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## Original Research Article

# Practices and associated factors regarding COVID-19 among community health workers: A cross-sectional survey from India

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## ABSTRACT

**Background:** Community health workers (CHW) are at the frontline facing the pandemic. Adequate awareness, knowledge and practice of preventive measures are of the utmost importance to sensitize the community and prevent spread of infection. The objective of our study was to assess the awareness, knowledge, and practices regarding COVID-19 infection among CHWs of four primary health care centers in Belagavi district, Karnataka, India.

**Materials and Methods:** A cross-sectional survey was conducted among CHWs working under 4 primary health centres. Data were collected from May 2020 to June 2020. Score of 1 was given to correct responses of 12 select questions taken from the awareness, knowledge, and practice sections. A combined score of  $\geq 8$  was considered satisfactory.

**Results:** Among 341 participants (response rate: 96%), mean age was  $40.1 \pm 8.2$  years and 324 (95.01%) were female. Majority had a minimum of secondary education (84.46%). Source of information for majority were through mobile phones and television (81.82%). 165 (47.21%) knew the mode of transmission of COVID-19.

**Conclusion:** The awareness, knowledge and practice among CHWs were adequate. Periodic training program and support from administrative authorities will motivate them to continue taking appropriate precautions.

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## 1. What we already know

Without adequate precautions, COVID-19 spreads rapidly in the community. Community health workers form the majority of the workforce in the public health sectors. They play a vital role in sensitizing and mobilizing the community towards a pandemic free era.

## 2. What this article adds

The awareness and knowledge regarding the preventive guidelines among community health workers have been adequate. This exemplifies the efforts undertaken by the public health authorities to employ adequate training and convey important and timely instructions to the community health workers.

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### 3. Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by coronavirus family (SARS-CoV-2). The symptoms range from common cold to Severe Acute Respiratory Syndrome (SARS). The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes.<sup>1</sup>

First case identified in India was on 27<sup>th</sup> January 2020. World Health Organization (WHO) has declared COVID-19 a Public Health Emergency of International Concern (PHEIC) on 30<sup>th</sup> January 2020. It was declared as a pandemic on 11<sup>th</sup> March 2020 by WHO. Most affected WHO region are the Americas followed by South-East Asia. As on January 22, 2021, globally, the estimated confirmed cases worldwide were 95,612,831 confirmed cases of COVID-19, including 2,066,176 deaths and in India, there were 10,625,428 confirmed cases and 153,032 deaths.<sup>2,3</sup>

There are no treatments available for COVID-19. The best way to prevent and slow down transmission is to be well informed and educated with accurate information about the coronavirus, the disease it causes and how it spreads through a science-driven narrative. Regular press conferences from WHO and government press and media notices are important but sensationalized news regarding COVID-19 and virally distributed social media stories tend to spread information at a faster rate. In social media, despite pressuring major corporations to control misinformation, countries have not been able to effectively stop or curtail their spread.<sup>4</sup>

Front line health care workers who encounter patients are at increased risk of exposure to infected cases. The primary health care workers need to have adequate knowledge and have good practice about the preventive measures against COVID-19 and to debunk the spread of misinformation in the community.

Many studies to assess the awareness and practices about COVID-19 were done among the health care professionals who are part of larger health settings. Very few studies have been done among these community health workers like Health Assistants, Accredited Social Health Activist (ASHA), Anganwadi teachers most of whom do not have a solid medical background. The aim of this study was to assess the awareness, knowledge, and practices regarding COVID-19 infection among community health workers of four primary health care centers in Belagavi district, Karnataka, India.

### 4. Material and Methods

A cross-sectional survey was conducted among CHWs employed under four primary health centers i.e., Kinaye, Vantamuri, Rukmini nagar and Ashok nagar which are the field practice areas of the Department of Community

Medicine, JNMC, Belagavi. The study was conducted from May 2020 to June 2020.

Out of total 355, 341 health care workers subsequently completed the questionnaire (response rate: 96%).

Community health workers such as Accredited Social Health Activists (ASHA), anganwadi teachers, Auxiliary Nurse Midwives (ANM), health assistants, laboratory technicians, pharmacists, clerical staff, and Class D workers of these health centers who gave written informed consent were included in the study.

The medical officers, postgraduate residents and residential medical interns were excluded from the study.

The investigators took written informed consent from each of the participants before collecting the data. The study participants were requested to come to their respective health center individually. Adequate precautions were taken with respect to infection control like hand hygiene, usage of masks and social distancing while collecting the data. Precautions were taken to see that none of the workers were assembled in one room.

The interview focused on socio-demographic information such as age, sex, type of family, level of education, marital status, and housing condition. Awareness, knowledge and practices related to COVID-19 were assessed through a semi-structured questionnaire. A score of 1 was given to correct responses of 12 select questions taken from the awareness, knowledge, and practice sections. A combined score of  $\geq 8$  was considered satisfactory.

The Jawaharlal Nehru Medical College Institutional Ethics Committee on Human Subjects Research (dated 29.04.2020 Ref: MDC/DOME/239) approved the study.

The data obtained were entered into Microsoft Excel and analyzed using IBM SPSS Statistics for Windows, Version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive analysis was carried out by mean and standard deviation for quantitative variables and frequency, and proportion for categorical variables. Multiple linear regression analysis was done to predict the mean scores from the sociodemographic variables. P value of  $< 0.05$  was considered statistically significant.

### 5. Results

A total of 341 participants were included in the study. The mean age was  $40.1 \pm 8.2$  and 324 (95.01%) were female and 17 (4.98%) were male (Table 1). 202 (59.23%) participants were anganwadi workers and 87 (25.51%) were ASHA workers. Majority had a minimum of secondary education (84.46%) and belonged to socioeconomic classes III or IV (65.1%). 234 (68.62%) of the participants were employed under the rural health centres.

As indicated in Table 2, 98.24% of the respondents were aware of the COVID-19 virus. The source of information for majority of the participants were through mobile phones

**Table 1:** Distribution of study participants and mean scores obtained according to sociodemographic characteristics (N=341)

	Mean ± SD	n	(%)
<b>Age</b>			
Less than 40	8.1 ± 0.779	160	(46.92)
More than 40	7.92 ± 0.936	181	(53.08)
<b>Gender</b>			
Male	8.35 ± 0.702	17	(5.0)
Female	7.98 ± 0.874	324	(95.0)
<b>Designation</b>			
ASHAs	8.11 ± 0.868	87	(25.51)
Anganwadi Workers	7.94 ± 0.881	202	(59.24)
Others	8.08 ± 0.813	52	(15.25)
<b>Socio Economic Class</b>			
Upper and middle class	8.05 ± 0.879	254	(74.5)
Lower class	7.87 ± 0.833	87	(25.5)
<b>Marital status</b>			
Married	8.01 ± 0.874	307	(90.03)
Unmarried or widowed or separated	7.91 ± 0.83	34	(9.97)
<b>Family type</b>			
Nuclear	8.02 ± 0.827	223	(65.40)
Joint family and three generation family	7.97 ± 0.947	118	(34.60)
<b>Type of house</b>			
Kaccha	7.99 ± 0.87	157	(46.04)
Semi pucca	7.86 ± 0.918	59	(17.30)
Pucca	8.09 ± 0.843	125	(36.66)
<b>Education</b>			
Primary education or illiterate	7.65 ± 1.051	40	(11.73)
Secondary education	8.07 ± 0.823	253	(74.19)
Graduate	7.94 ± 0.885	48	(14.08)
<b>Field practice area</b>			
Kinaye (rural)	7.98 ± 0.88	165	(48.39)
Vantmuri (rural)	8.26 ± 0.885	69	(20.23)
Ashok nagar (urban)	7.85 ± 0.745	20	(5.87)
Rukmini nagar (urban)	7.87 ± 0.833	87	(25.51)

and television (81.82%). 165 (47.21%) of the participants knew the mode of transmission of COVID-19 and 327 (95.89%) had knowledge regarding the symptoms and signs of COVID-19. Majority (92.08%) felt that recovery was possible once infected.

274 (80.35%) had knowledge regarding the number of days to be quarantined once infected and 279 (81.82%) had knowledge regarding the various zones such as Red, Green and Orange as per guidelines issued by the Ministry of Home Affairs, Government of India (GoI). A clear distinction was seen between the level of knowledge and practices of important preventive measures as 97.36% knew about them but 50.15% were following all the preventive measures to contain the spread of COVID-19 as per guidelines issued by the Ministry of Health and Family Welfare, GoI. 142 (41.64%) were using the “Arogya Setu” mobile app for contact tracing, syndromic mapping and self-assessment developed by the National Informatics Centre, Ministry of Electronics and Information Technology, GoI.

A significant regression equation was found ( $F(13, 327) = 2.513, p < 0.001$ ), with an  $R^2 = 0.10$ . All predictors in the equation together accounted for 10% variance in the data. The constant (intercept = 8.651) is mean on score i.e., when a person 1) was of age < 40 years, 2) was a Male, 3) belonged to upper-class and middle-class background, 4) belonged to joint and three generation family, 5) was a graduate, 6) was either an unmarried, separated, or widowed, 7) was an ASHA worker, 8) stayed in a Semi Pucca house and, 9) resided at a place which comes under rural field practice area of Vantmuri (Table 3). There was significant difference in mean scores between Anganwadi workers and ASHAs ( $b = -0.276, p = 0.036^*$ ). ASHAs scored 0.276 points more than Anganwadi workers. There was significant difference in mean scores between Kinaye (rural) and Vantmuri (rural) ( $b = -0.367, p = 0.011^*$ ) and between Rukmini Nagar (urban) and Vantmuri (rural) ( $b = -0.416, p = 0.005$ ). Community health workers from Vantmuri (rural) scored 0.367 more than Kinaye (rural) and scored 0.276 points more than Rukmini Nagar (urban).

**Table 2:** The respondents' awareness, knowledge and practice about COVID-19 (N=341)

Variables	Categories	n	%
Do you know about COVID-19 virus?	Yes	335	(98.24)
	Medical officer	38	(11.14)
What was the source of information for COVID-19?	Newspaper/ Radio	14	(4.11)
	Mobiles /Television	279	(81.82)
	Government Announcements	10	(2.93)
Do you know country where the first case was detected?	Yes	248	(72.73)
	Droplet infection	133	(39.0)
Do you know the mode of transmission?	Fomites	43	(12.61)
	All the above	165	(47.21)
	Yes	327	(95.89)
Knowledge of signs and symptoms	No	296	(86.80)
Is the disease 100% fatal?	Yes	314	(92.08)
Do you think recovery is possible?	Yes	274	(80.35)
Knowledge regarding number of quarantine days?	Yes	279	(81.82)
Knowledge of zones?	Yes	332	(97.36)
Knowledge of preventive measures?	Yes	321	(94.13)
	Hand washing/ using sanitizer	66	(19.35)
	Using mask while going out	87	(25.51)
Do you think washing hand is useful?	Avoiding overcrowding/ maintaining 6 feet distance in public places	12	(3.52)
	Avoiding unnecessary travel	5	(1.47)
	All the above	171	(50.15)
	Yes	142	(41.64)
Are you following preventive measures?	Yes	142	(41.64)
Are you using the "Arogya Setu" app released by GoI for COVID-19 digital service?	Yes	142	(41.64)

**Table 3:** Multivariate regression analysis to model scores from sociodemographic characteristics (N=341)

Variables	Unstandardized coefficients		Standardized coefficients	t	P - value
	Beta	Std. Error	Beta		
<b>(Constant)</b>	<b>8.651</b>	<b>0.381</b>		<b>22.714</b>	<b>0.000</b>
<b>Age</b>					
> 40 years	-0.151	0.099	-0.087	-1.521	0.129
<b>Gender</b>					
Female	-0.423	0.244	-0.106	-1.736	0.083
<b>Designation</b>					
Anganwadi workers	-0.276	0.131	-0.156	-2.108	<b>0.036 *</b>
Others	-0.147	0.193	-0.061	-0.762	0.447
<b>Type of family</b>					
Nuclear family	0.03	0.103	0.016	0.287	0.774
<b>Education status</b>					
Illiterate or primary education	-0.127	0.215	-0.047	-0.591	0.555
Secondary education	0.257	0.165	0.13	1.56	0.12
<b>Socioeconomic status</b>					
Lower class	0.170	0.115	0.085	1.478	0.140
<b>Marital status</b>					
Married	-0.018	0.158	-0.006	-0.113	0.91
<b>Type of house</b>					
Kaccha	0.14	0.14	0.08	1.001	0.318
Pucca	0.22	0.14	0.122	1.571	0.117
<b>Health centres</b>					
Kinaye (rural)	-0.367	0.143	-0.211	-2.566	<b>0.011 *</b>
Ashok nagar (urban)	-0.345	0.219	-0.093	-1.581	0.115
Rukmini nagar (urban)	-0.416	0.147	-0.209	-2.829	<b>0.005 *</b>

## 6. Discussion

We performed a study aimed to assess the awareness, knowledge and practices regarding COVID-19 infection among community health workers during the early stages of the COVID-19 outbreak in critically affected areas.

Regarding awareness and source of information regarding COVID-19, more than 80% got or used social media or television to obtain information. This finding is comparable to a study done by Bhagavathula et al.<sup>5</sup> WHO declared an “infodemic” and take continuous efforts to promote healthy behaviours and mitigate the harm from misinformation.<sup>6</sup> We reiterate that misinformation is an ongoing hurdle to proper infection prevention and control of COVID-19 and fact checking by oneself should be taught to consumers of social media.

The average standard score for knowledge and practice was 8.0 which was satisfactory. These findings were lower compared to studies done by Biriha et al. in Ethiopia and by Saqlain et al. in Pakistan.<sup>7,8</sup> The responses to the question - knowledge regarding mode of transmission of COVID-19 was poor. COVID-19, an emerging disease gave unprecedented challenges to the entire global health sector and had a “learning as we go” approach to which the low score may be attributed to. Community health workers encounter the public need to have adequate knowledge regarding mode of transmission which provide a rationale for practicing appropriate and adequate preventive measures against COVID-19. These findings were lower compared to other studies.<sup>5,8,9</sup>

Our results showed that 74 (21.7%) respondents had poor combined score for knowledge and practice which were consistent with the results for emerging diseases as reported by Alshafi et al.<sup>10</sup> Almost half of the community health workers were practicing different preventive measures and were considered to have poor practice of preventive measures wherein they did not adhere to all the recommendations issued. This reduced compliance may be attributed to exceptionally low availability of resources or insufficient infection prevention control (IPC) training. The community health workers are the grassroots level workers of the public health sector and are envisioned as key personnel in the delivery of primary health care. If they show adequate compliance, the public will show more interest in following them. This reduced compliance is consistent with findings from other studies.<sup>7,11</sup> The other half had better practice which may be attributed to workers’ inclination or motivation to take adequate steps so that they could avoid infecting themselves or their family.<sup>12</sup>

## 7. Conclusion

CHWs who work without adequate preventive measures have a higher risk of COVID-19 infection. Periodic

infection prevention and control (IPC) training will enable and motivate them to take adequate precautions during times of outbreaks which would increase their confidence while providing health services at the community level.

## 8. Source of Funding

None.

## 9. Conflict of Interest

None.

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