

## ORIGINAL ARTICLE

## Poor social distancing attitudes and practices may drive community transmission of COVID-19 – A Knowledge Attitude Practice study among the general population of Odisha, India

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### Abstract

**Background:** Knowledge, attitude, and practice of the community can determine progress from localized to community transmission of COVID-19 in India. **Aims and Objectives:** To assess the knowledge, attitude and practice levels of the general population during the early phase of COVID-19 pandemic. **Materials and Methods:** A rapid cross-sectional survey was conducted among hospital visitors of a lead tertiary care hospital. Realtime data collection from 223 respondents was done and analyzed using Stata 12.1 SE. **Results:** Mean age was 38.2 ± 13.5 years, 68.2% were males, mean education was 12.1 ± 3.7 years and 45.3% were gainfully employed. Almost all had heard about CORONA (221, 99.1%). Adequate knowledge was present on: a) mode of spread (48.0%); b) preventive measures (70.9%). Television (77.1%), social media (60.5%) and WhatsApp (44.0%) were sources of information. Positive attitude was seen for: a) wearing a mask (83.9%); b) health-seeking (85%) on presenting with symptoms; c) Self-isolation or home-quarantine (20%). Adequate knowledge towards the mode of spread, symptoms and control measures or positive attitudes for health-seeking were found to positively translate into correct practices (p ≤ 0.001). **Conclusion:** Attitudes and practices of social distancing, self-isolation or home-quarantine were not adequate to prevent the epidemic progress in India.

### Keywords

Epidemics; Pandemic; Community Participation; Severe Acute Respiratory Syndrome Corona Virus 2; Knowledge

### Introduction

COVID-19 had become a Public Health Emergency of International Concern (PHEIC) by 30<sup>th</sup> January 2020(1,2). The pandemic reported highest number of cases and deaths by any pandemic of the modern era (3). Other pandemics like Severe Acute Respiratory Syndrome (SARS) (2003) show that community perception and participation are key in the management and control of an epidemic or pandemic(4,5). Community perception regarding the effectiveness of preventive measures(6) and hazards

(morbidity and mortality) from an ongoing pandemic are strong determinants of behaviour change (7). Moreover, a well-informed community will practise the preventive measures in an appropriate manner(8). India as on 25<sup>th</sup> March 2020 midnight was in Phase 2 of the epidemic (3). Large population, high population density and large out-migration rate are potential factors for epidemic propagation (9). The literacy rate in India as per Census 2011 is 74% (less among females)(10). All these factors can help spread an epidemic in the country, which is difficult to change in a short time.

Health education in India is provided through various platforms and formats.(11). Digital, social and electronic mass media are ways to reach out mass population during an outbreak. Previous studies in India for pandemic H1N1 outbreak show better knowledge levels for health care workers than general population(12). Knowledge levels regarding usual outbreaks like dengue were only 55% among urban slum population of Chennai(13). Moreover, knowledge levels differ based on contact history, geographic location, gender, age, education and occupation(14,15). These may further facilitate spread of an outbreak beyond boundaries, and act as hindrance in the preventive measures.

Considering crucial role knowledge, attitude and practice can play in behaviour change for the control measures initiated transition from localized transmission to Community transmission/ amplification)) of the epidemic(16), a rapid survey was conducted to assess the same among the general population. The results could be applied by government officials and help devise health education measures, and interventions like lockdown and shutdown.

### Aims & Objectives

To assess the knowledge, attitude and practice levels of the general population regarding COVID-19 disease during the early phase of COVID-19 pandemic.

### Material & Methods

**Study Type:** A cross-sectional study through a rapid one-day survey within a week of the first confirmed COVID case in Odisha.

**Study Population:** The attendants accompanying the patients to the out-patient department were the respondents. This group of population was considered by the authors as proxy to the general population since in a tertiary care hospital the patients and their attendants availing hospital services usually belong to different geographical regions of the state.

**Study area:** A leading tertiary care teaching hospital of Bhubaneswar city of Odisha state, India. Bhubaneswar is also a city with international access.

**Sample Size calculation:** The sample size was estimated based on a study in Singapore regarding KAP towards pandemic influenza among cases, their contacts and healthcare workers. The proportion of the general serviceman knowing H1N1 pandemic was 68.8%(17). A relative precision of 10%, alpha value of 5% and power of 80% was gave the minimum sample required as 175. With a non-response or missing information rate of 20%, the final sample size was 210.

**Inclusion criteria:** Respondents aged 18 years or above were included in the study after taking verbal consent.

**Exclusion criteria:** COVID-19 patients and their attendants were excluded, as were also attendants of patients who were health care workers by occupation.

**Strategy for collection:** Consecutive sampling technique was used. Attendants of the patients visiting the out-patient department (OPD) of medicine, surgery, paediatrics, obstetrics and gynaecology, orthopaedics, casualty, otorhinolaryngology, and ophthalmology were included in the study.

**Study tool and Working definition:** The study tool comprised of four parts. The first part on brief socio-demographic profile like age, gender, occupation, and education. The second regarding knowledge about CORONA infection, its mode of spread, symptoms, and preventive measures. The third was related to attitude towards health-seeking and preventing the spread of CORONA using masks. Fourth was regarding practices for the prevention of CORONA infections like the use of mask, hand washing practices, social distancing/ avoiding gathering, etc. The questionnaire was based on guidelines issued by Government of India and frequently asked questions regarding misbeliefs(18). Since at the beginning of the pandemic, people were using CORONA as a more popular word in comparison to Covid-19 disease, we used the word CORONA in the study tool.

Adequate knowledge for the mode of spread was taken as knowing at least three out of the five common modes of transmission (*handshake, coughing, sneezing and touching publicly accessible surfaces, kissing and exchanging currency notes*). Respondents were regarded as having adequate knowledge about symptoms if they knew at least two out of three common symptoms (*like cough/sneezing, fever and difficulty in breathing*). For control measures, adequate knowledge was regarded as having three or more control measures (*use of mask, sanitizer/ hand-washing, avoiding social gathering, the social distancing of 1 meter or more, not going outside without emergency need, avoiding touching eyes, nose and mouth, maintaining respiratory etiquette*). Positive attitude towards developing symptoms as such or after coming in contact with someone having symptoms was considered if the respondent was either *willing to go for self-isolation/home quarantine or would immediately consult a doctor/ visit a hospital*. Any kind of readiness like *purchasing a mask, having sanitizer/using hand wash or not going outside without any emergency need, or avoiding social gathering/ maintaining social distance* was considered adequate readiness/practice.

**Ethical approval:** Since the study was carried out on emergency basis to support government officials take decisions on lockdown and shutdown during the ongoing COVID-19 pandemic, institutional ethical clearance was taken after conducting the study. Ethical permission was obtained from Institute Ethics Committee of the institution (Ref DMR/IMS.SH/SOA/18096).

**Consent:** To avoid remote possibilities of contamination through fomites (pen and paper), only verbal consent was taken from the respondents. Precautionary measures like social distancing, use of mask and handwashing was

practiced by data collectors during the study. Respondents were also educated about the modes of spread, symptoms, and controls measures of CORONA infection after data collection.

**Data collection and Data analysis:** Data collection tool was developed English language on Magpi (19). The forms were shared with trained data collectors on their mobile platform for data collection. Stata 12.1 SE was used for data analysis. Data were presented as numbers and percentages for categorical values and mean (or median) with standard errors (or interquartile range) for numerical data. Chi-square was used for the testing association of practices of the respondents with their knowledge and attitude at a p-value of 0.05. Mann-Whitney U test was used to compare median years of education with adequate knowledge and attitude, and good practices at a p-value of 0.05. To avoid observer bias appropriate measures were taken. Investigators themselves were not involved in data collection, but it was collected through trained data collectors of medical background. Leading questions were also avoided in the data collection process. Selection bias was taken care by not including patients, who might be having symptoms of corona/ COVID-19 and made potentially aware by health care providers, but by including only their attendants.

## Results

A total of 244 subjects were approached to participate in the study. Eight subjects did not consent to participate, and a total of 236 respondents were included. After data cleaning, a total of 13 cases were excluded due to incomplete or missing data, and data were analyzed for the remaining 223 responses (non-response rate of 8.6%). Average time taken to record the response was 15 minutes (ranged from 12 to 18 minutes). Age of the study participants ranged from 18 to 72 years, with a mean age of 38.2 years (SD 13.5 years). Majority of them were males (152, 68.2%). Mean years of education was 12.1 years (SD 3.7 years) with a range of 0 to 15 years. Most of the respondents were gainfully employed (101, 45.3%).

Majority of the visitors to the hospital had heard about CORONA (221, 99.1%). There were 22 (9.9%) respondents who were not having any knowledge about the mode of spread, while 107 (48.0%) had adequate knowledge. Misbeliefs regarding the mode of spread were present among 38 respondents (17.0%). More than two-thirds (158, 70.9%) had adequate knowledge regarding preventive aspects of CORONA infection, while rest of the respondents had either inadequate (62, 27.8%) or no knowledge (3, 1.3%). Majority knew about the common symptom profile of CORONA infection (198, 88.8%) (Table 1). The major source of information for knowledge on CORONA infection was television (172, 77.1%), followed by social media like Facebook, Twitter, Instagram, etc. (135, 60.5%) and chatting media WhatsApp (98, 44.0%).

Positive attitude towards wearing a mask was found in 187 (83.9%). Positive attitudes like going for self-isolation or home quarantine on developing disease symptoms were seen in 43 (19.3%) and health seeking attitude in 206 (92.4%). Attitudes were similar after coming in close contact with a CORONA case (Table 2).

Purchasing a mask (163, 73.1%), maintaining social distance or avoiding social gathering (127, 57.0%), having a sanitizer or hand-wash (123, 55.2%) were three leading good practices seen among the respondents. Common appropriate hand-washing measures seen among the respondents were handwashing before eating food (147, 66.0%), after touching any publicly accessible surfaces (105, 47.1%), and after sneezing or coughing (94, 42.2%) (Table 3).

Having adequate knowledge towards the mode of spread, symptoms and control measures were found to be positively translated into correct practices ( $p \leq 0.001$ ). Similarly, positive attitude for health-seeking was also found to be significantly associated with correct practices ( $p < 0.001$ ). Gender was not found to be associated with adequate knowledge regarding spread, symptom or control, good attitude towards symptoms of self or getting in contact with a suspected case, and even with practice of an individual ( $p > 0.05$ ). No association was found between the age of the respondent and knowledge, attitude or practices regarding CORONA. However, education of the respondent was found to have a significant association with knowledge, attitude and practices regarding CORONA infection ( $p < 0.05$ ) (Figure 1).

## Discussion

Almost all the respondents were aware of the term CORONA/ COVID-19. Within 3 months from the onset there was a quick percolation of awareness among the general population. In other pandemics like swine flu studies have shown that awareness ranged from 67.3% in rural and 73.6% in the urban population of Southern India (20,21). This may be partly due to exponential increase in the use of digital, social and electronic mass media currently compared to the past. Major sources of information about CORONA/ COVID-19 in our study population were obtained from television (77%), social media (61%) and WhatsApp (44%) also supported this fact.

Adequate knowledge regarding the mode of spread of CORONA/ COVID-19 was present in 48% of the study population. The results were similar to the study in Karnataka, India during Swine Flu pandemic in 2009 (48% to 56%)(20,21) and regarding Hepatitis E outbreak in Odisha in 2015(40%)(22). Few myths and misbeliefs regarding the spread of CORONA/ COVID-19 such as spread by non-vegetarian foods, bloodborne, etc. were found among 17% of our study subjects, which is almost similar to the study conducted during Swine Flu(21). Knowledge of preventive aspects was found to be

adequate in 71% of the respondents. The knowledge levels ranged from very poor in a rural setting to fairly good in urban setting regarding Swine Flu pandemic in Southern India in 2009(20,21). Knowledge levels on prevention were found to be poor in case of Hepatitis E outbreak in a similar setting (same district of Odisha) in 2015 (25 to 36%) (22).

Attitude towards wearing a mask for prevention of disease of self was seen in 84% and even consulting a doctor/visiting a hospital was seen in 86% to 93% of cases, but attitude to isolate self or go for home-quarantine was seen in only one-fifth of the respondents. Thus, the respondents had a good attitude for disease prevention for self, but responsibility or attitude towards the community was not found to be sufficient. In case of COVID-19, where median daily reproduction number was 2.2(23) ranging from 2.35 before travel restriction to 1.05 after(24), it is very clear that reducing the reproductive number(16) through social distancing and travel restrictions would put a check on the high peak of the epidemic in the country yet to come, without which the epidemic is seen to almost double in one week time(23). COVID-19 presents as the disease with milder forms in around 80% of cases(25), and among infections in 50% to 60% as asymptomatic cases(26) may be also responsible for disease transmission(27), more so within the incubation period. In such a case, knowing about symptoms and self-isolation/ home-quarantine can be regarded as the best mechanism for preventing a large peak of the epidemic and its consequences. Lack of attitude among people to self-isolate or to put themselves on home quarantine thus may become a single and sufficient reason for COVID-19 to enter from Phase 2 (local transmission) to Phase 3 (Community transmission/ amplification) of the epidemic in India(16). The attitude of people towards the use of mosquito nets to prevent common diseases like Malaria and Dengue in the eastern part of India was considerably less (64%) as seen in other studies(28).

Purchasing a mask was the most important practice that was considered by people and seen around three-fourths. This was however less (61%) during Severe Acute Respiratory Syndrome (SARS) outbreak in Hong Kong as seen in the study by Tang et.al. Factors such as susceptibility, cues to action and perceived benefits are important reasons for considering wearing facemasks(6). Other appropriate practices for preventing the spread of the disease like having a sanitizer or hand-wash or maintaining social distance or avoiding social gathering were seen in around 50% to 60% of the respondents. Hand-washing before eating food was seen only in two-thirds, while after touching any publicly accessible surfaces or after coughing or sneezing was less than 50%. Thus, there was no uniformity in common practices that could prevent the spread of the disease. All the measures are quite important during an epidemic or outbreak, and

one cannot be a replacement to the other. Assessments done during other pandemics like Swine flu in 2009 in Southern India have also shown this kind of lack of uniformity in practices and many practices at inadequate levels. Hand-washing practices, however, was above 90%(20).

Age is an important factor in determining the spread of the disease. It is also evident that mortality among the patients of COVID-19 is more among the elderly or having co-morbidities(25,29). Young age group play a vital role in the spread of the disease since they are mobile and working population. In our study, however, age did not find any association with KAP. However, education was found to have a significant association. Thus, health education given or awareness drive created by the authorities should target more towards less educated sections of society. Selecting the medium for dissemination of information is quite important in such situations. Media campaigns and epidemics are closely related to one another, and the number of infective cases that are unaware/ without complete knowledge can reduce drastically through an increase in implementation of awareness drives and dissemination of health education(30). Health education information can quickly percolate the community during epidemic situations through the use of social/ chat media (like Facebook, WhatsApp, Instagram, etc.) and electronic mass media (radio/ television). However, social and/or chat media may act as a double-edged sword through the circulation of personal beliefs and myths. Electronic media like television and radio, on the contrary, maybe more reliable during this period(31).

## Conclusion

Knowledge, attitude and practices of the hospital visitors were found to be average to good during the initial phases of the epidemic situation of COVID-19 in India. Attitudes and practices of social distancing, self-isolation or home-quarantine were however not adequate to prevent the epidemic progress in India from the phase of local to community transmission. Using official tele media, social media and chat media may help disseminate correct information regarding COVID-19 and avoid myths and misbeliefs among the community. Strict social distancing/ avoidance of public gathering through lockdowns by the government authorities may rather be alternatives to prevent the spread.

## Recommendation

Attitude and practices of people on social distancing in India was found to be poor and can act as a major driving force in the spread of COVID-19 epidemic at community level. Knowledge and awareness levels are needed to be focussed especially on uneducated and poor sections, since in this population it will spread fast due to many poor hygienic practices including open air defecation. Alternative strategies to control the spread is to use

lockdowns, and increase the knowledge, attitude and practice of the community during this period.

### Limitation of the study

The findings may not be true community-level KAP as it was done among hospital attendants. Results may be on the higher side. All aspects of KAP (including myths and misbeliefs and their sources) were not covered.

### Relevance of the study

The study was done as soon as the initial case of COVID-19 epidemic was detected in the state in Odisha state, India to quickly to understand the situation how community is placed with its attitude and practices so as to accept the methods of prevention, and participate in decreasing transmission from local to community levels, including the need of lockdown.

### Authors Contribution

JS & SKP: Conceptualization (supporting), methodology (lead), software (lead), formal analysis (lead), writing – original draft (lead), Writing – review and editing (equal). EV: Conceptualization (supporting), methodology (supporting), formal analysis (supporting), Writing – review and editing (equal).

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**Tables**

**TABLE 1 KNOWLEDGE REGARDING COVID-19/ CORONA INFECTION AMONG THE RESPONDENTS (N=223)**

Sl	Variable	n	%
1.	Have you heard about CORONA <sup>†</sup>	221	99.10
2.	Not having any knowledge of how CORONA is spread	22	9.86
3.	Adequate knowledge regarding the spread of CORONA <sup>‡</sup>	107	47.98
4.	Misbeliefs regarding the spread of CORONA	38	17.04
5.	Not having any knowledge regarding preventive measures	3	1.34
6.	Adequate knowledge regarding preventive measures of CORONA <sup>§</sup>	158	70.85
7.	Not having any knowledge regarding symptoms of CORONA	10	4.48
8.	Adequate knowledge regarding symptoms of CORONA <sup>¶</sup>	198	88.78

<sup>†</sup> Not have heard and wearing face masks were two housewives; <sup>‡</sup>Said spreads by three or more common methods of spread (handshake, coughing, sneezing and touching publicly accessible surfaces, kissing and exchanging currency notes); <sup>§</sup> Three or more control measures (use of mask, sanitizer/ hand-washing, avoiding social gathering, the social distancing of 1 meter or more, not going outside without emergency need, avoiding touching eyes, nose and mouth, maintaining respiratory etiquette); <sup>¶</sup>Said two or more symptoms of CORONA like cough, sneezing, fever and difficulty in breathing

**TABLE 2 ATTITUDE REGARDING COVID-19/ CORONA INFECTION AMONG THE RESPONDENTS (N=223)**

Sl	Variable	n	%
1.	Attitude towards wearing a mask	187	83.86
2.	Health seeking of self with positive symptoms		
	Do nothing/ follow my routine	1	0.45
	Wait for some time to see the progress	16	7.17
	Self-isolation/ Home quarantine <sup>†</sup>	43	19.28
	Immediately consult a doctor/ visit a hospital <sup>†</sup>	206	92.38
	Directly go to a laboratory for testing	3	1.35
3.	Health seeking behaviour of self after contact with a positive case		
	Do nothing/ follow my routine	0	0.00
	Wait for some time to see the progress	15	6.73
	Self-isolation/ Home quarantine <sup>†</sup>	46	20.63
	Immediately consult a doctor/ visit a hospital <sup>†</sup>	192	86.10
	Directly go to a laboratory for testing	3	1.35

<sup>†</sup> Considered as a positive health-seeking attitude in this study

**TABLE 3 PRACTICE REGARDING COVID-19/ CORONA INFECTION AMONG THE RESPONDENTS (N=223)**

Sl	Variable	n	%
1.	Readiness regarding CORONA infection		
	Purchased a mask (N95/Others) <sup>†</sup>	163	73.09
	Having a sanitizer/ hand-wash <sup>†</sup>	123	55.16
	Not going outside without emergency need <sup>†</sup>	47	21.08
	Avoiding social gathering/ Maintaining social-distance <sup>†</sup>	127	56.95
	Keeping food stock at home	35	15.70
	Asking others including maid not to come home	7	3.14
2.	The practice of handwashing using sanitizer/ soap and water		
	Every half an hour to one hour	26	11.66
	After touching any surface or object accessible to the public	105	47.09
	After handshaking	83	37.22
	After sneezing or coughing	94	42.15
	Before eating food	147	65.92

<sup>†</sup> Considered as correct practices in this study regards to readiness

**Figures**

**FIGURE 1 ASSOCIATION OF EDUCATION LEVEL WITH KAP REGARDING COVID-19 (N=223)**

