Original Research Article

Adherence to COVID-19 appropriate behaviour among small scale workers in unorganized sector in Rajasthan by applying health belief model and generalized social beliefs

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ABSTRACT

Background: People's adherence to COVID-19 appropriate behavior (CAB) is important to prevent and manage coronavirus disease-19. The study aimed to determine the prevalence and associated factors of adherence to CAB in small-scale workers in the unorganized sector by applying health belief model (HBM) and generalized social beliefs.
Methods: This community-based, cross-sectional study was done in Central Rajasthan from January 2021 to March 2021. A pre-tested, structured, interviewer-administered tool was used to collect data from 384 participants. Data were collected on five constructs of HBM and two social axioms.
Results: The mean (SD) age of participants was 36.89 (10.84) years. About 58% of participants were male. Adherence to all CAB measures was 15%, it was not found to be associated with age, gender, education level, residence and occupation. The most common practiced CAB measure was face cover (57.8%) followed by handwashing (43.75%). Adherence was found associated with all five HBM constructs and two social axioms.
Conclusions: The adherence to CAB was low among small-scale workers in the unorganized sector. It is pivotal to consider the community's perceived susceptibility, severity, benefit, barrier, cue to action, cynicism and reward for application to improve the adherence towards CAB.

Keywords: COVID-19 appropriate behaviour, Health belief model, Social axioms, COVID-19, Adherence

INTRODUCTION

COVID-19 caused by the novel coronavirus (SARS-CoV-2) is an acute respiratory illness. WHO declared COVID-19 a pandemic in March 2020. WHO and the Government of India (GOI) suggested various measures to manage and contain the disease.[1,2] Since most of the cases are asymptomatic, MOHFW suggested adopting CAB to prevent the spread of infection.[3-7] GOI has advised 15 measures. They are greet without physical contact, maintain physical distance, wear face cover, avoid touching eyes, nose and mouth, maintain respiratory hygiene, wash hands, avoid tobacco, regularly cleaning the surfaces, avoid travelling, non-discrimination, discourage crowd, avoid sharing unverified news and facts, seek professional advice in need, limit stress and anxiety.[6]

There are various enactments and regulations in place to implement these measures, but largely these are measures to be adopted voluntarily. Various studies in other countries had shown poor adherence to precautionary

measures.[8-13] Individual differences have been reported regarding behavioural adherence to preventive measures worldwide.[9-13] Understanding such differences at the interpersonal level is essential to improve adherence to CAB. In India, there are varying reports of adherence to these measures in various sections of societies.[14] Small scale workers in unorganized sectors are not in strict regulations and safety protocols of occupational health. Their adherence to CAB measures is not studied yet in India. Role of two interpersonal level factors like specific COVID-19 beliefs and generalized social beliefs, in individual's behavioural adherence to COVID-19 appropriate behaviour was studied in China and was found associated with adherence to CAB.[10]

Social scientists have proposed different theories to understand the factors influencing health behaviour, one of which is the HBM. It is a general conceptual framework and theoretical guideline for health behaviour in public health.[15] It has five constructs, namely perceived susceptibility, perceived severity, perceived benefit, perceived barrier and cue to action. Perceived susceptibility is belief about the risk of acquiring a disease, perceived severity is belief about the seriousness of the outcome of getting the disease, perceived benefit is belief in the effectiveness of the advised actions to reduce the effect of the disease threat, perceived barrier is belief about the monetary and social hurdles of the advised actions and cue-to-action is the amount of the cue that triggers the advised actions.[10,15] Some studies have found the role of HBM in understanding the adherence to CAB in Iran, Ethiopia and China.[8-12]

While HBM is associated with specific beliefs related to the disease (COVID-19), the generalized beliefs may also influence one's adherence to preventive measures. These generalized beliefs are called social axioms. Researchers have identified five social axioms namely social cynicism, reward for application, social complexity, fate control and religiosity, which are universal generalized beliefs about oneself and the social, physical and social environments.[10,16,17] These five generalized beliefs can be used either in full or in part to understand health and safety behaviours.[16] In the current study, we particularly focused on the roles of social cynicism and reward for application. Social cynicism reflects negative views of human nature, biases against some social groups and mistrust in social institutions, reward for application reflects positive beliefs about the investment of effort and resources.

We couldn't find any community-based study which has tested the role of all five HBM factors together with social axioms in adherence to CAB. Therefore, the study was aimed to determine the prevalence of adherence to CAB and associated factors by applying HBM and generalized beliefs (social axioms) among small-scale workers in the unorganized sector.

METHODS

This community-based, cross-sectional study was done from January 2021 to March 2021 in a city of central Rajasthan. Assuming the prevalence of adherence to CAB as 50%, with absolute error 5%, power 80%, and 95% confidence interval sample size came out to be 384.

Small scale workers from three employment categories, that is, fruit and vegetable vendors, shopkeepers and auto-drivers were included in the study. Other inclusion criteria were being aged 18 to 60 years, engaged in the present occupation for at least 20 days in a month for the last three months. Current or recovered persons from COVID-19 infection were excluded from the study.

After obtaining written informed consent, 384 eligible participants (128 from each category) were surveyed for the study. Every day, the first person was selected randomly in the market or street, thereafter consecutive sampling was done. Maximum 20 participants were surveyed in a day.

A pre-tested, structured, interviewer-administered questionnaire was used to collect the data. It consists of socio-demographic information, information on CAB, questions regarding constructs of HBM, questions regarding generalized beliefs (social axioms).

For CAB, adherence to every six measures was asked to participants for the last one week. These measures were hand wash, use of face cover, physical distancing, avoid touching face, cleaning or disinfection of frequently used surfaces. These responses were recorded on a Likert scale from 1=never to 5=always. Four and five were considered as adherence in the dichotomous category of adherence.

HBM constructs were taken from the available literature. Perceived susceptibility to COVID-19 (susceptibility) was assessed by a single item: I have high chances of getting COVID-19; perceived severity of COVID-19 (severity) was assessed by three items with a Cronbach's alpha of 0.89; perceived benefit of adherence to CAB (benefit) involved three items with a Cronbach's alpha of 0.93; perceived barrier for adherence to CAB (barrier) consists of six items with a Cronbach's alpha of 0.78 and cue-to-action for adherence to CAB (cue-to-action) was composed of two items with a Cronbach's alpha of 0.62. A higher subscale score represented a higher level of the corresponding construct.

Social cynicism and reward for application were assessed by two eight-item subscales of the social axioms survey on a 5-point Likert scale (1=strongly disbelieve, 5=strongly believe).[10] Social cynicism evaluates the extent to which respondents believe the social world will behave negatively (e.g. people create hurdles to prevent others from succeeding). Reward for application means the belief that positive outcomes are the result of careful investment of effort, knowledge, planning and other

resources (e.g. one will succeed if he/she tries). The internal reliability of social cynicism and reward for application was 0.81 and 0.79, respectively.

Data were analyzed using SPSS 20.0. Categorical variables such as gender, residence, occupation were presented as proportion. Continuous variables such as age, education years, scores of constructs are presented as mean and standard deviation. Bi-variate correlation among CAB measures, HBM constructs and social axioms were checked by Pearson correlation coefficient. Effects of HBM and social constructs were examined for each CAB measure using the multiple linear regression. The analyses were performed at a significance level of 0.05.

Written informed consent was taken from all the participants. Study protocol was approved by institutional review board of author's institution.

RESULTS

Four hundred sixteen eligible participants were approached for the study, 17 refused for the consent and 15 did not give complete information. Complete data were collected from 384 participants. Participants were fruit and vegetable vendors, shopkeepers and auto-drivers by occupation (128 from each category). About 58% of participants were male. The mean age (SD) of

participants was 36.89 (10.84) years, one-third being 18 to 30 years old. Ten participants were illiterate, about one-third educated up to primary level only. The mean (SD) years of education was 8.58 (3.09) years. About 80% of participants were residing in urban areas (Table 1).

Prevalence of adherence to all measures was found 15.53%. The prevalence was not found to be associated with age, education level, residence and occupation (Table 1). The most common measure adhered to by participants was the use of face cover (57.8%) followed by hand wash (43.75%). The remaining measures were followed by only a quarter of the participants (Table 2).

Table 3 shows the bivariate association among adherence to CAB, HBM factors and social axioms. For HBM factors, perceived susceptibility displayed a positive association with adherence to all five CAB measures (r=0.29 to 0.70, p<0.01), perceived severity also showed a positive association with five CAB measures (r=0.13 to 0.18, p<0.01). perceived benefit also shows positive association with all CAB measures (r=0.19 to 0.43, p<0.01), while perceived barrier showed a negative association with CAB measures (r=-0.11 to -0.16, p<0.01). Cue to action was positively associated with proper handwashing, physical distancing, avoiding face touch and cleaning the surfaces (r=0.15, 0.26, 0.31, 0.28 respectively, p<0.01).

Table 1: Distribution of sociodemographic characteristics.

Characteristics		Total (n=384) N (%)	Adherence (n=59) N (%)	Non-adherence (n=325) N (%)	P value
Gender	Male	224 (58.33)	37 (62.71)	187 (57.53)	.458
	Female	160 (41.67)	22 (37.28)	138 (42.46)	
Residence	Urban	304 (79.16)	44 (74.57)	260 (80.0)	0.35
	Rural	80 (20.83)	15 (25.42)	65 (20.0)	
Age (in years)	18-30	136 (35.42)	16 (27.11)	120 (36.92)	0.09
	31-40	114 (29.69)	16 (27.11)	98 (30.15)	
	41-50	94 (24.48)	20 (33.89)	74 (22.76)	
	51-60	40 (10.42)	7 (1.86)	33 (10.15)	
Education	Illiterate	10 (2.60)	0 (0)	10 (3.07)	0.79
	Primary	127 (33.07)	20 (33.89	107 (32.92)	
	Middle	91 (23.70)	14 (23.72)	77 (23.69)	
	Secondary	94 (24.48)	16 (27.11)	78 (24.0)	
	Senior secondary and above	62 (16.15)	9 (15.25)	71 (21.84)	
Occupation	Fruit and vegetable vendors	128 (33.33)	19 (32.20)	109 (33.53)	0.46
	Shopkeepers	128 (33.33)	25 (42.37)	103 (31.69)	
	Auto-drivers	128 (33.33)	15 (25.42)	113 (34.76)	

Table 2: Adherence to CAB measures in different occupations.

CAB measure	Total (n=384) N (%)	Vendors (n=128) N (%)	Shopkeepers (n=128) N (%)	Auto-driver (n=128) N (%)	P value
Adherence to all measures	59 (15.53)	19 (14.84)	25 (19.53)	15 (11.72)	0.46
Handwashing	168 (43.75)	50 (39.06)	74 (57.81)	44 (34.38)	0.85

Continued.

CAB measure	Total (n=384) N (%)	Vendors (n=128) N (%)	Shopkeepers (n=128) N (%)	Auto-driver (n=128) N (%)	P value
Face mask	222 (57.81)	74 (57.81)	92 (71.88)	56 (43.75)	0.46
Social distancing	133 (34.64)	56 (4.75)	53 (41.41)	24 (18.75)	0.31
Avoiding touching face	100 (26.04)	29 (22.66)	49 (38.28)	22 (17.19)	0.56
Cleaning or disinfection of surface	82 (21.35)	24 (18.75)	42 (32.81)	16 (12.50)	0.20

CAB: COVID-19 appropriate behavior.

Table 3: Bivariate correlation among adherence, HBM factors and social axioms.

S. no.	Bivariate correlation	1	2	3	4	5	6	7	8	9	10	11
1	Hand wash	1										
2	Face cover	0.81	1									
3	Physical distancing	0.32	0.42	1								
4	Avoid touching face	0.35	0.44	0.83	1							
5	Cleaning the surface	0.41	0.50	0.87	0.90	1						
6	Susceptibility	0.30	0.33	0.68	0.74	0.71	1					
7	Severity	0.19	0.16	0.13	0.16	0.15	0.07^	1				
8	Benefit	0.19	0.20	0.43	0.49	0.44	0.64	0.10	1			
9	Barrier	-0.13	-0.11	-0.13	-0.15	-0.11	-0.08	0.71	-0.05	1		
10	Cue to action	0.15	0.13	0.26	0.31	0.28	0.42	0.06^	0.63	-0.04^	1	
11	Cynicism	-0.04	-0.08	-0.09^	-0.15	-0.12	-0.11	0.46	-0.07^	0.61	0.01^	1
12	Reward	-0.01	-0.02	0.11	0.16	0.13	0.21	0.07	0.42	-0.08^	0.30	-0.05

^- statistically not significant.

Table 4: Multivariate regression of adherence to CAB measures in relation to HBM and social axioms.

Construct	Hand wash β (95% CI)	P value	Face cover β (95% CI)	P value	Physical distancing B (95% CI)	P value	Avoiding touching face β (95% CI)	P value	Cleaning surfaces β (95% CI)	P value
Susceptibility	0.29 (0.17-0.45)	<0.01*	0.34 (0.24-0.51)	<0.01*	0.69 (0.62-0.82)	<0.01*	0.73 (0.68-0.86)	<0.01*	0.73 (0.68-0.86)	<0.01*
Severity	0.17 (0.09-0.14)	0.01*	0.14 (0.08-0.17)	0.04*	0.06 (0.01-0.12)	0.03*	0.08 (-0.05-0.11)	0.11	0.07 (0.05-0.10)	0.11
Benefit	-0.01 (-0.06--0.06)	0.95	0.11 (0.06-0.18)	0.03*	0.00 (-0.45-0.45)	0.99	0.01 (-0.04-0.04)	0.97	0.12 (0.01-0.15)	0.02*
Barrier	-0.05 (-0.36--0.01)	0.52	0.01 (-0.03-0.03)	0.95	-0.12 (-0.21-0.07)	0.03*	-0.05 (-0.15--0.01)	0.04*	-0.05 (-0.03-0.01)	0.31
Cue to action	0.47 (-0.23-0.59)	0.04*	0.01 (-0.04-0.03)	0.88	0.02 (-0.03-0.02)	0.57	-0.01 (-0.03-0.03)	0.96	0.43 (0.31-0.49)	<0.01*
Social Cynicism	-0.11 (-0.01--0.22)	0.03*	0.02 (-0.09-0.14)	0.72	-0.07 (-0.15--0.01)	0.04*	0.01 (-0.07-0.09)	0.79	0.01 (-0.07-0.09)	0.79
Reward for application	0.08 (0.01-0.18)	0.04*	-0.09 (-0.12-0.01)	0.08	-0.01 (-0.06-0.04)	0.71	0.01 (-0.04-0.05)	0.74	0.01 (-0.03-0.04)	0.75
R²	0.11 <0.01		0.11 <0.01		0.47 <0.01		0.57 <0.01		0.51 <0.01	

CAB=COVID-19 appropriate behavior; HBM=health belief model; CI=confidence interval; β=standardized regression coefficient, *=statistically significant.

For two social axioms, social cynicism was negatively associated with avoiding touching the face and cleaning the surface (r=0.15 and -0.13 respectively, p<0.01), whereas reward for application was positively associated with physical distancing, avoiding touching face and cleaning the surface (r=0.16, 0.13, 0.22 respectively, p<0.01) (Table 3).

Multivariate associations between CAB measures and HBM/social axioms were explored by multivariate linear regression after controlling age, occupation and education level. Perceived susceptibility was positively associated with all five CAB measures (β=0.29-0.73, p<0.01). Perceived severity was positively associated with handwashing, face cover and physical distancing (β=0.06-0.17, p<0.05). Perceived benefit was found positively associated with face cover and cleaning the surface (β=0.11, 0.12 respectively, p<0.05). Perceived barrier was negatively associated with physical distancing and avoiding touching face (β=-0.12, -0.05 respectively, p<0.05). Cue to action was found associated with hand wash and cleaning the surface (β=0.47, 0.43 respectively, p<0.05). Amongst social axioms, social cynicism was negatively associated with hand wash and physical distancing (β=-0.11, -0.07 respectively, p<0.05), whereas reward for application was found associated with only hand wash. (β=0.08, p<0.05) (Table 4).

DISCUSSION

The current study examined adherence to five types of CAB measures, some of these measures were enforced by law with penalty provisions for non-compliance. The prevalence of adherence to all five measures was found about 15%. A similar prevalence was also reported from in a study in Ethiopia.[11] It was lower than the findings reported in other studies from India and elsewhere.[9,10,12-14] These studies were limited to the computer literate population only, this may be the reason for the higher prevalence in these studies. Among the five CAB measures, face masks or cover wearing in public was most likely to have adhered. This was consistent with other studies.[9,10,14] It may be due to the easy availability of face masks or covers, even homemade covers of cloth were considered as effective by GOI.[6,7]

Only about 40% of participants practiced hand washing. Hand washing was reported higher in the general population.[9,10,12] We couldn't find any study which had assessed adherence to hand washing among small-scale workers. Adherence to physical distancing, avoiding touching the face and cleaning the surface was found about 25%. No study was found among small-scale workers of the unorganized sector to compare these findings. Adherence to CAB measures was not found to

be associated with age, residence, education level and occupation. A study in China also didn't find such associations.[10]

Association of adherence with five HBM constructs was also studied. Perceived susceptibility was found to be associated with adherence to all five CAB measures. This agreed with another study.[9] Perceived severity was also found associated with adherence to hand washing, face cover, physical distancing. Our findings were consistent with other studies.[9,10,18] Interventions that target perceived severity are information on risk factors and health outcomes.[19,20] Younger people may defy the construct of severity due to too much optimism, so additional information such as mortality in peers, catastrophic economic burden, destruction of the family should be conveyed.[21,22]

Both perceived benefit and perceived barrier were found associated with some of the CAB measures in multivariate analysis. This was consistent with other studies.[9,10,23] Our findings suggest that a proper understanding of perceived benefit and perceived barrier of any intervention is required before rolling out to work it effectively. MacCaul et al had suggested that customized messages can be effective in promoting the perceived benefit of health.[23] Since COVID-19 is contagious, CAB not only is beneficial to oneself but also can contribute to the community's health as a whole. Therefore, the perception of benefits to others may also be promoted in health campaigns.[10] Additionally, attempts should be made in future campaigns to change the perception of barriers such as inconvenience, cost and peer pressure while adopting CAB.

Cue to action was found associated with adherence to CAB in multivariate analysis. A similar association was reported in China and Iran among the general population.[9,10] It may be helpful in the present digital era where personalized reminders and counselling sessions can be delivered effectively in a short span by short message services, calls and social media.

The generalized social beliefs or social axioms were also found to be associated with adherence to CAB in our study. This agreed with another study done during the COVID-19 pandemic.[10] The mechanism of association between social axioms and health behaviour is unclear. Some researchers have suggested this association is indirect, while others found it direct.[16,17,24] Reward for application such as appreciation, increase in customers was found positively associated with CAB in our study. Reward promotes effort exertion and causes favorable attitudinal changes.[25] Social cynicism was negatively associated with CAB measures. It implies that a negative

view toward authority or society has an undesirable outcome on adherence to the CAB proposed by the government. Interventions aimed at reducing social cynicism may have a time lag to work, but it may be useful to prepare people for facing potential future unforeseen circumstances or accepting approved interventions such as vaccines.[10]

Limitations

Our study had some limitations. First, it was limited to only small-scale workers of the unorganized sector. Second, it considered only limited intrapersonal factors based on the HBM and social axioms, factors such as personality were not considered. Indicators of exposure, behavioural factors (previous knowledge and habits) were not controlled for analysis. Third, it is a cross-sectional study, association doesn't imply causation. Cross-cultural, follow-up studies are required for further exploration.

CONCLUSION

The overall adherence to COVID-19 appropriate behaviour was low among small-scale workers in the unorganized sector. It is pivotal to consider the community's perceived susceptibility, severity, benefit, barrier, cue to action, cynicism and reward for application to improve the adherence towards any intervention to control the COVID-19.

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