Fear of COVID-19 among the Indian youth: A cross-sectional study

Gaurav Gaur, Meenakshi Sharma[1], Meenu Kundu[2], Harmehr Sekhon[3], Nidhi Chauhan[4]

Abstract:

BACKGROUND: Coronavirus disease is a highly infectious and fatal disease. It has caused distress in the form of fear, and anxiety among masses including youth. The psychosocial health of youth is important to build resilient nations after the pandemic is over.This study aimed to capture the level of COVID-19 fear among youth studying in a northern Indian university and to compare it with demographic variables.

MATERIALS AND METHODS: This was a cross-sectional study (April–May 2020) conducted among university students in North India. Fear of COVID-19 Scale (FCV-19S) was used for online survey using Google Forms. FCV-19S is a reliable tool for assessing the fear of COVID-19 among the general population. Descriptive statistics and principal component analysis (PCA) with varimax rotation were used for statistical analysis.

RESULTS: A total of 521 responses were recorded. The majority (78%) of the participants were in the age group of 18–23 years and more than half (57%) were pursuing graduation. The respondents belonged to 16 states and union territories in the country. A total of 17% reported severe fear, while a few reported moderate (17%) or mild (11%) fear on the FCV-19S. No respondent could be categorized with "no fear" based on the overall FCV-19S score. Approximately, 42% of respondents were nervous after watching news/social media posts about COVID-19. Based on PCA, factor 1 labeled as anxiety toward COVID-19, factor 2 media effect on shaping of fear, and factor 3 thanatophobia as contributing factors for fear among youth.

CONCLUSIONS: Reflection of fear among youth suggests that adequate knowledge about COVID-19, preventive steps, treatment options, etc., may be planned to allay fears among youth.

Keywords:

Coronavirus, COVID-19, fear, Fear of COVID-19 Scale, principal component analysis; psychological health, Students, India

Centre for Social Work, Panjab University, Chandigarh, India, [1]Department of Community Medicine, School of Public Health, PGIMER, Chandigarh, India, [2]Department of Statistics , Panjab University, Chandigarh, India, [3]Department of Medicine, McGill University, Montreal, Canada, [4]Department of Psychiatry, GMCH, Chandigarh, India

Address for correspondence:
Dr. Meenakshi Sharma, Department of Community Medicine, School of Public Health, PGIMER, Chandigarh, India. Room No. 1005, Department of PRM, PGIMER, Chandigarh, India.
E-mail: mnxphd@gmail. com

Introduction

COVID-19 is a highly infectious and fatal disease.[1,2] Due to the high infection rate and mortality, fear of contracting the virus is rampant.[3] This may affect the transmission rate, morbidity, and mortality of the disease which further leads to psychosocial challenges.[4]

Currently, there is no cure for COVID-19 and the primary focus is on symptomatic treatment, reduction of contact through social distancing, and implementation of lockdown worldwide.[5] Likewise, in India, a nationwide lockdown was announced on March 25, 2020. Indian youth constituting 19% of the total population[6] was restricted to stay at home. This might have caused distress in the form of fear, and anxiety among the youth, amplified further by social media panic. The psychosocial health of youth is important to build resilient nations after the pandemic is over. Hence, it is important to understand the fear of COVID-19 among youth and the contributing factors for the same. Therefore, the current study planned to capture the level of fear of COVID-19

among youth studying in a university of northern India and to compare it with demographic variables.

Materials and Methods

Study design and settings
The present study was a cross-sectional study (April–May 2020).

Study participants and sampling
The study conducted among students studying in a university located within northern India. The sample size was estimated based on a similar study[7] which showed that the perceived mental health need was seen in more than 80% of the participants. Hence, the sample size of 246 students with a 5% margin of error at a 95% confidence level was estimated. Assuming a further nonresponse rate of 50%, the recruitment target was 492 (246/[1-0.5]).

Data collection tool and technique
A questionnaire gathering demographic data and the seven-item Fear of COVID-19 Scale (FCV-19S)[3] developed by Ahorsu *et al*.[3] was prepared using Google Forms. FCV-19S is a reliable tool for assessing fear of COVID-19 among the general population, a small exploratory qualitative study conducted through telephone among 10 experts (public health specialists [4], social workers [2], researchers [3], and statistician [1]) was used to explore the understandability and simplicity of FCV-19S in our context. The experts suggested minor changes in FCV-19S questions 3, 4, and 5, respectively. Modifications were done such as including synonym for the word "clammy" in question 3 (i.e., my hands become clammy/sweaty when I think about coronavirus-19). In question 5, "newspapers, news, internet" along with social media (when watching news and stories about coronavirus-19 on social media/WhatsApp, newspapers, news, internet etc., I become nervous or anxious) were added. One participant suggested adding one question pertaining to family; hence, question 4 of FCV-19S was modified and "family" was also added [Table 1].

A snowball sampling technique was used to identify university teachers and the link of the questionnaire was sent through e-mails/WhatsApp so that they could share with students studying in their departments. On receiving and accessing the link, the respondents were auto directed to a page with information about the study, demographic details, and the questionnaire. The link for the survey was initiated on April 23, 2020, and was active for 1 week. The study included only respondents who understood English and had access to the Internet.

The requisite permission for conducting and publishing the study was taken by the first author from the affiliated university. The ethical concerns like confidentiality,

informed consent, and the rights of respondents to drop out from the survey any time they wish were ensured. For the sake of confidentiality, we did not record the e-mail addresses of the respondents.

The respondents indicated their level of agreement with the statements using a five-item Likert-type scale. Answers included "strongly disagree," "disagree," "neither agree nor disagree," "agree," and "strongly agree." The minimum score possible for each question on FCV-19S was 1 and the maximum was 5. A total FCV-19S score was calculated by adding up each item score. Quantification of cutoff scores was done based on the Hospital Anxiety Depression Scale[8] score (7–10: mild, 11–14: moderate, and >15: severe). A score of <7 indicated a response "no fear" in terms of COVID-19.

Data analysis
Descriptive statistics were used to analyze the findings. The principal component analysis (PCA) with varimax rotation was used to classify the variables and data reduction. Correlation, Bartlett's test, eigenvalues of components, and scree plot were evaluated for PCA. Scores of latent variables derived from PCA were categorized as low and high levels of fear based on the mean, which was taken as a cutoff. The scores above the mean were considered as high fear and less than or equal to the mean as low fear. A multiple logistic regression of levels of fear with demographic variables was conducted. Statistical analysis was performed using MS Excel, Epi Info, R software version 4.0, and Microsoft Power BI, version 2.80.

Results

An online survey related to COVID-19 fear among the students studying in a northern Indian university was conducted. A total of 521 responses were recorded. All the respondents were above 18 years of age. Two-third of the respondents had come to know about the novel coronavirus by January 2020. A majority of the respondents (45%) felt happy while staying at home during the lockdown. Furthermore, a majority of the participants (78%) were in the 18–23 years age group and more than half (53%) were females. More than half of the participants (57%) were pursuing graduation [Table 2] and approximately 74% of respondents were from urban areas. The respondents belonged to 16 states and union territories of the country with a majority of participants from Punjab (*n* = 222), Chandigarh (*n* = 130), Haryana (*n* = 73), and Himachal (*n* = 36) [Figure 1].

In this study, 37% of the respondents affrmed feeling afraid of the pandemic, and 39.4% of responses indicated feeling uncomfortable when thinking about the novel pandemic. About 45% of participants selected the "worried for themselves and their close ones" response

Table 1: Components of Fear Scale of COVID-19

Parameter	Rating scale				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I am most afraid of coronavirus-19					
It makes me uncomfortable to think about coronavirus-19					
My hands become clammy/sweaty when I think about coronavirus-19					
I am afraid of losing my life because of coronavirus-19					
When watching news and stories about coronavirus-19 on social media/Whatsapp, newspapers, news, internet etc., I become nervous or anxious					
I cannot sleep because I'm worrying about getting coronavirus-19					
My heart races or palpates when I think about getting coronavirus-19					
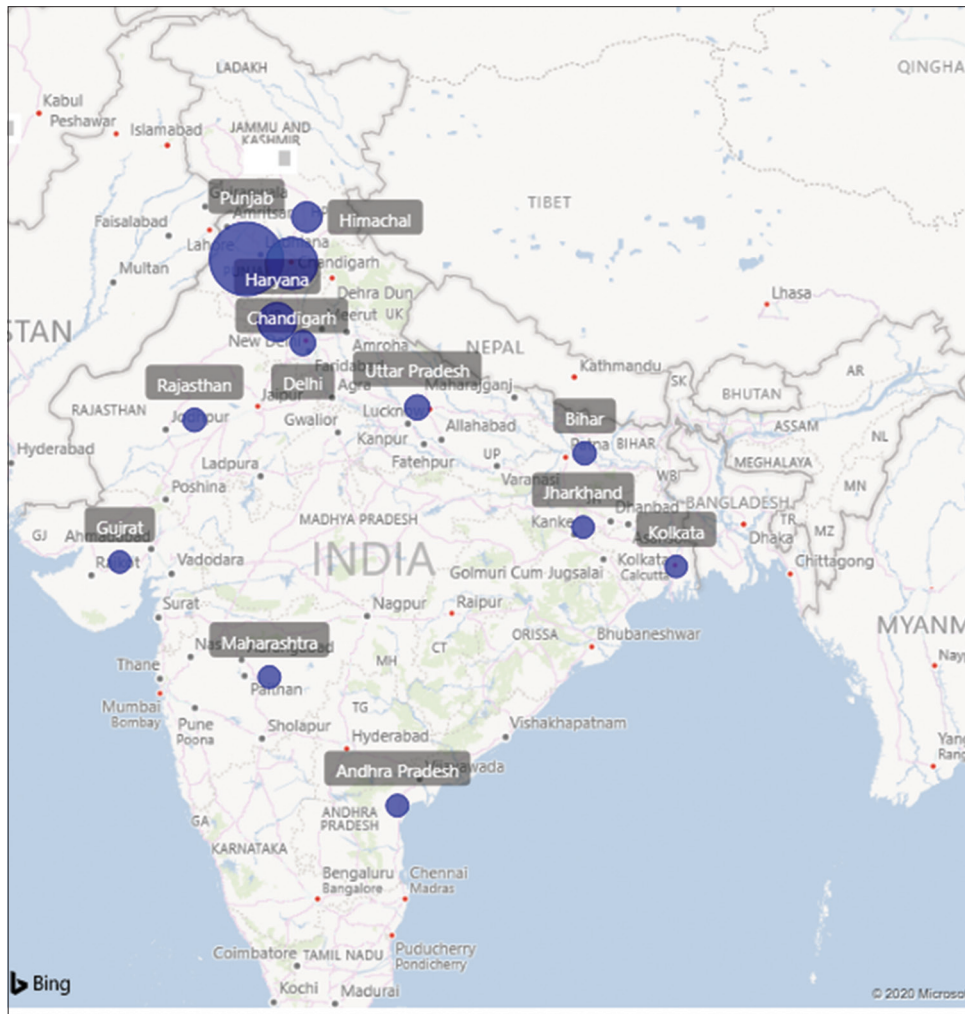
Figure 1: Distribution of sample size across various states of India

in terms of their reaction to the ongoing pandemic. Approximately, 7% of the respondents had diffculty in sleeping due to being worried about the COVID-19 pandemic [Table 3].

It was found that there is higher fear in terms of the overall FCV-19S score. A total of 17% reported severe fear, while a few reported moderate (17%) or mild (11%) fear on the FCV-19S. It should be noted that no

Table 2: Characteristics of respondents who participated in the online survey (*n*=521)

Variables	*n* (%)
Age (years)	
18-23	407 (78.1)
>23	114 (21.9)
Gender	
Male	245 (47.0)
Female	275 (52.8)
Prefer not to say	1 (0.2)
Course	
Pursuing graduate	296 (56.8)
Pursuing postgraduate	181 (34.7)
Postdoctorate	35 (6.7)
Pursuing postdoctorate	6 (1.1)
Income of the family (INR)	
<20,000	99 (19)
>80,000	107 (20.5)
20,000-40,000	126 (24.2)
40,000-60,000	113 (21.7)
60,000-80,000	76 (14.6)
Area of residence	
Urban	384 (73.7)
Rural	129 (24.8)
Other	8 (1.5)
First came to know about corona	
December 2019 or earlier	133 (25.5)
January 2020	205 (39.4)
February 2020	130 (25)
March 2020	51 (9.8)
April 2020	2 (0.4)
Learn about coronavirus/COVID-19 the first time?	
Friends/relatives/colleagues	59 (11.3)
Internet	298 (57.2)
News channel	103 (19.8)
Newspaper	56 (10.8)
Others	5 (1)
How do you feel staying at home during lockdown?	
Frustrated/irritated	122 (23.4)
Happy	232 (44.5)
Sad	32 (6.1)
Uninterested	85 (16.3)
Others	50 (9.6)

INR=International normalized ratio

Figure 2: Scree plot showing eigen values

questions (Q) that load highly on Factor 1 are Q6 (I cannot sleep because I'm worrying about getting coronavirus-19), Q3 (my hands become clammy/sweaty when I think about coronavirus-19), and Q7 (my heart races or palpates when I think about getting coronavirus-19) with the lowest loading of 0.73. The questions that load highly on factor 2 are Q2 (it makes me uncomfortable to think about coronavirus-19) and Q5 (when watching news and stories about coronavirus-19 on social media/Whatsapp, newspapers, news, internet etc. I become nervous or anxious) and on the factor 3, Q1 (I am most afraid of coronavirus-19) and Q4 (I am afraid of losing my life because of coronavirus-19) respectively [Figure 3].

The factors labeled as latent variables F1 were "anxiety towards COVID-19," combination of (Q3, 6, 7), F2: "media effect on shaping of fear," combination of (Q2, 5), and F3: "thanatophobia," combination of (Q1, 4). Females, education level, and residence showed significantly higher odds ($P < 0.05$) for a high level of fear compared to their respective counterparts in our study [Table 4]. Females had 1.94, 2.26, and 3.38 times significantly ($P = 0.01$) higher odds to fear COVID-19 compared with their counterparts with respect to anxiety toward COVID-19, media effect on shaping of fear, and thanatophobia ($P = 0.01$).

Discussion

High infection rates and mortality due to COVID-19 are the primary causes of worry among people.[7] Chung-Ying Lin *et al*. have reported that people have fear of contacting the COVID19 virus.[4] The psychological health of youth is particularly important during this pandemic. Hence, this study attempted to capture the level of fear of COVID-19 among the youth of India.

In our study, all participants reported fear, apprehension about COVID-19, and anxiety symptoms based on the overall score of the FCV-19S. These findings are consistent with Chung-Ying Lin *et al*. reporting that people have fear of contacting the COVID-19.[4] Variables

respondent could be categorized with "no fear" based on the overall FCV-19S score.

In terms of the correlation of the variables, no variable was found below the value of 0.3 or more than 0.8; hence, no variable was excluded. Bartlett's test on the correlation matrix ($P < 0.001$) showed that factor analysis was appropriate. Thus, the PCA was performed. From the scree plot [Figure 2], the point of inflexion was found to be around the second point to the left. Based on the scree plot and eigenvalues, a three-component solution was considered best. According to orthogonal rotation (varimax) results, it was found that the
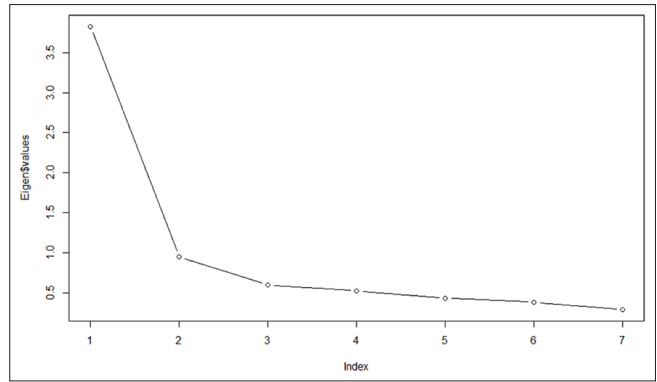
Table 3: Item-wise response on Fear COVID-19 Scale

Parameters	Strongly disagree, *n* (%)	Disagree, *n* (%)	Neither agree nor disagree, *n* (%)	Agree, *n* (%)	Strongly agree, *n* (%)
I am most afraid of coronavirus-19	53 (10.1)	98 (18.8)	176 (33.8)	150 (28.8)	44 (8.4)
It makes me uncomfortable to think about coronavirus-19	81 (15.6)	130 (25)	105 (20.2)	174 (33.4)	31 (6)
My hands become clammy/sweaty when I think about coronavirus-19	215 (41.3)	199 (38.2)	58 (11.1)	39 (7.5)	10 (1.9)
I am afraid of losing my life and my family because of coronavirus-19	89 (17.1)	96 (18.4)	104 (20)	167 (32.1)	65 (12.5)
When watching news and stories about coronavirus-19 on social media/WhatsApp, newspapers, news, internet etc., I become nervous or anxious	77 (14.8)	107 (20.5)	117 (22.5)	174 (33.4)	46 (8.8)
I cannot sleep because I'm worrying about getting coronavirus-19	229 (44)	181 (34.7)	66 (12.7)	34 (6.5)	11 (2.1)
My heart races or palpitates when I think about getting coronavirus-19	172 (33.0)	165 (31.7)	99 (19)	68 (13.0)	17 (3.3)

```
Principal Components Analysis
Call: principal(r = raqData, nfactors = 3, rotate = "varimax")
Standardized loadings (pattern matrix) based upon correlation matrix
   item  RC1  RC3  RC2   h2   u2  com
X6    6 0.84           0.79 0.21 1.2
X3    3 0.82           0.74 0.26 1.2
X7    7 0.73 0.45      0.76 0.24 1.8
X2    2      0.86      0.84 0.16 1.3
X5    5      0.71      0.73 0.27 1.9
X1    1           0.85 0.81 0.19 1.2
X4    4           0.73 0.70 0.30 1.7

                    RC1  RC3  RC2
SS loadings        2.23 1.62 1.51
Proportion Var     0.32 0.23 0.22
Cumulative Var     0.32 0.55 0.77
Proportion Explained 0.42 0.30 0.28
Cumulative Proportion 0.42 0.72 1.00

Mean item complexity =  1.5
Test of the hypothesis that 3 components are sufficient.

The root mean square of the residuals (RMSR) is  0.08
 with the empirical chi square  156.65  with prob <  9.7e-34

Fit based upon off diagonal values = 0.97>
```

Figure 3: Loading of the questions on the factors as shown by R software

such as females, education level, and area of residence had greater fear toward COVID-19.

Studies have shown that females are more prone to stress and anxiety.[9] In our study, females had 1.94 times significantly higher odds to fear COVID-19 compared with their male counterparts with respect to anxiety. Higher odds for COVID-19 fear based on education level and residence were seen for all the subcategories and found to be statistically significant. Lower educational level may significantly impact the way an individual understands the infection. Therefore, extra effort may be made to impart information to students undergoing graduation for a better understanding of the disease development and its progression.

In the present study, fear of COVID-19 (most afraid, uncomfortable) was seen in more than one-third of the respondents. Ravi also suggested that the COVID-19 outbreak may lead to unfavorable effects on psychological health of the Indian students.[10] Another surprising finding of the current study is the significantly heightened fear of this infection among students residing in the urban area compared to their counterparts. The possible reason could be that COVID-19 infection was mostly confined to urban areas till April end and entered rural pockets afterward.[11]

Approximately, 42% of respondents agreed to getting nervous/worrisome after watching news/social media posts about COVID-19 pandemic. Zamanian *et al.*[12] found that social media was the main cause of fear and rumors among Iranian adults. Therefore, to maintain control during an epidemic, in addition to implementation of public health measures, we should attempt to overcome the pandemic of social media panic as well as detect and reply to public rumors. Literature reports increased psychiatric morbidity in individuals afflicted with physical illnesses or those witnessing difficult survival issues.[13]

More than two-third of the participants, however, did not report physical symptoms of anxiety (palpitation of heart and sweaty hands) while thinking about COVID-19. This depicted the positive frame of mind of the students who may help fight this epidemic. In our study, we found fewer people reporting sleep diffculties despite the fact that many studies reported insomnia among varied population during the COVID-19 pandemic suggesting treatment for the same.[14,15] The predominant presence of participants in the home environment could be a factor contributing to less sleep difficulties in comparison with other studies, as a majority reported being at home during COVID-19 related lockdown.

COVID-19 is labeled as the first major pandemic of the social media age.[16] In this study, a majority (57%) of the respondents knew about COVID-19 through the Internet. Previously, a study mentioned that the dissemination of misinformation through media would take its incredible toll on the mental health of the population.[13] Everts[17] reported that the swine flu pandemic (2009–2010) which caused high mortality globally also caught global media attention and induced anxiety among the people significantly.

Table 4: Multiple logistic regression analysis of levels of fear based on latent variables with demographic variables

Demographic variables	n (%)	High fear, n (%)			OR			95% OR						P		
								Lower			Upper					
		F1	F2	F3	F1	F2	F3	F1	F2	F3	F1	F2	F3	F1	F2	F3
Gender																
Male	245 (47.0)	114 (39.7)	118 (38.4)	119 (35.9)	1.94	2.26	3.38	1.36	1.59	2.32	2.74	3.23	4.91	0.01	0.01	0.01
Female	275 (52.7)	172 (59.9)	189 (61.5)	212 (64.0)												
Others	1 (0.2)	0	0	0												
Age (years)																
18-23	407 (78.1)	221 (77)	237 (77.2)	260 (78.5)	1.09	1.14	1.03	0.75	0.78	0.71	1.56	1.64	1.50	0.63	0.48	0.85
23-30	102 (19.6)	60 (20.9)	62 (20.2)	61 (18.4)												
>30	12 (2.30)	6 (2.1)	8 (2.6)	10 (3.0)												
Education level																
Graduation	296 (56.9)	150 (52.4)	160 (52.1)	173 (52.4)	1.41	1.43	1.34	1.07	1.08	1.01	1.86	1.90	1.79	0.01	0.01	0.04
Postgraduation	181 (34.8)	107 (37.4)	118 (38.4)	130 (39.4)												
PhD and others	43 (8.3)	29 (10.1)	29 (9.5)	27 (8.2)												
Income																
<2000	99 (19)	58 (20.2)	54 (17.6)	59 (17.8)	0.88	0.97	0.94	0.78	0.85	0.82	1.00	1.10	1.06	0.06	0.65	0.35
2000-4000	126 (24.2)	77 (26.8)	81 (26.4)	88 (26.6)												
4000-6000	113 (21.7)	59 (20.6)	70 (22.8)	74 (22.6)												
6000-8000	76 (14.6)	42 (14.6)	42 (13.7)	50 (15.1)												
>8000	107 (20.5)	51 (17.7)	60 (19.5)	60 (18.1)												
Area of residence																
Urban	384 (73.7)	195 (67.9)	214 (69.7)	231 (69.8)	1.75	1.62	1.69	1.20	1.10	1.13	2.56	2.38	2.53	0.01	0.01	0.01
Rural	129 (24.7)	88 (30.6)	87 28.3)	94 (28.4)												
Other	8 (1.5	4 (1.3)	6 (1.9)	6 (1.8)												

OR=Odds ratio

The reflection of fear among youth in the current study emphasized the need to identify fear, worry, anxiety about COVID-19 among them, and mitigate the psychological impact of COVID-19. Limitation of the study may be the English language inclusion criteria, Internet access, and evaluation of fear objectively. Nevertheless, the large sample size displays the strengths of the study.

Conclusions

Reflection of fear among youth suggests that adequate knowledge about COVID-19, preventive steps, treatment options etc., may be planned to allay fears among youth. The findings of our study emphasize a need to conduct a prospective longitudinal study for establishing a cause–effect relationship.

Conflicts of interest
There are no conflicts of interest.

References

1. Pung R, Chiew CJ, Young BE, Chin S, Chen MI, Clapham HE, *et al*. Investigation of three clusters of COVID-19 in Singapore: Implications for surveillance and response measures. Lancet 2020;395:1039-46.
2. Sharma M, Chauhan A, Singh M, Singh M. Infection control measures for homes of coronavirus disease 2019 heroes. J Educ Health Promot 2020;9:132.
3. Ahorsu DK, Lin C-Y, Imani V, Saffari M, Griffiths MD, Pakpour AH. The Fear of COVID-19 Scale: Development and Initial Validation. International journal of mental health and addiction [Internet]. 2020 Mar 27;1–9. Available from: https://pubmed.ncbi.nlm.nih.gov/32226353. [Last accessed on 2020 May 30].
4. Chung-Ying Lin. Social Reaction toward the 2019 Novel Coronavirus (COVID-19). Social Health and behaviour. 2020:2–3.
5. Cascella M, Rajnik M, Cuomo A, Dulebohn SC, Di Napoli R. Features, Evaluation and Treatment Coronavirus (COVID-19) [Internet]. StatPearls. 2020. Available from: http://www.ncbi.nlm.nih.gov/pubmed/32150360. [Last accessed on 2020 Jun 15].
6. Samal J, Dehury RK. Salient features of a proposed adolescent health policy draft for India. J Clin Diagn Res 2017;11:LI01-5.
7. Roy D, Tripathy S, Kar SK, Sharma N, Verma SK, Kaushal V. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. Asian J Psychiatr 2020;51:102083.
8. Stern AF. The hospital anxiety and depression scale. Occup Med (Lond) 2014;64:393-4.
9. Doshi D, Karunakar P, Sukhabogi JR, Prasanna JS, Mahajan SV. Assessing coronavirus fear in Indian population using the fear of COVID-19 scale. Int J Ment Health Addict 2020;1-9.
10. Ravi RC. Lockdown of colleges and universities due to COVID-19:

Any impact on the educational system in India? J Educ Health Promot 2020;9:209.

11. Fears about Covid-19 Spread to Rural India Grow as Cases Cross 4-mn Mark Business Standard News. Available from: https://www.business-standard.com/article/current-affairs/fears-about-covid-19-spread-to-rural-india-grow-as-cases-cross-4-mn-mark-120090500598_1.html. [Last accessed on 2021 Jan 12].

12. Zamanian M, Ahmadi D, Sindarreh S, Aleebrahim F, Vardanjani H, Faghihi S, *et al*. Fear and rumor associated with COVID-19 among Iranian adults, 2020. J Educ Health Promot 2020;9:355.

13. Naguy A, Moodliar-Rensburg S, Alamiri B. Coronaphobia and chronophobia-A psychiatric perspective. Asian J Psychiatr 2020;51:102050.

14. Zhang C, Yang L, Liu S, Ma S, Wang Y, Cai Z, *et al*. Survey of insomnia and related social psychological factors among medical staff involved in the 2019 novel coronavirus disease outbreak. Front Psychiatry 2020;11:306.

15. Altena E, Baglioni C, Espie CA, Ellis J, Gavriloff D, Holzinger B, *et al*. Dealing with sleep problems during home confinement due to the COVID-19 outbreak: Practical recommendations from a task force of the European CBT-I academy. J Sleep Res 2020;29:e13052.

16. Depoux A, Martin S, Karafillakis E, Preet R, Wilder-Smith A, Larson H. The pandemic of social media panic travels faster than the COVID-19 outbreak. J Travel Med 2020;27:3.

17. Everts J. Announcing swine flu and the interpretation of pandemic anxiety. Antipode 2013;45:809-25.