivational talks and individual counseling must be initiated at the local level to provide mental support and reduce the anxiety of infection among HCWs [3, 11, 18, 19]

#### CONCLUSION

The HCWs had knowledge and awareness regarding some aspects of COVID-19, such as epidemiology - place and time of origin, agent, mode of transmission, and management of cases. They perceived the pandemic as a major public health issue of concern and feared of being getting infected with the novel coronavirus. The other HCWs were more worried than the doctors of getting infected by the virus. Hence, frequent sessions on recent updates in the trend of COVID-19 pandemic and motivational talk, individual and group counseling will help fill the gap in knowledge and reduce concerns about pandemic among HCWs.

Limitation -As this study was conducted in one health care facility with smaller sample size, the findings cannot be generalized.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The Ethics approval was obtained by the Institutional Ethics committee, Kasturba Medical College, India with approval number IEC KMC MLR 02-2020/143(A).

## HUMAN AND ANIMAL RIGHTS

No Animals were used in this research. All human research procedures were followed in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

## CONSENT FOR PUBLICATION

All patients participated on a voluntary basis and gave their informed consent.

## AVAILABILITY OF DATA AND MATERIALS

The data that support the findings of this study are available from the corresponding author [P.R.] upon reasonable request.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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