A descriptive cross-sectional study on COVID-19 knowledge, attitude, and practices of South Indian population

Shakeer Kahn Patan, Sravana Deepthi Chittem, Pallavi Madithati[1], Bayapa Reddy Narapureddy[2], Chandra Sekhar Chittooru, Kalyan Viswanath Reddy Lingala[3], Kumar Gular[4]

Abstract:

BACKGROUND: The 2019-novel coronavirus (2019-nCoV) started as an epidemic later transformed into a pandemic causing a threat to public health globally. Any community to fight the COVID-19 pandemic requires adequate knowledge, attitude of the people, and practice of the government-imposed laws and regulations. Based on these factors, we framed the objectives to find the sociodemographic profile of the study group and to assess their knowledge, attitude, and practice (KAP) toward COVID-19. These results will help the health planners and administrators in each state to find out the gap in health education efforts.

MATERIALS AND METHODS: A descriptive, cross-sectional study was conducted on South Indian population to know KAP toward COVID-19. A convenient sampling technique was used to collect the data using Google forms, and analysis was done using the SPSS software version 21. The questionnaire includes sociodemographic information, KAP questions toward COVID-19, and perception toward national and community responses.

RESULTS: A total of 1644 were participated; the average knowledge score was 17.5 (+1.9). Most of them (92.9%) respondent's perceived that early detection will have a better outcome from COVID-19, whereas the knowledge compared with practice, there is a significant difference Pearson correlation (0.404) P is < 0.001.

CONCLUSIONS: Although a high level of knowledge on COVID-19 in the public gradually decreasing the practice of preventive measures, the government should continue the consistent efforts to change the behavioral communication and motivate the public social responsibility to adhere to the health protocols, masking, hand hygiene, social distancing, and vaccination to prevent expected COVID-19 subsequent episodes.

Keywords:

Attitudes, behavioral communication, COVID-19, knowledge, pandemic, practices, preventive measures, South India

Department of Community Medicine, Apollo Institute Medical Sciences and Research, Chittoor, Andhra Pradesh, India, [1]Department of Biochemistry, Apollo Institute Medical Sciences and Research, Chittoor, Andhra Pradesh, India, [2]Department of Community Medicine, Apollo Institute of Medical Sciences and Research, Murukambattu, Chittoor, Andhra Pradesh, India, [3]Department of Public Health, College of Health Sciences, Saudi Electronic University Abha, Saudi Arabia, [4]Department of Physiotherapy, College of Applied Medical Sciences, King Khalid University, Abha, Saudi Arabia

Address for correspondence:
Dr. Bayapa Reddy Narapureddy, Department of Community Medicine, Apollo Institute of Medical Sciences and Research, Murukambattu, Chittoor, Andhra Pradesh, India.
E-mail: bayapreddy916@gmail.com

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Introduction

Over the past few years, emergent threats posed by infectious diseases have become public health concerns which have increased the need for prompt disease outbreak warnings. The first outbreak of the 2019-novel coronavirus (2019-nCoV) was identified in Wuhan, Hubei Province during December 2019 which started as an epidemic later became a pandemic causing a threat to public health worldwide.[1] Based on the recommendations of the International Health Regulations (2005) Emergency Committee,[2] on January 30, 2020, the WHO Director-General has declared that the outbreak of novel coronavirus (2019-nCoV) is a global public health emergency. As of

February 25, 2021, total confirmed cases and deaths globally were 113,543,465 and 2,518,740, respectively.[3]

The uncertainties caused by COVID19 have had consequences in several sectors, and implications on the population's day to day activities. These COVID 19 consequences would be faced by humanity for a decade or so.[4] The common social change brought about by the COVID-19 was hygiene practices and social distancing among the population.[5] Although voluntary self-quarantine is not the only solution, complete knowledge is required to control this epidemic situation effectively and efficiently.[6] Irrespective of symptoms, usage of the mask by the general population may lead to the reduction of infectivity in the susceptible individuals from the silent COVID-19 cases.[7] The World Health Organization has instructed to maintain a minimum physical distance of 1 m, perform hand hygiene, usage of the mask, and refraining from touching the mouth, nose, and eyes.[8] Despite the unparalleled measures deployed in tackling the spread of the outbreak, the results of the efforts are largely dependent on the conduct of people. Further, the adherence of the communities of various socioeconomic status people to healthy practices plays a major role in preventing the spread of the disease.[9] With this background, the present study aims to recognize whether the general population has gained adequate knowledge, developed a responsible attitude, and practicing safety measures to avoid contracting the disease.

Materials and Methods

Study design and setting
A descriptive, cross-sectional study was conducted to find the knowledge, attitude, and practice (KAP) about COVID-19 from September 15, 2020, to October 25, 2020.

Study participants
The general population of South Indian states who were willing to participate and above the age of 18 years.

Sampling
Convenient sampling technique was used under a restricted environment. The representative target sample size needed to achieve the study objectives, and sufficient statistical power was calculated by a sample size calculator.[8] The minimum sample size calculated was 1015 participants, and finally, 1644 study participants were included in the study.

Data collection tool and technique
The questionnaire was carefully designed and developed in English and Telugu languages according to the guidelines provided by the government for the community of COVID-19. The questionnaire was pretested using a pilot study for identifying, assessing, and evaluating the questionnaire before using it on the target population. Proper explanation about the objectives of the study, the *pros and cons* of the study has been made to the respondents. The data collection is performed and accomplished by final year MBBS students after getting adequate training in data collection and data entry in Google forms. After piloting the study pro forma, the actual data were collected, and the investigators were constantly monitored the data collection.

The questionnaire includes sociodemographic information, KAP questions toward COVID-19 and perception toward national and community responses. The sociodemographic consists of variables such as age, gender, marital status, level of education, residential location, type of family, occupation, and the socioeconomic status was determined based on the monthly income of the individual as per the Modified BG Prasad year 2020.[9] The components of the knowledge section include the awareness of COVID-19, the causes, signs and symptoms, and the source of information. Attitude sections focus on COVID-19 preventive measures, adherence to government disease prevention orders, social distancing, use of face masks, feelings, and adaptive measures toward the pandemic. The practice section includes perception toward COVID-19 pandemic, government response, and opinion about Indian prospective.[10]

Ethical consideration
The enumerator obtained the telephonic verbal consent after explaining the importance of the study, and steps involved in data collection before proceeding from the age above 18 years respondents, willing to participate and sparing time to provide information, also emphasized that they were free to withdraw at any stage of the study, without giving any reason. The authors assured the confidentiality of personal identification, and other information and opinions provided would be anonymous and confidential. Obtained institutional ethical committee clearance with reference number IEC08/AIMSR/07/2020 from the Apollo Institute of Medical Sciences and Research Murukambattu, Chittoor, Andhra Pradesh, India.

Data analysis
Google forms are used to collect the data and Statistical Package for the Social Sciences (SPSS), IBM Corp, Armonk, NY, USA; version. 21. statistical package software was used to analyze the data. The data were presented by means proportions through descriptive analysis, univariant analysis, Pearson correlations, and other appropriate tests were applied to find the relationship between respondents' COVID-19 KAP. $P < 0.05$ is considered as statistical significance.

Results

A total of 1758 people responded, out of 1758 responses, 1644 (93.6%) participants were responded completely, 114 (6.4%) were provided incomplete information/withdrawn in the middle of the study.

Out of 1644 respondents, 815 respondents were female and 829 were male. The survey reached a population ranging from 18 to 74 years with a mean age of 35.3 years (±9.7 years). Most of the respondents were graduates 644 (39%) respondents, followed by intermediate/diploma 370 (23%), postgraduates 248 (15%), high school 197 (12%), primary school and middle school were 71 (4%) and 62 (3.7%), respectively, with remaining 52 (3.1%) were illiterates. Among the 1644 half of the responders were unmarried 819 (50%) followed by 771 (47%) were married and the remaining 3.1% were either widows or separated. Many of the responders were living in a nuclear family 1387 (84%) and only 15% of the responders either living in joint family 203 (12%) or three-generation family 54 (3.2%). Referring to the residence, nearly half of the responders were living in the urban areas 768 (47%) followed by semiurban 419 (25%), rural 350 (21%), and the remaining from the metropolitan city 107 (7%). From total responders as per the BG Prasad Socioeconomic Status Scale for the year 2020, more than half of the responders 1081 (66%) belongs to the socioeconomic status class I, followed by socioeconomic status class II 330 (20%), class III 140 (9%), class IV 64 (04%), and remaining class V 29 (2%). Details of the sociodemographic and socioeconomic are provided in Tables 1 and 2.

Assessment of knowledge

A total of 11 questions were used to measure knowledge on the COVID-19 virus. The average knowledge score for the participants was 79.7 with standard deviation = 1.9. About 96.7% of participants were aware of COVID-19 is caused by virus, most of the participants ranges from 78% to 98% aware of symptoms of COVID-19. Among the study participant, three fourth of the participants (67%–98%) were having enough knowledge on effective way of preventing COVID-19. Most of the respondents (97.7%) knew that who are high risk group for the COVID-19, but they were lacking the knowledge on which infective material is responsible for disease transmission. Most of the participants were aware that the disease transmitted with respiratory droplets (98%) and saliva (89%), whereas there was some noticeable confusion among respondents regarding the transmission of the virus by touching and eating. Details are provided in Table 3.

Assessment of attitudes

Regarding the assessment of the parameter attitude specified in Table 4, about 85% (1398) of the participants opined lockdown is the successful way to control the spread of infection and 53.9% (886) are sure that COVID-19 can be successfully controlled. About 92.9% (1528) of the respondents felt that early detection is crucial for the treatment and successful outcome for COVID-19 and 56.2% (924) are convinced that society is fully aware of COVID-19. Coming to the transmission of COVID-19 from household pets to humans or vice versa, only 34.7% (570) of the respondents agreed, whereas 35.7% (587) of the respondents did not agree with the statement. The respondents of about 88.6% (1456) said that the authorities should arrange for treatment for COVID-19 patients in a separate hospital. If the cases of COVID-19 increase, 81% (1331) of respondents voted to implement lockdown measures again. The attitude of successfully controlling COVID-19 was significantly associated with education status and socioeconomic status and not significant with type of family, residential area, and occupation. The complete details related to attitude are provided in Tables 4 and 4a.

Assessment of practices

The assessment of the practices toward COVID-19 revealed that out of total respondents 90.8% (1492) wear mask while going outside, 84.2% (1385) practice hand hygiene with soap or sanitizer, 84% (1381) avoid handshaking, hugging, and kissing while meeting others, and 83.8% (1377) of respondents often maintain social distance in public places, details that are provided in Table 5. Only 13.3% (218) of respondents are frequently going out, whereas most of them avoid going out until and unless if it is required. The differences between demographic groups, it was found that there were significant associations between gender, age group, marital status, literacy status, and occupation for the avoidance of crowded places and wearing mask details that are provided in Table 6.

Discussion

Epidemics and pandemics are periodic phenomena globally. Under these situations, the community should be aware of the disease and be equipped with complete knowledge, attitude, should show preparedness, and correct practices to encounter the challenges. Since the emergence of COVID-19, this pandemic crisis made India one of the major affected countries, forcing to impose lockdown and change health regulations. In a view of preparedness, curtailing the spread, and regulate the public health challenges, the Government of India has implemented standard operating procedures (SOPs) and regulations, but this can be done purely on public awareness on COVID-19. In this context, this study helps to find the level of knowledge, practice, and attitude of the public regarding COVID-19 which is of the highest priority.[11-14]

Table 1: Distribution of study participants based on sociodemographic profile

Variable	Female, *n* (%)	Male, *n* (%)	Total, *n* (%)
Age group (years)			
<20	233 (29)	169 (20)	402 (24)
21-40	352 (43)	384 (46)	736 (45)
41-60	202 (25)	231 (28)	433 (26)
>60	28 (3)	45 (5)	73 (4)
Total	815 (100)	829 (100)	1644 (100)
Marital status			
Unmarried	428 (53)	391 (47)	819 (50)
Married	341 (42)	430 (52)	771 (47)
Separated	2 (0)	1 (0)	3 (0.1)
Divorcee	3 (0)	5 (1)	8 (0.4)
Widow	41 (5)	2 (0)	43 (2.6)
Total	815 (100)	829 (100)	1644 (100)
Education (class)			
Illiterate	31 (4)	21 (3)	52 (3)
Primary (1st-5th)	39 (5)	32 (4)	71 (4)
Middle (6th-7th)	24 (3)	38 (5)	62 (3.7)
High school (8th-10th)	79 (10)	118 (14)	197 (12)
Inter/diploma	181 (22)	189 (23)	370 (23)
Graduate	327 (40)	317 (38)	644 (39)
Postgraduates/professional degree	134 (16)	114 (14)	248 (15)
Total	815 (100)	829 (100)	1644 (100)
Type of family			
Joint	85 (10)	118 (14)	203 (12)
Nuclear	703 (86)	684 (83)	1387 (84)
Three generation	27 (3)	27 (3)	54 (3)
Total	815 (100)	829 (100)	1644 (100)
Residential area			
Metropolitan (>1,000,000 population)	58 (7)	49 (6)	107 (7)
Rural (<10,000 population)	167 (20)	183 (22)	350 (21)
Semiurban (10,000-100,000 population)	172 (21)	247 (30)	419 (25)
Urban (100,000-1,000,000 population)	418 (51)	350 (42)	768 (47)
Total	815 (100)	829 (100)	1644 (100)

Table 2: Distribution of study participants based on occupation and socioeconomic profile

Variable	Female, *n* (%)	Male, *n* (%)	Total, *n* (%)
Occupation			
Homemaker	31 (4)	0	31 (2)
Professional	56 (7)	95 (11)	151 (9)
Semiprofessional	105 (13)	150 (18)	255 (16)
Skilled	29 (4)	83 (10)	112 (7)
Semiskilled	30 (4)	119 (14)	149 (9)
Unskilled	24 (3)	83 (10)	107 (7)
Student	319 (39)	253 (31)	572 (35)
Unemployed	221 (27)	46 (6)	267 (16)
Total	815 (100)	829 (100)	1644 (100)
Socioeconomic status			
I	574 (70)	507 (61)	1081 (66)
II	134 (16)	196 (24)	330 (20)
III	62 (8)	78 (9)	140 (9)
IV	28 (3)	36 (4)	64 (4)
V	17 (2)	12 (1)	29 (2)
Total	815 (100)	829 (100)	1644 (100)

A total of 1644 individuals from the different states of South India have participated in this study with the number of males 829 (50.5%) and female 815 (49.5%). Many of the participants were the age group of 21–40 years (45%) followed by 41–60 years (26%), <20 years (24%) and >60 years only 4%. The study participants were an almost equal number of married (50%) and unmarried (47%); almost half of the participants have completed their graduation (39%), postgraduation (15%), and only 4% of them were illiterates. More than three fourth (84%) of the study group were living as the nuclear family, very few 12% were in a joint family, and almost negligible amount (3%) living in three-generation families. Nearly half of the study participants are living in the urban areas, whereas one-quarter of the participants were living in the rural communities. These findings agreed with, other earlier studies judgments conducted in different countries Egypt, Kenya, and Nigeria.[15-17]

Table 3: Distribution of study participants based on knowledge on COVID-19 disease

Knowledge	Frequency (%)		
	True	False	Don't know
K1. COVID-19 is caused by virus	1590 (96.7)	20 (1.2)	34 (2.1)
K2. The major clinical symptoms of COVID-19			
Fever	1610 (98.0)	17 (1.0)	17 (1.0)
Cough and sore throat	1614 (98.0)	16 (1.0)	14 (1.0)
Body pain	1323 (80.5)	83 (5.0)	238 (14.5)
Breathlessness	1549 (94.2)	27 (1.7)	68 (4.1)
Loss of smell or taste	1293 (78.6)	120 (7.3)	231 (14.1)
K3. COVID-19 is a contagious disease	1578 (96.0)	33 (2.0)	33 (2.0)
K4. Preventive measures of COVID-19			
Not contacting directly with infected person (shake hands/hugging/kissing)	1622 (98.7)	13 (0.8)	9 (0.5)
Wearing face masks in public places	1609 (97.9)	31 (1.9)	4 (0.2)
Maintain social distancing>1 m	1582 (96.2)	46 (2.8)	16 (1.0)
Not sharing articles (fomites) of infected persons	1399 (85.1)	156 (9.5)	89 (5.4)
Consumption of contaminated food items	1110 (67.5)	392 (23.9)	142 (8.6)
K5. Infected material responsible for the transmission of COVID-19			
Respiratory droplets	1607 (97.7)	5 (0.3)	32 (12.0)
Saliva	1477 (89.8)	64 (3.9)	103 (6.3)
Urine	477 (29.0)	571 (34.7)	596 (36.3)
Fecal matter	422 (25.7)	572 (34.8)	650 (39.5)
Blood	798 (48.5)	323 (19.6)	523 (31.9)
K6. Age group severely affected (years)			
Children (<10)	1326 (80.7)	198 (12.0)	120 (7.3)
Adolescent (11-20)	383 (23.3)	900 (54.7)	361 (22.0)
Adults (21-50)	602 (36.6)	701 (42.6)	341 (20.8)
Aged persons (>51)	1591 (96.8)	28 (1.7)	25 (1.5)
K7. There is increasing trend of COVID-19 disease in India	1598 (97.2)	17 (1.0)	29 (1.8)
K8. Currently there is no effective cure for COVID-2019	1286 (78.2)	182 (11.1)	176 (10.7)
K9. Elderly who has chronic illnesses (HTN, cancer, diabetes, and chronic respiratory diseases) are more likely to get severe disease	1564 (95.1)	17 (1.0)	63 (3.9)
K10. Washing hands with water and soap can eliminate the disease cause	1570 (95.5)	36 (2.2)	38 (2.3)
K11. Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus	1574 (95.7)	11 (0.7)	59 (3.6)

HTN=Hypertension

Table 4: Distribution of study participants based on attitude

Attitude	Frequency (%)		
	Yes	No	Don't know
A1. In your opinion does lockdown will prevent the transmission of COVID-19	1398 (85.0)	154 (9.4)	92 (5.6)
A2. In your opinion does COVID-19 will finally be successfully controlled	886 (53.9)	381 (23.2)	377 (22.9)
A3. In your opinion does early detection of COVID-19 can improve treatment and outcome	1528 (92.9)	25 (1.5)	91 (5.5)
A4. In your opinion does awareness regarding COVID-19 disease in society is adequate	924 (56.2)	578 (35.2)	142 (8.6)
A5. In your opinion does COVID-19 disease can be transmitted through household pets to humans and vice versa	570 (34.7)	587 (35.7)	487 (29.6)
A6. In your opinion do authorities should quarantine COVID-19 patients in special hospitals	1456 (88.6)	87 (5.3)	101 (6.1)
A7. In your opinion if the number of COVID-19 cases increases, government should implement lockdown measures again	1331 (81.0)	177 (10.8)	136 (8.3)

The modes of spread of COVID-19 disease and preventive strategy knowledge were very high in the study group ranging from 85% to 98.7%. This high level of knowledge about COVID-19 recorded in this study might be due to the caliber and education of respondents who participated in the survey. Most of the participants were in the age group of below 60 years, with college (Bachelor) degree or higher educational qualifications, and <40 years educated were using smartphones with the social media, especially WhatsApp, Facebook, and local language news apps. Television is also one of the major sources of information for the age group of above 40 years. Although health authorities have been consistently disseminating correct information on COVID-19 since the first case of infection was reported in China. There are situations with some

Table 4a: Education and socioeconomic status were the predictor variables for attitude scores

Model	Unstandardized coefficients		Standardized coefficients (β)	*t*	Significant	95% CI for β (lower bound-upper bound)
	β	SE				
Constant	5.003	0.315		15.869	0.000	4.385-5.621
Age	−0.003	0.003	−0.033	−1.162	0.246	−0.009-0.002
Education	0.106	0.031	0.099	3.419	0.001	0.045-0.167
Occupation	−0.005	0.021	−0.007	−0.224	0.823	−0.046-0.036
Type of family	−0.143	0.098	−0.036	−1.464	0.143	−0.335-0.049
Socioeconomic status	−0.213	0.043	−0.128	−4.969	0.000	−0.298--0.129
Residential area	0.042	0.044	0.024	0.950	0.342	−0.045-0.129

Dependent variable: Attitude score. CI=Confidence interval, SE=Standard error

Table 5: Distribution of study participants based on practice of preventive strategy for COVID-19

Practices	Frequency (%)		
	Always	Sometimes	Rarely
P1. How often will you go outside when compared with that of before COVID-19 pandemic	218 (13.3)	471 (28.6)	955 (58.1)
P2. How often you wear mask while going outside	1492 (90.8)	118 (7.2)	34 (2.1)
P3. How often you practice hand hygiene with soap or sanitizer	1385 (84.2)	218 (13.3)	41 (2.5)
P4. How often you avoid handshaking, hugging, and kissing while meeting with others	1381 (84.0)	126 (7.7)	137 (8.3)
P5. How often you maintain social distance when you go out for market or public places	1377 (83.8)	214 (13.0)	53 (3.2)

Table 6: Univariate analysis of sociodemographic variables and knowledge, attitude, and practices related to COVID-19

Variable	*n*	Knowledge		Attitude		Practice	
		Mean±SD	*P*	Mean±SD	*P*	Mean±SD	*P*
Gender							
Female	815	17.59±1.9	>0.05	4.96±1.5	>0.05	8.95±1.5	<0.001
Male	829	17.51±1.9		4.88±1.5		8.49±1.6	
Marital status							
Single	873	17.51±2.0	>0.05	4.98±1.5	>0.05	8.83±1.5	<0.001
Married	771	17.60±1.8		4.86±1.6		8.59±1.5	
Age group (years)							
<20	402	17.40±2.2	<0.001	4.98±1.4	0.02	8.94±1.4	0.01
21-40	736	17.76±1.5		5.00±1.5		8.66±1.5	
41-60	433	17.50±2.0		4.81±1.5		8.62±1.6	
>60	73	16.52±3.0		4.51±2.0		8.58±1.7	
Education							
Illiterate	52	15.12±3.8	<0.001	3.96±2.0	<0.001	7.88±2.2	<0.001
Primary/secondary/high school	330	16.86±2.5		4.65±1.7		8.37±1.7	
Inter/diploma	370	17.71±1.5		5.04±1.4		8.75±1.5	
Graduate and above	892	17.88±1.5		5.03±1.4		8.87±1.4	
Occupation							
Student	572	17.52±2.0	<0.001	4.99±1.4	<0.001	8.89±1.5	<0.001
Unemployed	298	17.35±1.9		4.82±1.6		8.83±1.5	
Unskilled/semiskilled/skilled	368	17.22±2.2		4.65±1.6		8.24±1.6	
Professional	406	18.04±1.2		5.15±1.4		8.82±1.4	
Type of family							
Joint	203	17.66±1.7	<0.001	4.97±1.5	<0.001	8.74±1.5	>0.05
Nuclear	1387	16.93±2.9		4.83±1.7		8.50±1.7	
Three generation	54	17.09±2.0		4.06±1.5		8.81±1.5	
Socioeconomic status							
I	1081	17.78±1.6	<0.001	5.09±1.4	<0.001	8.82±1.5	0.007
II	330	17.26±2.0		4.73±1.5		8.48±1.6	
III	140	17.41±2.7		4.45±1.7		8.59±1.4	
IV	64	16.88±2.3		4.47±1.9		8.48±1.6	
V	29	15.97±3.2		4.07±1.9		8.72±1.4	

Contd...

Table 6: Contd...

Variable	n	Knowledge		Attitude		Practice	
		Mean±SD	P	Mean±SD	P	Mean±SD	P
Residential area							
Rural	350	17.41±2.3	>0.05	4.66±1.6	<0.001	8.55±1.7	0.013
Semiurban	419	17.44±1.7		5.01±1.5		8.65±1.5	
Urban	768	17.69±1.8		4.95±1.5		8.78±1.5	
Metropolitan	107	17.48±1.8		5.22±1.3		9.04±1.4	

SD=Standard deviation

of the individuals spreading fake, false, and inaccurate information about the COVID-19 causing panic and mistrusting of genuine information.[18,19] Similar studies conducted by Reuben *et al*. in Nigeria, Zhong *et al*. in China, and Roy *et al*. in India found the respondent having less knowledge compared with the respondents in this study, concluding those studies were conducted during the early stage of the diseases at respective places.[18,20,21]

Most of the participants have given the right response to items related to signs and symptoms such as fever, cough, body pains, loss of smell or taste, and breathlessness of COVID-19 (ranging from 78.6% to 98%). A similar study was conducted by Wong *et al*. in Hong Kong and Agarwal *et al*. in India also found similar results. Currently, due to the lack of proven treatment, preventive measures such as not contacting infected persons, wearing a face mask, maintaining a social distance of >1 m, hand washing or using sanitizer, and not sharing the objects even after taking the vaccine are ideal for avoiding COVID-19 infection. Similar studies conducted by the different authors from different countries such as Agarwal *et al*.,[22] Roy *et al*.[21] from India, Zhong *et al*.[20] from China, Azlan *et al*. from Malaysia,[23] Wong from *et al*.[19] from Hong Kong, and Reuben *et al*. from Nigeria[18] were observed similar results in the different settings. The high knowledge in this study might be due to the participation of high educated respondents, the advanced stage of the pandemic, and the vigorous health education campaign by the government and other private agencies.

Almost more than half of the study participants showed positive attitudes toward overcoming COVID-19. More than three fourth of respondents that is around 85% believe that the lockdown of the city/country will prevent the virus transmission among the community. However, only 53.9% of the respondents were satisfied with government efforts in mitigating the COVID-19 pandemic successfully in India. Similar studies conducted by Al-Hanawi *et al*., in Saudi Arabia in China by Zhong *et al*., and in Malaysia by Azlan *et al*. were also observed similar findings.[8,20,23]

This study further suggests behaviors such as personal hygiene and social distancing for practice to control the novel COVID-19 in the community. This study observed a good behavioral change among most of the participants. Almost three fourth of the respondents had reported taking precautions of avoiding crowded places, 83.8% were maintaining social distance at a crowded place, 90% of the participants were wearing face masks while going out of the house, 84% avoid shaking hands, unnecessarily touching of other objects, and 84% practicing proper hand hygiene either by hand wash or using sanitizer in this COVID-19 pandemic. Similar results were observed in other studies conducted similarly by Al-Hanawi *et al*. in Saudi Arabia, Roy *et al*. and by Agarwal *et al*. in India, and Azlan *et al*. in Malaysia.[8,21-23]

Limitations

This study was conducted in a restricted environment through the convenient sampling technique . There are the chances of selection bias of the sample as it is focusing on the urbanized communities. The marginalized or slum areas have not been able to participate in the study. Much of the data is collected from the age group of below 60 years that too mostly educated and only from South India. A more systematic, inclusive sampling method can be utilized to improve the representativeness and generalizability of the findings. A further limitation of the present study is the possibility of participants giving socially accepted responses. As this study was conducted telephonically, there is a possibility of participants answering positively for the attitude and practice-based questions, instead of what they were practicing.[23]

Conclusions

This study able to provide comprehensive knowledge, attitudes, and practices of the South Indian population toward COVID-19. This study found that the urbanized community is having a high acceptance level of knowledge on COVID-19 with most of them were positive in their perception of overcoming the pandemic. The government and private agencies should continue the consistent efforts to change the negative behavioral attitude to positive behavior of the public by disseminating the information related to health protocols and SOPs in different media to enhance the public understanding of COVID-19 and motivate the public as social responsibility to adhere the health protocols, masking, hand hygiene,

social distancing, and vaccination to prevent expected COVID-19 subsequent episodes.

Conflicts of interest

There are no conflicts of interest.

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