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journal homepage: www.elsevier.com/locate/dsx

Original Article

Socio-behavioural impact of COVID-19 on general population: A cross-sectional survey of one thousand seventy-nine participants across India between the first and the second wave of pandemic

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ARTICLE INFO

Article history:

Received 20 April 2021

Received in revised form

10 May 2021

Accepted 12 May 2021

Keywords:

Coronavirus

Pandemic

Socio-behavioural

Lifestyle

ABSTRACT

Background and aims: COVID-19 is expected to have a significant impact on the socio-behavioural aspect of citizens' lives, although the effects are expected to manifest differently in different population groups. The current study was conducted to assess the socio-behavioural impact of COVID-19 among the general population across India between the first and the second wave of pandemic.

Methods: A web-based cross-sectional study was conducted from 15th March –25th March 2021 using a pre-validated validated questionnaire upon the general population using e-survey, telephonic and face-to-face interview. The participants were recruited from the different regions of India by the purposive and snowball sampling technique following the principle of maximum diversity. Appropriate statistical tests were applied to study the association between the various sociodemographic variables and different behaviours.

Results: A total of 1079 responses were analysed for the study. Almost half of the participants feared contracting the COVID-19 infection. Overall, female participants, elderly people (more than 60 years of age) and urban dwellers reported a greater fear in the survey. More than half of the participants (53.39%) reported significant difficulties due to home confinement. People have become more inclined to adopt healthy lifestyles. There are mixed responses in the area of following preventive practices.

Conclusion: People have a significant amount of fear and anxiety related to the pandemic, leading to several social and behavioural changes that might have a considerable impact on their everyday lives.

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1. Introduction

India is undergoing a more severe and intense second wave of the COVID-19 pandemic. Though a vaccination drive has been launched to eradicate the infection, the crisis is far from getting

over anytime soon [1]. People are expected to follow the COVID-19 protocols, including social and behavioural measures even after getting vaccinated. These COVID-19 appropriate behaviours are expected to result in many social (preventive practices, household confinement) and behavioural (fear and anxiety, coping strategies

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and lifestyle modifications) changes in the lives of individuals and community at large [2–4].

Studies conducted in the West have highlighted the problem of these socio-behavioural changes on the individuals [5]. However, these studies suffer from certain limitations like limited representativeness of the sample and lack of validated tools for data collection. The result of the studies cannot be generalized due to differences in social and cultural constructs in various population groups. Therefore, our study aims to address this lacuna by gauging the nature and quantum of socio-behavioural changes experienced by Indian population during COVID-19 transition by using a validated tool.

It is necessary to study the impact of these changes in various sociodemographic groups to maintain the physical and mental well-being of individuals as well as the community.

2. Material & methods

2.1. Study design and rationale

A web-based cross-sectional study was conducted using a validated tool to assess the impact of socio-behavioural changes due to COVID-19 among the general population across India between the first and the second wave of pandemic. The ethical approval for the study was obtained from the Institute Ethics Committee, AIIMS, New Delhi.

The study was conducted from 15th March to 25th March 2021. The data was collected using Google forms, telephonic and face-to-face interviews conducted in the Medicine and Geriatric OPDs at AIIMS, New Delhi. The participants were invited via a study link shared over Emails, WhatsApp, Facebook, YouTube and Instagram. Participants who were unable to fill the forms by themselves due to low literacy or technical know-how were assisted by the investigators over telephonic or face-to-face interviews.

The participants were informed about the objective of the study and were assured regarding confidentiality before the administration of the questionnaire. Informed consent was obtained from the participants before enrolment in the study. The responses of only the complete questionnaires were considered for the purpose of data analysis.

2.2. Participants

The principle of maximum diversity was followed and a quota sampling technique was used to determine the various quotas such as age, gender, occupation and place of residence. The prevalence of different categories was compared to each quota, to preserve the maximum representativeness in the Indian population. Through the investigators' personal and social contacts, participants were recruited from different regions of India [North (n = 645), East (n = 167), West (n = 113), South (n = 48) and Central (n = 47)] via purposive and snowball sampling technique.

2.3. Survey questionnaire

The cross-sectional study was conducted using a validated questionnaire to assess the impact of socio-behavioural changes due to COVID-19 on the general population [2]. The questionnaire comprises five categories. Category A includes ten questions on Fear and Anxiety. These questions assess how the fear of infection and various sources of information impacted the lives of the individuals. Category B includes thirteen questions related to household confinement such as lack of interpersonal interactions and recreational activities, aimed at evaluating the ramifications of these social changes. Category C for Lifestyle Modification (5-items)

helps us in determining whether these behavioural changes have led to a positive or negative impact on individual's general lifestyle. The questionnaire tries to appraise how people feel about following preventive measures such as wearing masks, maintaining social distancing etc in category D. Lastly, two questions in category E helps us to identify what measures people take to cope with the thoughts related to the COVID-19.

2.4. Data and statistical analysis

Descriptive statistics such as frequency and percentage were applied to know the response pattern of the participants. Mean and standard deviation were calculated to find out the level of behaviours such as Fear and Anxiety, Household Confinement., Lifestyle Modifications and Preventive Practices. The association between the demographic and study variables was also calculated using chi-square. Moreover, correlation was applied to unearth the relationship among the different study variables.

3. Result

3.1. Socio demographic profile of participants

A total of 1109 responses were received. After the data cleaning process where incomplete and duplicate entries were eliminated, we had the final data for 1079 participants. The socio-demographic profiles of the included participants (N = 1079) are depicted in [Supplementary Table 1](#). The sample included the age range 18–87 years with almost equal distribution of male (47.50%) and female (52.50%) participants. The sample had a slight preponderance of students (58.80%) and unmarried (62.90%) participants. The sample had a fair representation of COVID-19 infected participants (11.50%).

3.2. Fear and anxiety due to the pandemic

The fear and anxiety regarding the COVID-19 infection is depicted in [Table 1](#). The result revealed that most of the population had a considerable (33.05%) and extreme (15.23%) amount of fear of getting COVID-19 infection. Slightly less than half of the population (40.87%) felt that different sources of information created a state of confusion regarding the pandemic. A significant association was found between the fear of getting the infection and particular socio-demographic profiles. As the age increased, the fear and anxiety related to the pandemic also increased ($\chi^2 = 23.10$; $p < 0.05$). Females had a greater fear of getting infected in comparison to males ($\chi^2 = 19.85$; $p < 0.01$). Students among the other occupational groups tended to avoid reading or listening to COVID-19 related news ($\chi^2 = 39.64$; $p < 0.001$) and believed that various sources of information created a state of confusion ($\chi^2 = 44.91$; $p < 0.001$). Populations residing in urban areas were more fearful of the pandemic ($\chi^2 = 28.95$; $p < 0.001$), and avoided the intake of COVID-19 related information ($\chi^2 = 17.55$; $p < 0.05$) as it led to a lot of confusion ($\chi^2 = 27.43$; $p < 0.01$).

3.3. Household confinement due to the pandemic

The impact of the pandemic on household confinement is presented in [Table 2](#). More than half of the participants experienced home confinement due the pandemic (53.39%). Restricted movement and lockdown affected their social lives remarkably as they were unable to attend social gatherings (55.3%), travel (66.51%) and contact or visit their healthcare professionals (43.81%). There was a significant association between home confinement and different socio-demographics. Instances of home confinement were

Table 1
Fear and anxiety due to COVID-19.

S. No	Fear and Anxiety	Frequency of responses by participants (Percentage %)					Association with Socio-demographic correlates						
		Not at all/ Not applicable	A little	Somewhat	Considerable	Extremely	Age	Gender	Marital Status	Occupation	Residence	COVID infected (Self)	COVID infected (Family)
1.	Fear of getting COVID-19 infection	84 (7.80)	165 (15.32)	308 (28.60)	356 (33.05)	164 (15.23)	$\chi^2 = 23.10$; $p < 0.05$	$\chi^2 = 19.85$; $p < 0.01$	$\chi^2 = 29.65$; $p < 0.001$	$\chi^2 = 45.05$; $p < 0.001$	$\chi^2 = 28.95$; $p < 0.001$	n.s.	$\chi^2 = 11.92$; $p < 0.05$
2.	Avoid reading or listening COVID-19 related news and messages	349 (32.37)	237 (21.99)	255 (23.65)	166 (15.40)	71 (6.59)	n.s.	$\chi^2 = 10.15$; $p < 0.05$	$\chi^2 = 20.94$; $p < 0.01$	$\chi^2 = 39.64$; $p < 0.001$	$\chi^2 = 17.55$; $p < 0.05$	n.s.	n.s.
3.	Confusion created by different information sources.	145 (13.44)	239 (22.15)	254 (23.54)	273 (25.30)	168 (15.57)	$\chi^2 = 23.36$; $p < 0.05$	$\chi^2 = 10.91$; $p < 0.05$	n.s.	$\chi^2 = 44.91$; $p < 0.001$	$\chi^2 = 27.43$; $p < 0.01$	n.s.	n.s.
Mean and SD of Fear and Phobia		M = 5.81, SD = 2.58											

Footnote: n.s.- Non significant.

experienced the most by the younger population. The impact of the home confinement decreased as the age increased ($\chi^2 = 25.79$; $p < 0.05$). Married participants were more impacted as they could

not attend religious ceremonies ($\chi^2 = 53.79$; $p < 0.001$) and were unable to extend support to near ones during the critical period ($\chi^2 = 22.13$; $p < 0.01$). Participants who were either self-infected

Table 2
Household confinement due to COVID-19.

S. No	Household confinement	Frequency of responses by participants (Percentage %)					Association with Socio-demographic correlates						
		Not at all/ Not applicable	A little	Somewhat	Considerable	Extremely	Age	Gender	Marital Status	Occupation	Residence	COVID-19 Infected (Self)	COVID-19 infected (family)
1.	Experienced home confinement	103 (9.56)	143 (13.28)	256 (23.77)	364 (33.80)	211 (19.59)	$\chi^2 = 23.11$; $p < 0.05$	$\chi^2 = 11.33$; $p < 0.05$	$\chi^2 = 15.99$; $p < 0.05$	$\chi^2 = 38.59$; $p < 0.001$	$\chi^2 = 22.12$; $p < 0.01$	$\chi^2 = 19/60$; $p < 0.01$	$\chi^2 = 12.96$; $p < 0.05$
2.	Effect of home confinement	108 (10.03)	184 (17.08)	251 (23.31)	317 (29.43)	217 (20.15)	$\chi^2 = 25.79$; $p < 0.05$	n.s.	n.s.	$\chi^2 = 35.18$; $p < 0.001$	n.s.	n.s.	$\chi^2 = 14.09$; $p < 0.01$
3.	Family members stopped from going outside	86 (7.98)	194 (18.00)	276 (25.60)	280 (25.97)	242 (22.45)	$\chi^2 = 31.65$; $p < 0.01$	$\chi^2 = 10.39$; $p < 0.05$	n.s.	n.s.	$\chi^2 = 17.68$; $p < 0.05$	n.s.	$\chi^2 = 12.81$; $p < 0.05$
4.	Socially cut-off	166 (15.40)	212 (19.67)	269 (24.95)	257 (23.84)	174 (16.14)	n.s.	$\chi^2 = 14.24$; $p < 0.01$	$\chi^2 = 15.77$; $p < 0.05$	$\chi^2 = 54.77$; $p < 0.001$	n.s.	$\chi^2 = 12.86$; $p < 0.05$	n.s.
5.	Disruption's in day-to-day social interactions.	124 (11.50)	208 (19.29)	278 (25.79)	299 (27.74)	169 (15.68)	$\chi^2 = 35.72$; $p < 0.001$	n.s.	$\chi^2 = 18.75$; $p < 0.05$	$\chi^2 = 35.35$; $p < 0.001$	$\chi^2 = 18.32$; $p < 0.05$	n.s.	$\chi^2 = 16.34$; $p < 0.01$
6.	Inability to attend any social gatherings	146 (13.57)	176 (16.36)	159 (14.78)	312 (29.00)	283 (26.3)	$\chi^2 = 24.37$; $p < 0.05$	n.s.	n.s.	$\chi^2 = 30.00$; $p < 0.01$	$\chi^2 = 35.58$; $p < 0.001$	n.s.	$\chi^2 = 23.98$; $p < 0.001$
7.	Impact on religious and spiritual ceremonies	198 (18.42)	194 (18.05)	203 (18.88)	291 (27.07)	189 (17.58)	$\chi^2 = 59.59$; $p < 0.001$	n.s.	$\chi^2 = 53.79$; $p < 0.001$	$\chi^2 = 53.94$; $p < 0.001$	n.s.	$\chi^2 = 10.69$; $p < 0.05$	$\chi^2 = 10.84$; $p < 0.05$
8.	Inability to be with close family members and friends	195 (18.16)	191 (17.78)	228 (21.23)	269 (25.05)	191 (17.78)	$\chi^2 = 26.74$; $p < 0.01$	n.s.	$\chi^2 = 22.13$; $p < 0.01$	$\chi^2 = 44.24$; $p < 0.001$	n.s.	$\chi^2 = 16.07$; $p < 0.01$	$\chi^2 = 49.92$; $p < 0.001$
9.	Impact on travel or vacations.	97 (9.00)	89 (8.26)	175 (16.23)	322 (29.87)	395 (36.64)	$\chi^2 = 28.68$; $p < 0.01$	n.s.	n.s.	$\chi^2 = 40.94$; $p < 0.001$	n.s.	$\chi^2 = 11.17$; $p < 0.05$	$\chi^2 = 23.68$; $p < 0.001$
10.	Inability to meet doctors/ Healthcare professionals	188 (17.49)	175 (16.28)	241 (22.42)	252 (23.44)	219 (20.37)	$\chi^2 = 39.55$; $p < 0.001$	$\chi^2 = 16.78$; $p < 0.01$	$\chi^2 = 16.32$; $p < 0.05$	$\chi^2 = 37.53$; $p < 0.001$	$\chi^2 = 41.23$; $p < 0.001$	n.s.	n.s.
Mean and SD of Household confinement		M = 22.69, SD = 8.34											

Footnote: n.s.- Non significant.

Table 3
Lifestyle modifications due to COVID-19.

S. No	Lifestyle Modifications	Frequency of responses by participants (Percentage %)					Association with Socio-demographic correlates						
		Significantly decreased	Slightly decreased	Grossly similar	Slightly increased	Significantly increased	Age	Gender	Marital Status	Occupation	Residence	COVID-19 Infected (Self)	COVID-19 Infected (Family)
1.	Intake of healthy food	39 (3.64)	67 (6.23)	238 (22.14)	418 (38.88)	313 (29.12)	$\chi^2 = 33.87$; $p < 0.01$	$\chi^2 = 15.44$; $p < 0.01$	n.s.	$\chi^2 = 26.31$; $p < 0.05$	n.s.	n.s.	n.s.
2.	Intake of fried and junk food	497 (46.23)	283 (26.33)	180 (16.74)	58 (5.40)	57 (5.30)	$\chi^2 = 30.31$; $p < 0.05$	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
3.	Exercise routine	124 (11.52)	169 (15.71)	384 (35.69)	279 (25.93)	120 (11.15)	$\chi^2 = 35.33$; $p < 0.01$	n.s.	$\chi^2 = 44.33$; $p < 0.001$	n.s.	$\chi^2 = 15.99$; $p < 0.01$	$\chi^2 = 18.31$; $p < 0.01$	$\chi^2 = 10.04$; $p < 0.05$
4.	Quality of sleep	96 (8.92)	190 (17.66)	441 (40.99)	236 (21.93)	113 (10.50)	$\chi^2 = 73.96$; $p < 0.001$	n.s.	$\chi^2 = 86.96$; $p < 0.001$	$\chi^2 = 32.25$; $p < 0.001$	n.s.	$\chi^2 = 10.04$; $p < 0.05$	$\chi^2 = 9.84$; $p < 0.05$
5.	Duration of sleeping hours	46 (4.28)	157 (14.59)	485 (45.07)	268 (24.91)	120 (11.15)	$\chi^2 = 65.17$; $p < 0.001$	n.s.	$\chi^2 = 34.39$; $p < 0.01$	n.s.	$\chi^2 = 9.88$; $p < 0.05$	$\chi^2 = 9.88$; $p < 0.05$	$\chi^2 = 9.84$; $p < 0.05$
Mean and SD of Life style Modification		M = 2.28, SD = 2.73											

Footnote: n.s.- Non significant.

($\chi^2 = 19/60$; $p < 0.01$) or had any family member infected ($\chi^2 = 14.09$; $p < 0.01$) with COVID-19 felt extreme home confinement.

3.4. Lifestyle modifications due to the pandemic

COVID-19 crisis has led to some remarkable changes in the lifestyle of the individuals as shown in Table 3. People have adopted healthy eating habits (68%). The consumption of junk food has significantly decreased (72.56%). The physical activity routine (37.08%) and sleep quality (32.43%) was also found to be improved among the participants. There was a significant change in the eating habits among the younger population ($\chi^2 = 33.87$; $p < 0.01$). The consumption of healthy food items increased for both the genders ($\chi^2 = 15.44$; $p < 0.01$). The quality of sleep improved for the students ($\chi^2 = 86.96$; $p < 0.001$) and those living in the cities ($\chi^2 = 32.25$; $p < 0.001$) in comparison to other occupations and residential areas. The physical activity routine improved for those who were not infected ($\chi^2 = 15.99$; $p < 0.01$) with the virus in comparison to those who were.

3.5. Preventive practices during the pandemic

The results of this domain revealed that people adhered to the preventive measures strictly as depicted in Table 4. They followed the protocols by wearing masks (90.81%), maintaining social distancing (56.45%) and frequent hand washing (75.49%). Participants reported that they bought and stocked groceries for 1–2 weeks in advance (35.07%) and ensured cleaning everything well before the consumption (64.75%). A good number of participants felt comfortable in carrying out these practices such as wearing masks (44.29%). Participants belonging to the age group (46–60 years) felt most uncomfortable about wearing masks ($\chi^2 = 85.73$; $p < 0.001$) and males felt more uncomfortable about changing clothes after coming home ($\chi^2 = 36.81$; $p < 0.001$). Unmarried participants were less likely to keep groceries outside after the purchase in comparison to married participants ($\chi^2 = 32.08$; $p < 0.001$). Participants who had any family member infected felt more uncomfortable with wearing masks ($\chi^2 = 31.16$; $p < 0.001$) and in following other preventive measures.

3.6. Coping strategies used during pandemic

Table 5 depicts that approximately 26.96% and 17.35% of the participants made considerable and extreme efforts to avoid COVID-19 related thoughts, respectively. People chose various methods such as watching television (15.55%), communicating with people (9.83%), and exercising (8.59) to distract themselves. Various other combinations of coping strategies along with frequency and percentages are presented in Supplementary Table 2.

3.7. Correlation between the domains

Correlation between the four domains was also calculated. The result presented in Supplementary Table 3 revealed that there was a significant correlation between fear and anxiety, household confinement ($p < 0.001$) and preventive measures ($p < 0.001$). Household confinement was significantly correlated to lifestyle modification ($p < 0.01$) and preventive measures ($p < 0.001$). Lifestyle modifications and preventive practices were also correlated significantly ($p < 0.001$).

Table 4
Preventive practices during COVID-19.

S. No	Frequency of responses by participants (Percentage %) <!--Para Run-on-->					Association with Socio-demographic correlates						
	Rarely/ Never	Sometimes	Commonly	Mostly	Always	Age	Gender	Marital Status	Occupation	Residence	COVID-19 Infected (Self)	COVID-19 Infected (Family)
1. Frequency of wearing masks while stepping out of the house	7 (0.65)	41 (3.81)	51 (4.74)	146 (13.56)	832 (77.25)	n.s.	$\chi^2 = 28.72$; $p < 0.001$	n.s.	$\chi^2 = 23.61$; $p < 0.05$	$\chi^2 = 49.73$; $p < 0.001$	n.s.	$\chi^2 = 9.74$; $p < 0.05$
2. Frequency of covering mouth and nose by mask or clothes properly	14 (1.30)	46 (4.28)	80 (7.45)	228 (21.23)	708 (65.74)	$\chi^2 = 33.75$; $p < 0.001$	$\chi^2 = 48.66$; $p < 0.001$	n.s.	$\chi^2 = 28.08$; $p < 0.01$	$\chi^2 = 31.88$; $p < 0.001$	n.s.	n.s.
3. Feeling about wearing masks regularly	23 (2.14)	302 (28.04)	275 (25.53)	248 (23.03)	229 (21.26)	$\chi^2 = 85.73$; $p < 0.001$	n.s.	$\chi^2 = 84.80$; $p < 0.001$	$\chi^2 = 97.92$; $p < 0.001$	$\chi^2 = 17.56$; $p < 0.05$	n.s.	$\chi^2 = 31.16$; $p < 0.001$
4. Frequency of maintaining social distance of at least 1 m distance with other people	74 (6.87)	139 (12.91)	256 (23.77)	411 (38.16)	197 (18.29)	$\chi^2 = 23.27$; $p < 0.05$	n.s.	$\chi^2 = 24.17$; $p < 0.01$	$\chi^2 = 32.54$; $p < 0.01$	$\chi^2 = 25.99$; $p < 0.01$	n.s.	$\chi^2 = 16.25$; $p < 0.01$
5. Feeling about maintaining social distance of at least 1 m with other people regularly	59 (5.48)	182 (16.91)	321 (29.83)	343 (31.88)	171 (15.89)	$\chi^2 = 73.96$; $p < 0.001$	$\chi^2 = 11.25$; $p < 0.05$	$\chi^2 = 69.17$; $p < 0.001$	$\chi^2 = 79.98$; $p < 0.001$	$\chi^2 = 29.41$; $p < 0.001$	n.s.	$\chi^2 = 22.32$; $p < 0.001$
6. Frequency of ensuring frequent hand washing/ sanitizing	13 (1.21)	69 (6.41)	182 (16.90)	374 (34.73)	439 (40.76)	$\chi^2 = 25.43$; $p < 0.05$	$\chi^2 = 16.08$; $p < 0.01$	$\chi^2 = 20.50$; $p < 0.01$	$\chi^2 = 31.57$; $p < 0.01$	n.s.	n.s.	n.s.
7. While washing your hands frequency of ensuring washing hands for at least 20 s	55 (5.11)	134 (12.44)	235 (21.82)	319 (29.62)	334 (31.01)	$\chi^2 = 37.37$; $p < 0.001$	$\chi^2 = 9.62$; $p < 0.05$	$\chi^2 = 27.58$; $p < 0.01$	$\chi^2 = 36.24$; $p < 0.001$	n.s.	n.s.	n.s.
8. Feeling about frequently washing/ sanitizing hands regularly	32 (2.97)	131 (12.17)	269 (25.00)	402 (37.36)	242 (22.49)	$\chi^2 = 41.06$; $p < 0.001$	$\chi^2 = 11.00$; $p < 0.05$	$\chi^2 = 32.81$; $p < 0.001$	$\chi^2 = 48.68$; $p < 0.001$	n.s.	n.s.	$\chi^2 = 27.80$; $p < 0.001$
9. Frequency of changing clothes after coming from outside	78 (7.24)	159 (14.76)	196 (18.20)	247 (22.93)	397 (36.86)	$\chi^2 = 37.88$; $p < 0.001$	$\chi^2 = 36.81$; $p < 0.001$	$\chi^2 = 22.46$; $p < 0.01$	$\chi^2 = 43.86$; $p < 0.001$	N.s.	$\chi^2 = 10.12$; $p < 0.05$	$\chi^2 = 19.96$; $p < 0.01$
10. Frequency of taking a bath after coming from outside	2060 (19.14)	301 (27.97)	159 (14.78)	227 (21.10)	183 (17.01)	$\chi^2 = 42.63$; $p < 0.001$	N.s.	$\chi^2 = 18.52$; $p < 0.05$	$\chi^2 = 57.17$; $p < 0.001$	N.s.	N.s.	$\chi^2 = 12.07$; $p < 0.05$
11. Frequency of purchasing 1–2 week worth of groceries at a time	239 (22.23)	228 (21.21)	231 (21.49)	231 (21.49)	146 (13.58)	$\chi^2 = 33.44$; $p < 0.01$	$\chi^2 = 9.89$; $p < 0.05$	n.s.	$\chi^2 = 26.89$; $p < 0.01$	$\chi^2 = 25.25$; $p < 0.01$	N.s.	N.s.
12. Keeping groceries out after purchasing them	281 (26.04)	402 (37.26)	242 (22.43)	114 (10.57)	40 (3.71)	$\chi^2 = 41.14$; $p < 0.001$	$\chi^2 = 13.05$; $p < 0.05$	$\chi^2 = 32.08$; $p < 0.001$	$\chi^2 = 44.58$; $p < 0.001$	N.s.	N.s.	$\chi^2 = 18.02$; $p < 0.01$
13. Frequency of ensuring cleaning groceries thoroughly before consuming them during COVID-19	71 (6.61)	99 (9.22)	199 (18.53)	279 (25.09)	426 (39.66)	$\chi^2 = 33.18$; $p < 0.01$	$\chi^2 = 31.62$; $p < 0.001$	$\chi^2 = 19.63$; $p < 0.05$	$\chi^2 = 30.33$; $p < 0.01$	N.s.	$\chi^2 = 10.57$; $p < 0.05$	N.s.
Mean and SD of preventive practices	M = 31.78, SD = 8.20											

Footnote: n.s.- Non significant.

Note: For questions no. 3, 5 and 8 responses are 'Very uncomfortable, Uncomfortable, neither comfortable nor uncomfortable, Comfortable and Very Comfortable' respectively. For question no. 12 responses are 'Don't keep out side, for 2–8 h, for 8–24 h, for 24–48 h, for 48–72 h' respectively.

4. Discussion

We conducted a web-based cross-sectional survey on 1079 participants recruited from different parts of the country to assess the socio-behavioural impact of the COVID-19 pandemic on the general population across India between the first and the second wave of pandemic.

To date, no Indian study assessed the impact of COVID-19 on

various aspects of social and behavioural changes experienced by individuals and community. Some social and behavioural changes of an individual's life such as dietary pattern, sleep behaviour and stress during home confinement have been reported in parts. This study brings together cohesively the impact of the pandemic on a number of behavioural and social aspects of human existence during the COVID-19 pandemic. Also, most of the earlier studies were not quantitative in nature and were conducted during the first

Table 5
Coping strategies during COVID-19.

S. No	Coping strategies	Frequency of responses by participants (Percentage %)					Association with Socio-demographic correlates						
		Not at all/ Not applicable	A little	Somewhat	Considerable	Extremely	Age	Gender	Marital Status	Occupation	Residence	COVID-19 Infected (Self)	COVID-19 Infected (Family)
1.	Making efforts to avoid the thoughts of COVID-19	171 (15.95)	157 (14.65)	269 (25.09)	289 (26.96)	186 (17.35)	$\chi^2 = 47.61$; $p < 0.001$	n.s.	$\chi^2 = 34.14$; $p < 0.001$	$\chi^2 = 37.84$; $p < 0.001$	$\chi^2 = 22.39$; $p < 0.01$	$\chi^2 = 14.73$; $p < 0.01$	n.s.

Footnote: n.s.- Non significant.

wave of the pandemic, where several changes in behaviour were forced by legislation and fear of punishment, as well as the fear of a disease which was only being known slowly. Our study was conducted during the transition period between the first and second wave, when cases appeared to be dropping steadily and therefore measures the long-lasting changes in lifestyle that were being followed largely voluntarily rather than out of coercive measures taken by the government.

We found that almost half of the participants feared contracting the COVID-19 infection. This sense of fear was prevalent among the females, elderly and urban dwellers. The negative emotions (such as fear or threat) were generally induced by the negative reporting of the situation by social media. Therefore, many people tried avoiding watching and listening to COVID-19 specific news as various information sources created a sense of confusion leading to a state of anxiety. Similar findings were reported in a study conducted in Eastern India, where females and middle-aged people were found to be more afraid of the COVID-19 situation [6,7].

The fear and anxiety of getting the infection made people follow the preventive practices strictly [3,8–11]. Participants were found to obey several precautionary measures including wearing masks, frequent hand washing, maintaining social distancing and keeping the groceries or other items outside for several hours before use [12]. Approximately half of the participants reported that they stocked groceries and other essential items for 1–2 weeks in advance, as a result of “panic-buying behaviour” [13]. As participants did not feel troubled in carrying out these practices on a day-to-day basis, a strict adherence to COVID-19 norms could be observed within all socio-demographic groups.

Participants were also found to resort to several behavioural changes. Their dietary pattern, physical activity routine and sleep cycle were also found to be altered during the pandemic. Overall, a positive shift could be observed in lifestyle modification. People resorted to healthy eating habits and consumption of unhealthy food items was found to be reduced which is found to be consistent with the result of the study conducted to assess the impact of the COVID-19 on lifestyle-related behaviours [3,14–16]. The quality and duration of sleep improved for the younger population groups, and similar findings were reported by Grover et al. in their study [17]. A smaller percentage of the participants claimed an increase in physical activity, which contradicts the findings of previous studies [14,18]. Overall, a significant change was not observed in terms of sleep as well as physical activity.

Apart from behavioural changes, people underwent social changes such as lockdown and restricted movement, which significantly transformed their social lives [19]. The feeling of being home-confined was experienced by all the age groups. Lack of social interactions such as inability to attend social gatherings, meet close family members and friends, and visit doctors or healthcare professionals caused a substantial amount of disruption in the lives of the individuals. Students, younger population groups and those who were themselves infected or had any family member infected

by the virus were found to be highly affected, as they had to completely isolate themselves from the social environment for weeks. Forced proximity (quarantine or self-isolation) resulted in a high level of aggression and confusion [5]. Similar findings were reported by a study conducted in China that home confinement due to the COVID-19 had negatively impacted the behaviour and attitude of the individuals [19].

The overall negative perception of the pandemic leads to a situation of significant distress, and many individuals made significant efforts to cope with the resulting emotional and mental turbulence, such as watching TV, conversing with people, and doing exercise. Whether infected or not, and whether they had a high or low level of fear, COVID-19 remained a major stressor in people's lives, pushing them to adopt several social and behavioural changes. We have witnessed a change in people's perception that included their choice of prophylactic drugs that may be due to uncertainty in its efficacy and safety [20].

People adhered to these social and behavioural changes during the first wave as they were plagued with the uncertainty of contracting the COVID-19 infection. When the curve started to flatten, people became more complacent and adopted a much more casual attitude. They were mostly in denial about the danger that the virus posed since India had survived the first wave relatively easily as compared to many Western nations. Belief in the vaccine as visible protection also gave people a false sense of confidence. The full effect of this is now on display during the second wave being witnessed since April 2021. It can now be expected that people will adhere to the necessary changes more strongly as the healthcare system of the country has clearly collapsed and individuals in almost every circle are confronted with the loss of loved ones. If we were to conduct this survey again at this moment, the percentage of people adopting recommended protective practices would be much higher.

5. Strengths and limitations

To the best of our knowledge, our study is the first study to assess the socio-behavioural impact of the COVID-19 pandemic on the general population across India between the first and the second wave of pandemic. The study was conducted using a valid and a reliable tool. Therefore, the findings can be used by the government and public health policy makers to develop strategies to maintain physical and psychological well-being of the individuals as well as the community. There are few major limitations of the study. Firstly, though the purposive and snowball sampling technique was used to collect the data from different parts of the nation, the result cannot be generalized to the entire population. Secondly, there is a possibility of reporting bias as data was collected using e-survey and telephonic interviews. Lastly, more than half of the population in the studied population is young (18–29 years) with a very little representation (9.10%) of older population (60+ years).

6. Conclusion

This study is one of the first attempts to assess the deep and widespread socio-behavioural impact of the COVID-19 pandemic on the general population across India between the first and the second wave of pandemic. The findings of the study can be used by the government and public health policy makers to develop strategies to minimize the negative impact of these changes to fulfil the goal of improving the physical, mental and emotional health of all cross-sections of Indian society.

Declaration of competing interest

The Author(s) declare(s) that there is no conflict of interest.

Acknowledgement

The study was supported by AIIMS intramural research grant under theme "Research on SARS-CoV-2 and COVID-19".

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.dsx.2021.05.017>.

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