International Journal of Community Medicine and Public Health
Salkatte R et al. Int J Community Med Public Health. 2022 Dec;9(12):4607-4612
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20223220

Original Research Article

Knowledge and perception towards COVID-19 pandemic: a cross-sectional survey among a selected rural community in Karnataka

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Received: 29 September 2022
Accepted: 09 November 2022

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ABSTRACT

Background: The World Health Organization has declared COVID-19 a pandemic that has become a significant public health burden across the world. In rural India, where 68 percent of the population resides, it will be crucial in containing the pandemic. Recognizing the importance of rural populations in COVID prevention, this study was carried out to assess the knowledge and behaviour of a selected rural population in response to COVID-19.
Methods: A cross-sectional survey was conducted from January to April 2021 among patients attending the Hadinaru primary health care centre. The sample size calculated was 415. Data were collected using a questionnaire administered face to face to each participant.
Results: A total of 415 valid questionnaires were obtained. 86.99% of participants knew about at least one covid associated symptom and 96.87% knew about the mode of transmission. Around 84.82% of participants reported face masks as the best mode of prevention of COVID-19 while 88.43% of subjects were using them regularly. Hand sanitization was followed by 86.26% of subjects while only 20% followed social distancing. The education of participants was a key determinant for use of face masks, hand sanitizers and social distancing as preventive tools.
Conclusions: In general, participants had good knowledge about the disease and a positive attitude towards protective measures. Although the government has made significant efforts to raise public awareness of the disease and stop its spread, more work needs to be done to support and educate the lower socioeconomic strata.

Keywords: Attitude, Behaviour, COVID-19, India, Knowledge, Rural population

INTRODUCTION

Severe acute respiratory syndrome corona virus 2 disease (SARS-CoV-2) also known as COVID-19, is a global epidemic that has become a serious public health burden around the world. In Wuhan, China, on December 31, 2019, cases of pneumonia were reported and was identified to be a new strain of the Coronavirus which was later connected to the consumption of seafood in one of Wuhan's markets.[1] On January 30, 2020, WHO declared the COVID-19 outbreak a global public health emergency of international concern due to the virus's rapid transmission and subsequent increase in the number of confirmed cases and deaths.[2] The disease's mortality and morbidity statistics are rapidly altering on a global scale; as of December 10, 2021, there were over 268 million confirmed cases of COVID-19 and more than 5,000,000 deaths worldwide.[3]

Coronaviruses are enveloped, positive single-stranded RNA viruses that can infect a wide range of animals, including humans. Tyrell and Bynoe, who cultivated the viruses from patients with common colds, first identified coronaviruses in 1966.[4] The virus primarily spreads through saliva droplets or discharge from an infected person's nose during coughing or sneezing.[5] Between 2

and 14 days after exposure, people who are both infected and asymptomatic may transmit the virus.[6] Chronic illness and advanced age have both been noted as potential risk factors for serious illness and fatality. Eighty per cent of patients have minor symptoms that do not necessitate medical attention. Around 20% of COVID-19 cases had severe illnesses like dyspnea, sepsis, septic shock, and organ failure; 2% of these cases could have been fatal[7,8] It is particularly risky in a nation like India, where 65-68% of the population resides in rural areas and where the availability of the health care workforce is significantly lower than what is advised by the World Health Organization.[9] Therefore, in the near future, raising awareness among these rural residents will be essential for the prevention and control of the COVID-19 epidemic in India. Since COVID-19 is a recent phenomenon, there is a scarcity of information about general public knowledge and behaviours, particularly among rural communities in India.[10]

India is a huge country with a population of about 1.3 billion people. In India, the first case of COVID-19 infection was reported in Kerala on January 27, 2020, in a 20-year-old female medical student returning home for the holidays from Wuhan, China.[11] As of 10th December 2020, India is the second most COVID-19 impacted country in terms of the overall number of infected persons, after only the United States with more than 3 crores confirmed cases and more than 4.5 lakh deaths.[3,12]

On March 8, 2020, the first case of the COVID-19 pandemic was confirmed in Karnataka. Two days later, the state became the first in India to invoke the provisions of the epidemic diseases act, 1897, which lasted a year in order to contain the disease's spread. Karnataka has 29,99,471 confirmed cases and 35,747 deaths as of 10 December 2021, with 29,53,857 recovered cases and 9,867 active cases.[13]

Knowledge of a disease is an important cognitive key in public health when it comes to health prevention and promotion. It involves a range of perspectives on the disease exacerbating and precipitating factors, as well as recognition of symptoms, available therapies, and potential outcomes. Beliefs about COVID-19 arise from a variety of sources, including stereotypes about similar viral diseases, government information, social media, the internet, prior personal experiences, and medical sources. These beliefs' veracity may affect various preventive actions and may differ across the population. Lack of knowledge or widespread misunderstanding of medical concepts can put people at risk in many situations.[14,15]

Objectives

To assess the knowledge and perception of a selected rural population in Mysuru towards COVID-19. To assess the practices in response to COVID-19 of a selected rural population in Mysuru.

METHODS

Study design and population

A cross-sectional study was done in the rural field practice area of the department of community medicine, JSS medical college, Mysuru (Primary health centre Hadinaru) for a period of 4 months (January to April 2021). All patients above the age of 18 years and consenting to participate in the study were included and the exclusion criteria were those suffering from mental or physical disability. The study protocol was approved by the institutional ethical committee and consent was obtained from the participants after explaining the purpose and procedure of the study.

Study settings

The primary health centre Hadinaru comes under the rural field practice area of JSS medical college, Mysuru, under the limits of Nanjangud taluk. The data was collected from people under the Hadinaru subcentre which has a total population of about 6331.

Sample size and sampling technique

Based on the prevalence of 56.3% from a previous study conducted in rural Bihar, at a confidence interval of 95% and an absolute precision of 5 %, at least 378 participants were needed to be studied.[16]

Sample size:

$$n = \frac{Z^2PQ}{L^2}$$

where, Z=1.96, P= 56.3, Q= (100-56.3) = 43.7, L=5%

Therefore, the required sample size works out to be 378, taking into consideration a non-response rate of 10%, the total sample size was to 415.

Using systematic random sampling, the first person attending the primary health centre was selected after which every 15th person was selected for the study. In case the 15th person selected was less than 18 years, the very next person was selected for the study.

Study tool

Informed consent was obtained from the participants in the local language prior to data collection. After evaluating the existing relevant literature on COVID-19, a structured questionnaire consisting of both open-ended and closed-ended questions was constructed and it was pretested on 20 individuals who were later eliminated from the research. As a result, the material validity and reliability of the instrument were established. The questionnaire asked about (1) socio-demographic variables which include information on age, gender and

education status. (2) knowledge section including symptoms, prevention, mode of transmission and preventive strategies implemented by the city cooperation and (3) the practice section which includes, following home isolation and the various preventive measures taken by subjects.

Statistical analysis

The data collected was entered in Microsoft Excel 2019 spreadsheet followed by analysis using SPSS version 26 (Statistical package for the social science) Windows, Version 26.0. (IBM Corp. Released 2019. IBM SPSS Statistics for Armonk, NY, USA). The associations between education and knowledge were found using the Chi-Square test/ Fisher's Exact test. The data distribution was represented using appropriate tables. P value of less than 0.05 was considered statistically significant.

RESULTS

Out of the 415 participants who answered the questionnaire, 190 (45.78%) were males and 225 (54.22%) were females. The mean age of the study participants was 35±5.4 years. 166 (40%) participants received education beyond PUC while 123 (30%) had only a middle school education (Figure 1).

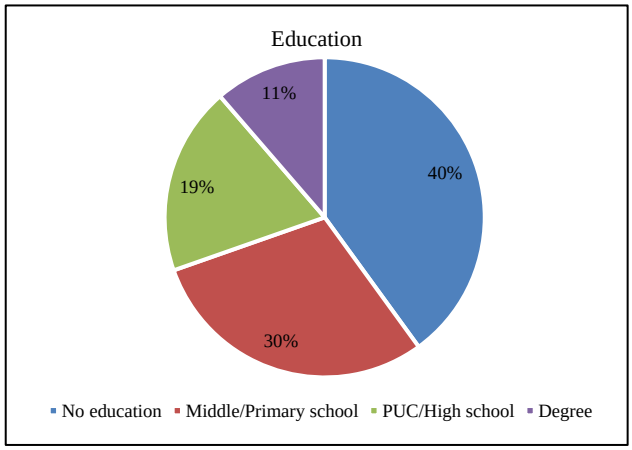

Figure 1: Pie chart showing the education level of participants.

Among the 415 study subjects, 361 (86.99%) participants knew about at least one covid associated symptom and the knowledge levels were found to be more in participants with higher levels of education (Table 1).

Table 1: Perception and educational differences among COVID-19 symptoms.

Variables	Knowledge about symptoms present (%)	Knowledge about symptom's absent (%)	Total (%)	Chi-square value	P value
No education	125 (75.3)	41 (24.7)	166 (100)	34.400	<0.001**
Middle/Primary school	114 (92.7)	9 (7.3)	123 (100)		
PUC/High school	76 (96.2)	3 (3.8)	79 (100)		
Degree	46 (97.9)	1 (2.1)	47 (100)		

**, *- Significant p value

Table 2: Knowledge and educational differences toward COVID-19.

Variables	Category	No education (%)	Middle/primary school (%)	PUC/high school (%)	Degree (%)	Chi-square value	P value
Mask	Knows	152 (91.6)	96 (78)	59 (74.7)	45 (95.7)	20.908	<0.001**
	Don't know	14 (8.4)	27 (22)	20 (25.3)	2 (4.3)		
Covid Mithra	Knows	30 (18.1)	45 (36.6)	25 (31.6)	17 (36.2)	14.621	0.002*
	Don't know	136 (81.9)	78 (63.4)	54 (68.4)	30 (63.8)		
Pancha Sutra	Knows	32 (19.3)	41 (33.3)	25 (31.6)	20 (42.6)	13.296	0.004*
	Don't know	134 (80.7)	82 (66.7)	54 (68.4)	27 (57.4)		
Spread of Covid	Know	24 (14.5)	20 (16.3)	23 (29.1)	16 (34)	14.156	0.003*
	Don't know	142 (85.5)	103 (83.7)	56 (70.9)	31 (66)		

**, *- Significant p value

Table 2 shows the distribution of participant responses to each knowledge question with educational differences. There were significant educational differences for each item of knowledge questions; 402 (96.87%) participants had knowledge about at least one mode of transmission of COVID-19 and 83 (20%) participants were aware of both direct and indirect modes of transmission. Around 352 (84.82%) participants reported using masks as the best mode of prevention of COVID-19. 117 (28.19%) participants were aware of Covid Mithra, which were the triage and counselling centres set up by the Mysuru district administration to help COVID-19 patients and

their families on how to deal with the fear and the stigma attached to the virus while 118 (28.43%) participants were aware of the Pancha Sutra which is a unique 5-point action plan to control the spread of COVID-19 (Table 2).

Table 3 shows the behavioural differences of the participants with respect to education. 43 (10.36%) out of the 415 study participants reported having at least one member of their family tested positive for COVID-19 infection. Among the 318 (76.63%) participants who were asked to follow home isolation due to either COVID infection or being in primary contact with an infected person, 185 subjects actually followed it. 367 (88.43%) subjects were using masks regularly and 358 (86.26%) participants reported using the hand sanitizer each time they returned back home, both showing an increase among people with higher educational qualifications (Table 3).

Table 3: History of infection, practice and educational differences.

Variables	Category	No education (%)	Middle/primary school (%)	PUC/high school (%)	Degree (%)	Chi-square value	P value
Family history of covid	Present	14 (8.7)	8 (6.6)	12 (15.2)	9 (16.98)	16.515	0.017#
	Absent	147 (91.3)	114 (93.4)	67 (84.8)	44 (83.02)		
Home isolation	Followed	73 (59.8)	59 (69.4)	39 (56.5)	14 (33.3)	15.279	0.002*
	Not followed	49 (40.2)	26 (30.6)	30 (43.5)	28 (66.7)		
Mask	Using	136 (81.9)	119 (96.7)	72 (91.1)	40 (85.1)	16.256	0.001*
	Not using	30 (18.1)	4 (3.3)	7 (8.9)	7 (14.9)		
Sanitizer and hand washing	Following	129 (77.7)	113 (91.9)	72 (91.1)	44 (93.6)	17.241	0.001*
	Not following	37 (22.3)	10 (8.1)	7 (8.9)	3 (6.14)		

*- Significant p-value, #- Fisher's Exact Test

DISCUSSION

The COVID-19 pandemic is a global health emergency, and many of the issues that have been raised throughout the outbreak are likely to get worse in regions with weakened healthcare systems and widespread misunderstanding about the virus. The knowledge gained from this study will help to better understand how rural households gather and analyse data regarding a novel emerging disease.[17]

A large majority of participants in the study (86.99%) had at least heard of one COVID-19 symptom at the time the study was conducted. This finding was higher when compared to a study done by Makemjio et al in semi-rural areas of Cameroon, where nearly 91.14% of the participants were unaware of clinical symptoms of the disease. The level of awareness varied significantly according to the educational level ($p<0.001$) of the participants.[18]

Among the study participants, 96.87% had knowledge about at least one mode of transmission of COVID-19 while 20% of the participants were aware of both direct and indirect modes of transmission. Coughing and sneezing were identified as transmission routes by 90.36% of respondents while indirect transmission through contaminated food was the least commonly identified transmission route (27.23%). This was similar to a study done by Lau et al in the Philippines where 89.5% of participants identified coughing and sneezing as the main mode of transmission and indirect hand washing as the least commonly identified transmission route (72.6%).[17] Another study done by Abdelhafiz et al in Egypt showed that 81.8% of the population knew the disease could be transmitted by asymptomatic carriers which were higher when compared to our study.[19]

In accordance with our study, handwashing was identified by 55.90% of participants as the most frequent preventive practice in response to COVID-19, while 84.82% of participants were aware of the use of face masks, and 73.01% were aware of social distancing. In a study done by Siddiqui et al among the Saudi Arabian population, 84% of the participants knew about handwashing techniques, 75% knew that sneezing or coughing into the arm/elbow can prevent the spread of COVID-19, 82% knew that COVID-19 can be transferred by shaking hands and 79% knew that they had to maintain a safe distance of at least one meter.[20]

In our study, 88.43% of subjects reported using masks regularly and 86.26% of participants reported using the hand sanitizer each time they returned back home and this usage was found to be more in subjects with higher educational qualifications. A study done by Gupta et al in a rural population in a northern Indian district showed 77% of participants using face masks followed by 72% following social distancing.[10] Another study done among poor-income households in Philipines reported that 82.2% of participants practiced handwashing strategy regularly while social distancing and avoiding the crowd were only identified by 32.4% and 40.6% of respondents respectively. The education of participants was a key determinant for use of face masks as a preventive tool and this was found to be statistically significant in our study.[17] In another study done by Omoronyia et al among community health workers in rural Nigeria, regular

practice of use of face masks, goggles, gloves, and hand hygiene was found to be 50%, 12.8%, 30.2%, and 56.4%, respectively.[21] Similar results were also observed in a study done in Jammu and Kashmir by Dkhar et al where 87% followed advisories and reported washing hands with soap and water regularly, 73% reported regularly wearing masks, 89% reported following lockdown guidelines, and 87% reported maintaining social distancing.[22]

We also wanted to see if people were aware of the Covid Mithra and Pancha Sutra initiatives provided by the Mysuru district administration. Out of the surveyed, only 28.19% had heard of Covid Mithra and 28.43% had heard of the pancha sutra plan.

The study also had a few limitations. As a result of the short survey's reliance on self-reported rather than observed behaviour, we are unable to determine whether social desirability bias affected the measurement. Moreover, as the pandemic's severity grew, public health campaigns grew in intensity, therefore the findings of this study may no longer reflect current knowledge and practice. Further, the sample size was small and this was a hospital-based study so might not be exactly representative of the general population.

CONCLUSION

Only a small proportion of studies have been conducted on India's rural population, which accounts for 68.8% of the country's population. Our survey participants had a good understanding of COVID-19 and a positive attitude toward implementing protective measures, which is critical in limiting the disease's spread. Less-educated subjects, on the other hand, had lower levels of knowledge.

More effort or the use of alternative means to communicate with these groups may be required. Although the government has made significant steps to curb the disease's spread, more work is needed to help the most vulnerable communities cope with the disease's economic consequences. As the vast majority of rural residents do not have access to the internet, we must make better use of television and radio channels for this purpose, as well as educate the public on the role of asymptomatic carriers in disease transmission.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Salkatte R, Anil D, Kumar SD, Basheer S. Knowledge and perception towards COVID-19 pandemic: a cross-sectional survey among a selected rural community in Karnataka. Int J Community Med Public Health 2022;9:4607-12.