

Original Article

MENTAL HEALTH AND QUALITY OF LIFE DURING COVID-19 PANDEMIC IN INDIAN POPULATION

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ABSTRACT

Objective: As there is a dearth of researches targeting the Indian population on this issue, we decided to conduct a survey to assess the psychological impact of COVID-19 on mental health and quality of life of Indians.

Methods: In this Cross-Sectional study, a total of 2245 participants above 16 y of age were included. Mental health variables were assessed via depression, anxiety and stress subscale (DASS-21), Insomnia Severity Index (ISI-7), Patient health questionnaire (PHQ-15), Quality of life (QoL-5) and social media exposure.

Results: The multivariate logistic regression demonstrated female (OR-1.17, 95% CI: 0.99 to 1.38) had significantly higher depression scores whereas, housewife had higher depression (OR-1.68, 95% CI: 1.33 to 2.13), anxiety (OR-1.64, 95% CI: 1.15 to 2.35), insomnia (OR-1.32, 95% CI: 1.14 to 1.53), somatic symptoms (OR-1.76, 95% CI: 1.21 to 2.57). Front line workers had a higher psychological impact with increased scores of anxieties (OR-1.23, 95% CI: 0.79 to 1.53), stress (OR-1.82, 95% CI: 0.76 to 2.55), insomnia (OR-1.65, 95% CI: 1.31 to 2.09). Lower education level had significantly higher score in depression (OR-1.14, 95% CI: 0.73 to 1.32), insomnia (OR-2.42, 95% CI: 2.07 to 2.84), somatic symptoms (OR-2.59, 95% CI: 1.80 to 3.37). Poor physical health, social media exposure was significantly associated with heightened anxiety score.

Conclusion: There is a need for psychological intervention as the dynamics and severity of COVID-19 is rapidly changing. These findings could guide the public health authorities to target and implement health measures to combat the pandemic.

Keywords: Mental health, Quality of Life, COVID-19, General Population, India

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INTRODUCTION

For the first time after post-war history disease pandemic is re-writing history. Impacting six continents with more than 14 million positive cases and >600,000 mortalities the novel coronavirus has seized our daily lives with psychological rest and mental distress [1, 2]. COVID-19 first originated from Wuhan (Province of Hubei), the mainland of China at the end of 2019, although in the swipec of two months this virus has become an integral and alarming part of daily conversations, debates and social media updates. Two-third of the globe was under lockdown due to the arbitrary and uncertainty of infectious disease. The clinical presentation, transmissibility and the epidemiological pattern has led a call for public health emergency of international concern [3-5]. Even after stringent public health measures, the COVID-19 contagion has resulted to cause psychosomatic fear, anxiety, stigma, prejudice, and marginalization towards the disease with long term worldwide challenge and detrimental effect on the well-being [6, 7].

As India is under escalation of COVID-19 cases, government, public health authorities and policymakers are guiding universal safety measures for dissemination of COVID-19 to safeguard the welfare of the general public. In accordance to a study which demonstrated the services and strategies deployed by China for the general public to minimize outbreak-related stress by the assessment of social media information reliability, intensifying social support, maintaining feasible adherence to safety measures and provision of psychosocial services [8]. However, no studies have reported the impact of the COVID-19 pandemic on mental health and quality of life combinely on Indian population. Hence, we report this novel study to evaluate the temporal psychosomatic impact on mental health as a potential risk and protective factor to provide evident information and interventions on psychological health in the Indian population.

MATERIALS AND METHODS

This Cross-sectional online survey was performed via snowball sampling technique from April 28th, 2020 to May 08th, 2020 in

India. The survey was performed amid lockdown when India has reported more than thirty thousand cases corresponding to the maximum vulnerability since the outbreak of a pandemic [9]. The questionnaire was sent by the study investigator using Emails and social media platform such as WhatsApp, Telegram, Facebook and LinkedIn to the participants. The cover page of the questionnaire includes a consent form, with a declaration of confidentiality and anonymity. The online survey included Socio-demographic data and clinical variables. Inclusion criteria include Indian citizens with more than 16 y of age, able to read English or Hindi and have access to the internet. Whereas exclusion criteria include foreign citizen, less than 16 y of age, unable to read English or Hindi and don't have access to internet.

Ethical approval

The purpose of the survey was explained to potential participants, who were requested to provide consent of voluntary willingness prior to their participation. All procedures performed in this study involving human participants were in adherence to the ethics of the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This study was conducted and reported according to the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) guidelines.

Measures

Demographic characteristics

Demographic covariates include sex (male or female), Age in years (16-25, 26-35, 36-45, 46-55, ≥56), Marital status (Married, Single), Education (≤ Senior Secondary, Pursuing Graduation, Graduate and ≥Postgraduate), Occupation (Student, Unemployed, House-wife, Self-employed, Unskilled, Employed), Geographical area (Urban or Rural), Area of Working (Work from home, Work from the office, Frontline worker), Living with family (Yes or No).

Depression, anxiety and stress scale (DASS-21)

The mental health status of respondents was assessed using three self-report scales DASS-21 (Depression, Anxiety, and Stress), Psychometric scale based on a dimensional comparison of general distress in context to characteristics [10]. The questionnaire consists of 21 questions, 7 items per scale. Scores ranged from 0 (did not apply to them at all) to 3 (apply to them very much). The total depression cut-off score above 9 was classified from mild depression (10–12), moderate depression (13–20), severe depression (21–27), and extremely severe depression (28–42). In anxiety, mild Subscale cut-off scores above 7 were classified from mild anxiety (7–9), moderate anxiety (10–14), severe anxiety (15–19), and extremely severe anxiety (20–42). Stress subscale cut-off score above 10 mild stress (11–18), moderate stress (19–26), severe stress (27–34), and extremely severe stress (35–42) [11]. In our study, the Cronbach's alpha coefficient of DASS was 0.799.

Insomnia severity index (ISI-7)

Insomnia was screened via ISI (Insomnia Severity Index) consisting of 7 items-classified under no significant insomnia, sub-threshold insomnia, moderate and severe insomnia. Response options ranged from 0 (No problem) to 4 (very severe problem) [12]. The Cronbach's alpha coefficient of the ISI scale was 0.841 and this scale presented as good internal consistency.

Patient health questionnaire [PHQ-15]

PHQ-15 (Level-2) assessed the domain of somatic symptoms from score 0-30, each item asked for somatic symptoms during the past 7 d [13]. Each item of PHQ-15 rates from 0 (not bothered at all) to 3 (bothered at all), with higher scores indicating the severity of symptoms. Cronbach's alpha coefficient was 0.920.

Quality of life [QoL-5]

QoL5 is a global and valid short quality of life questionnaire used for assessing practical and relevant outcome related QoL. On the numerical scoring from 1(very high) to 5(very low). Questions comprised based on physical, mental health and relationship with family and friends [14]. The construct and validity of the questionnaire presented as good and Cronbach's coefficient was 0.648.

Social media exposure and mental health

Social media exposure assessed through Source of information, how often respondents spend time exposed to news or information (less, sometimes and frequently) concerning mental distress and satisfaction regarding the availability of information.

Statistical analysis

The Data was analysed by SPSS version 22.0 (SPSS Inc., Chicago, IL USA). Mean (M) and Standard Deviation (SD) were used to describe demographic data. The percentage of responses was calculated according to the number of respondents per response to the number of total responses of a question and One-way ANOVA to assess association demographic characteristics. Multivariate logistic regression was performed to calculate the association of all variables to explore the risk dimension such as insomnia, somatic symptoms, depression, anxiety, and stress. A value of $p < 0.05$ was considered significant for the entire hypothesis.

RESULTS

In the nationwide survey, we retrieved 2542 questionnaire in which 297 denied giving consent and excluded. Remaining 2245 questionnaire response was acceptable with a response rate of 88.31. The detailed demographic characteristics were demonstrated in (table 1).

Table 1: Socio-demographic variable by psychological impact (N=2245)

Socio-demographic variable	N [‡] (%)	Dass 21		Stress		ISI		PHQ 15			
		Depression M±SD	p*	Anxiety M±SD	p*	M±SD	p*	M±SD	p*		
Sex											
Female	1085(48.3)	12.772±8.919	0.83	10.496±5.492	<0.0	15.666±7.857	<0.0	11.217±6.172	<0.0	10.773±5.625	0.294
Male	1160(51.7)	12.845±6.040	7	12.953±6.055	01	17.140±5.181	61	12.755±6.063	001	10.553±11.60	
Age											
16-28 Y	866(38.6)	10.485±8.792	<0.0	9.439±5.255	<0.0	13.356±7.558	<0.4	9.185±6.145	<0.0	9.008±5.629	<0.00
29-38 Y	626(27.9)	13.863±6.826	01	11.163±6.015	01	17.578±5.026	12	12.128±5.430	001	11.09±4.419	1
39-48 Y	479(21.3)	14.572±5.647		14.894±4.948		18.656±4.311		15.332±4.845		12.455±3.906	
49-58 Y	186(8.3)	15.247±6.150		15.430±5.848		20.183±6.980		15.129±5.833		11.77±3.862	
>58 Y	88(3.9)	13.455±5.080		14.182±4.064		18.409±4.560		14.398±4.960		11.681±3.538	
Marital status											
Married	1194(53.2)	11.816±7.580	<0.0	12.092±6.320	0.00	16.315±6.776	0.03	11.674±6.132	0.0	10.501±5.122	0.107
Single	1051(46.8)	13.939±7.394	01	11.395±5.404	5	16.556±6.518	9	12.395±6.178	06	10.539±4.755	
Geographical area											
Rural	478(21.3)	16.071±6.926	<0.3	10.611±6.930	<0.1	14.142±8.990	<0.0	11.762±7.037	0.3	10.769±5.414	0.584
Urban	1767(78.7)	11.928±7.492	01	12.065±5.577	01	17.046±5.708	01	12.079±5.905	18	10.629±4.825	
Education											
≤Senior Secondary	255(11.4)	13.898±11.561	<0.0	12.024±5.129	0.06	17.271±6.807	0.06	13.149±6.742	<0.0	11.33±7.292	<0.00
Pursuing graduation	325(14.5)	18.289±5.707	01	12.511±5.723	0	17.280±4.900	7	15.443±4.104	001	11.88±4.526	1
≥Graduate/Post-graduate and above	1665(74.2)	11.574±6.549		11.581±6.056		16.132±6.897		11.168±6.148		10.32±4.532	
Occupation											
Housewife	310(13.8)	15.090±10.420	0.02	13.077±5.635	0.00	18.085±7.144	0.09	13.326±6.523	<0.0	11.529±6.354	0.168
Student and Unemployed	479(21.3)	11.211±9.550	3	11.106±4.329	4	16.225±6.859	7	10.710±5.397	001	10.135±5.790	
Self employed	202(9.0)	14.495±8.805		13.426±6.621		19.970±7.457		14.079±6.647		10.985±6.047	
Employed	1254(55.9)	12.585±5.075		11.426±6.289		15.531±6.022		11.851±6.127		10.952±3.879	
Area of working											
Work from home	944(42.0)	13.297±5.173	0.06	13.042±5.825	0.01	16.691±5.091	0.10	13.093±5.551	0.0	10.89±3.528	0.979
Work from office	318(14.2)	10.509±4.130	7	6.610±4.952	6	12.201±7.207	2	8.220±6.263	17	9.70±4.640	
Front line worker	124(5.5)	12.774±8.979		16.419±6.573		22.016±8.086		14.395±7.544		10.48±5.843	
Not working do you live with family?	859(38.3)	13.132±10.007		11.600±4.924		16.896±6.870		11.882±5.948		10.79±6.101	
No	726(32.3)	13.700±7.437	<0.0	13.132±6.006	0.02	17.821±5.254	0.02	13.405±5.634	<0.0	11.649±4.698	<0.00
Yes	1519(67.7)	12.384±7.593	01	11.113±5.764	1	15.762±7.094	1	11.346±6.294	001	10.188±5.007	1

‡N=total number of population; $p < 0.05$ statistically significant

The socio-demographic and psychological impact

The mean age of respondents was 32.4±11.4. Larger proportion of male (55.4%), age 18-28 in years (38.6%), married (53.2%), 74.2% with the education level of ≥bachelor's degree, belonging from the urban background (78.7%), Self-employed/employed (55.9%), Working from home (42%) and residing with family (67.7%) (table 1).

Mental health impact of the COVID-19 outbreak was measured by DASS-21, reporting a mean score of 21.94 (SD=7.85). For depression subscale, 317(14.12%), 259(11.54%), 142(6.32%) and 63(2.81%) are considerate under mild, moderate, severe and extremely severe depression respectively. For anxiety subscale, 393(17.46%), 227(10.11%), 206(9.17%) and 101(4.50%) were considered to suffer from mild, moderate, severe and extremely severe anxiety whereas for stress scale, 339(15.10%), 242(10.77%), 160(7.12%) and 83(3.70%) were considered to have mild, moderate, stress and extremely stressed. Insomnia severity index revealed a mean score of 12.01(SD=7.8). In all respondents, 592(24.85%) had an absence of

insomnia in contrast to 733(20.26%), 893(39.77%), and 27(1.20%) had sub threshold, moderate, severe insomnia consecutively. The multivariate logistic regression analysis (table 2) demonstrated that being a women was significantly associated with lower scores of anxiety OR-0.401[0.30, 0.52] and insomnia OR-0.751[0.68-0.826] whereas, younger age had association with lower scores of depression (OR-0.636[0.41,0.96]), anxiety (OR-0.419[0.22, 0.79]), stress (OR-0.202[0.11,0.36]), insomnia (OR-0.336[0.25-0.447]), and somatic symptoms (OR-0.168[0.08, 0.33]). In marital status, married individual showed significant association with lower level of depression (OR-0.567[0.48, 0.66]), stress (OR-0.807 [0.65,0.98]), and insomnia (OR-0.875[0.79, 0.96]) in contrast anxiety scores (OR-1.805[1.40,2.32]) were high. Education status of pursuing graduation was associated with higher depression (OR-1.142[0.78, 1.32]), stress (OR-0.734[0.54, 0.99]), insomnia (OR-2.429[2.07, 2.84]), and somatic symptoms (OR-2.597[1.80, 3.73]). In occupation, self-employed is significantly associated with higher score of stress (OR-1.998[1.38, 2.87]), and insomnia (OR-1.543[1.29,1.84]).

Table 2: Association of socio-demographic variable by psychological impact

Scales	DASS 21			ISI	PHQ 15
	Depression	Anxiety	Stress	OR (95%CI)	OR (95%CI)
Socio-demographic variable	OR (95%CI)	OR (95%CI)	OR (95%CI)		
SEX					
Female	1.174 (0.998 to 1.380) *	0.401 (0.309 to 0.520) **	0.824 (0.671 to 1.012)	0.751 (0.683 to 0.826) ***	1.144 (0.890 to 1.470)
Male	Reference	Reference	Reference	Reference	Reference
AGE					
16-28 Y	0.636(0.418 to 0.968) *	0.419(0.220 to 0.798) ***	0.202 (0.113 to 0.360) ***	0.336(0.253 to 0.447) ***	0.168(0.084 to 0.333) ***
29-38 Y	1.158 (0.764 to 1.756)	0.213(0.112 to 0.405) ***	1.284 (0.721 to 2.286)	0.609(0.457 to 0.812) **	0.682(0.340 to 1.368)
39-48 Y	1.303 (0.855 to 1.985)	1.384(0.732 to 2.619)	0.914 (0.508 to 1.642)	1.260 (0.937 to 1.696)	1.643(0.809 to 3.336)
49-58 Y	1.489 (0.933 to 2.378)	1.417(0.698 to 2.877) ***	1.367(0.710 to 2.362)	1.199 (0.860 to 1.671)	1.065 (0.483 to 2.348)
>58 Y	Reference	Reference	Reference	Reference	Reference
MARITAL STATUS					
Married	0.567(0.482 to 0.668) ***	1.805 (1.400 to 2.328) ***	0.807 (0.659 to 0.988) **	0.875(0.796 to 0.962)	0.813(0.633 to 1.046)
Single	Reference	Reference	Reference	Reference	Reference
GEOGRAPHICAL AREA					
Rural	1.297(0.801 to 1.903)	0.899(0.647 to 1.248)	0.281 (0.215 to 0.369) ***	0.943 (0.841 to 1.058)	1.089 (0.802 to 1.479) **
Urban	Reference	Reference	Reference	Reference	Reference
EDUCATION					
≤Senior Secondary	1.026(0.612 to 1.505) ***	1.342(0.909 to 1.982)	0.693 (0.502 to 0.857) *	1.466(1.254 to 1.715) ***	1.870(1.253 to 2.791) **
Pursuing graduation	1.142(0.782 to 1.325) ***	1.169 (0.815 to 1.675)	0.734(0.540 to 0.999) *	2.429(2.070 to 2.849) ***	2.597(1.808 to 3.731) ***
≥Graduate/Post-graduate and above	Reference	Reference	Reference	Reference	Reference
OCCUPATION					
Housewife	1.685 (1.330 to 2.134) ***	1.649 (1.154 to 2.357) ***	1.053(0.776 to 1.429)	1.325(1.145 to 1.533) ***	1.768(1.214 to 2.574) ***
Student and Unemployed	0.712(0.578 to 0.879) *	1.053(0.759 to 1.462)	0.877(0.679 to 1.132)	0.809(0.718 to 0.913) **	0.753(0.546 to 1.039)
Self employed	1.340 (1.017 to 1.766)	1.307(0.855 to 1.998)	1.998 (1.387 to 2.876) ***	1.543(1.290 to 1.845) ***	1.272 (0.811 to 1.995)
Employed	Reference	Reference	Reference	Reference	Reference
AREA OF WORKING					
Work from home	0.955 (0.802 to 1.138)	1.757 (1.320 to 2.339)	1.108 (0.881 to 1.393)	1.265 (1.135 to 1.410) ***	1.059(0.801 to 1.401)
Work from office	(0.657,0.490 to 0.0881) **	0.025(0.013 to 0.046) ***	1.520 (1.098 to 2.103) **	0.487 (0.465 to 0.571) ***	0.507 (0.341 to 0.754) **
Essential provider	0.711(0.502 to 1.008)	1.230(0.796 to 1.537) ***	1.828(0.765 to 2.555) ***	1.659 (1.315 to 2.093) ***	0.828 (0.461 to 1.468)
Not working	Reference	Reference	Reference	Reference	Reference
DO YOU LIVE WITH FAMILY?					
No	2.011 (1.080-3.362) ***	1.369(1.050-1.787) **	1.369(1.050-1.787) **	2.670(1.206-3.841) ***	2.823(2.142-3.720) ***
Yes	Reference	Reference	Reference	Reference	Reference

*p<0.05; **p<0.01; ***p<0.001; Reference- odd ratio is in reference to other subsequent variable (multinomial logistic regression)

Although other variables were high in housewife-depression (OR-1.685[1.33,2.13]), anxiety (OR-1.649[1.15, 2.35]) and somatic symptom (OR-1.768[1.21, 2.57]). Working as an essential provider was significantly associated with higher score of anxiety (OR-1.230[0.79, 1.53]), stress (1.828[0.76, 2.55]), and insomnia (1.659[1.31, 2.092]). Not living with family was a significant predictor of depression (OR-2.011[1.08, 3.36]), anxiety (2.10[1.65, 3.64]), stress (1.369[1.05, 1.78]), insomnia (OR-2.670[1.20, 3.84]), and somatic symptom (OR-2.823[2.14, 3.72]).

Quality of life and psychological impact

Following the onset of the pandemic, approximately half of the respondents (47.9%) reported good physical health. Additionally, 82.2% and 71.4% mentioned that they had a good relationship with their partner and friends respectively. A total of 85.8% of participants reported they feel good about themselves. On the other hand, there was an association between moderate physical health to higher odds of anxiety (OR-1.05, 95%CI-0.993-1.742) and lower stress (OR-0.890 95%CI-0.704-1.127) whereas poor feeling about themselves to higher depression scores (OR-1.59,95%CI-1.12-2.280) and stress scores (OR-1.73,95%CI-1.09-2.757) (table 3).

Comparison of SME and psychological impact

Social media exposure was "frequent" for almost half of the respondents (47.3%), the internet was the main source of disseminating information (38.6%) and about 41.2 % were dissatisfied with the amount of information available regarding COVID-19. As shown in table 4, Multivariate analysis found that persistent exposure to media was significantly associated with higher DASS anxiety (OR-1.846, 95 % CI-1.246 to 2.734) and stress scores (OR-1.073 (95 % CI-7.911 to 1.456). The source of dissemination of health information about COVID-19 was also associated with high scores DASS anxiety (OR-2.252 (95%CI-1.427-3.554)1 and stress (OR-1.908(95% CI-1.355 to 2.688).

DISCUSSION

To our knowledge, our study is among the first to analyze the impression of COVID-19 pandemic on mental health and quality of life. 20.67% of respondents had moderate to severe depressive symptoms, 23.7% of respondents had moderate to severe anxiety symptoms and 21.5% had moderate to severe stress symptoms on DASS subscales. The prevalence of stress was higher than depression

and anxiety in DASS subscales. This study found that compared to men, women had significantly higher depressive and somatic levels which is consistent with previous research studies [15, 16]. Age group (49-58 y) was associated with increased anxiety scores. The elderly group is at higher risk under COVID-19 due to feeble immune system, deliberating physical activity, compromised psychological capability and co-morbid Conditions. These factors contribute to inculcating psychological effects on seniors [17].

Concerning the geographical area, rural population had increased somatic symptoms because spread in such areas is heightened due to multi-factorial reasons, including deficient of awareness, inadequate level of nutrition, sparse public health centres and most importantly ill-equipped causing prolonged stress regulating psychoneuroimmunological (PNI) releasing proinflammatory cytokines [18, 19].

The general public with a low level of education had a relatively higher relation to depressive scales because of a lower understanding of situations and issues. The government might

mobilize resources or Social workers which can play an important role in providing sustainable awareness on physical and mental impact in simple language (diagrammatic or audio format) which can address diverse Indian population [20].

Individuals not only have to deal with the consequences of infection but also with issues concerning finance and security affecting mental health and their relationship. Housewives are related to high scores of depression, anxiety, somatic symptoms and Insomnia. LIVES is a psychosocial approach that has been developed by the World Health Organization (WHO) for women to address the prompt needs of any person who is exposed to domestic/intimate partner violence, where "L" stands for Listen means Listen to the person closely, with empathy, and without judging, "I" stands for Inquire (needs and concerns) means Inquire about emotional, physical, social and practical concerns, "V" stands for Validate means to assure and convey you believe the person, "E" stands for Enhance safety means to discuss a plan to protect the person from further harm if violence occurs again and "S" stands for Support means by providing access to information, services and social support [21].

Table 3: Association between QOL 5 and DASS subscale

Scales	N# (%)	DASS					
		Depression		Anxiety		Stress	
		OR (95%CI)	P*	OR (95%CI)	P*	OR (95%CI)	P*
How do you consider your physical health at the moment?							
Poor	499 (22.2)	1.207 (0.986 to 1.478)	0.068	1.155 (0.837 to 1.594)	0.380	1.250 (0.968 to 1.614)	0.880
Moderate	671 (29.9)	1.185 (0.837 to 1.594)	0.072	1.051 (0.933 to 1.742)	<0.001	0.890 (0.704 to 1.127)	0.034
Good	1075(47.9)	Reference	Reference	Reference	Reference	Reference	Reference
How do you consider your mental health at the moment?							
Poor	256 (11.4)	0.937 (0.728 to 1.205)	0.611	0.911 (0.614 to 1.354)	0.646	1.162 (0.847 to 1.595)	0.351
Moderate	385 (17.1)	0.911 (0.614 to 1.354)	0.621	0.909 (0.759 to 1.477)	0.736	0.971 (0.743 to 1.269)	0.828
Good	1604 (71.4)	Reference	Reference	Reference	Reference	Reference	Reference
How is your relationship with your partner at the moment?							
Poor	165 (7.3)	0.868 (0.638 to 1.180)	0.366	1.209 (0.624 to 1.632)	0.971	0.992 (1.677 to 1.455)	0.968
Moderate	234 (10.4)	0.773 (0.651 to 1.262)	0.651	1.179 (0.788 to 1.763)	0.423	0.906 (0.692 to 1.333)	0.810
Good	1846 (82.2)	Reference	Reference	Reference	Reference	Reference	Reference
How is your relationship with your friends at the moment?							
Poor	166 (7.4)	1.524 (1.124 to 2.064)	0.066	1.727 (1.448 to 2.182)	0.199	0.958 (0.618 to 1.327)	0.611
Moderate	341 (15.2)	1.227 (0.949 to 1.587)	0.118	0.905 (0.614 to 1.355)	0.627	0.921 (0.667 to 1.273)	0.620
Good	1838 (77.4)	Reference	Reference	Reference	Reference	Reference	Reference
How do you feel about yourself at the moment?							
Poor	110 (4.9)	1.598 (1.120 to 2.280)	0.010	0.869 (0.498 to 1.515)	0.619	1.733 (1.090 to 2.757)	0.020
Moderate	208 (9.3)	0.983 (0.749 to 1.591)	0.903	0.812 (0.797 to 1.844)	0.368	1.127 (0.798 to 1.591)	0.497
Good	1927 (85.8)	Reference	Reference	Reference	Reference	Reference	Reference

‡N=total number of population; *p<0.05 statistically significant; Reference-odd ratio is in reference to other subsequent variable (multinomial logistic regression)

Table 4: Association between social media exposure and DASS subscale

Scales	N# (%)	DASS					
		Depression		Anxiety		Stress	
		OR (95%CI)	P*	OR (95%CI)	P*	OR (95%CI)	P*
How many times in a day, you are exposed to social media?							
Frequently	1063 (47.3%)	0.881 (0.690 to 1.125)	0.311	1.846(1.246 to 2.734)	0.002	1.073 (7.911 to 1.456)	0.650
Sometimes	874 (38.9)	0.871 (678 to 1.119)	0.281	1.397 (0.932 to 2.094)	0.105	0.597 (0.673 to 1.255)	0.919
Less	308(13.7)	Reference	Reference	Reference	Reference	Reference	Reference
The primary source of information on COVID-19							
Other sources	149 (6.6)	1.053 (0.711 to 1.156)	0.796	1.213 (0.636 to 2.315)	0.557	1.463 (0.899 to 2.382)	0.126
Radio	178 (7.9)	0.778 (0.533 to 1.136)	0.194	1.576 (0.849 to 2.924)	0.149	1.141 (0.717 to 1.816)	0.578
Television	793 (35.3)	0.822 (0.668 to 1.165)	0.376	1.868 (1.179 to 2.960)	0.008	1.507 (1.069 to 2.124)	0.019
Internet	867 (38.6)	0.767 (0.581 to 1.012)	0.061	2.252 (1.427 to 3.554)	<0.001	1.908 (1.355 to 2.688)	<0.001
Family members	258(11.5)	Reference	Reference	Reference	Reference	Reference	Reference
Satisfaction with the health information available about COVID-19							
Do not know	65 (2.9)	0.855 (0.480 to 1.523)	0.595	0.389 (0.148 to 1.022)	0.055	1.029 (0.522 to 2.027)	0.934
Not satisfied at all	195(8.7)	1.168 (0.783 to 1.741)	0.447	0.934 (0.489 to 1.782)	0.835	0.653 (0.398 to 1.070)	0.091
Not very satisfied	925(41.2)	1.257 (0.919 to 1.718)	0.152	1.047 (0.637 to 1.723)	0.850	1.075 (0.729 to 1.586)	0.714
Somewhat satisfied	886 (39.5)	1.087 (0.794 to 1.488)	0.602	1.805(1.095 to 2.9750)	0.021	0.829 (0.560 to 1.226)	0.347
Very satisfied	174 (7.8)	Reference	Reference	Reference	Reference	Reference	Reference

‡N=total number of population; p<0.05 statistically significant; Reference-odd ratio is in reference to other subsequent variable (multinomial logistic regression)

Also, it was found that front line workers had heightened psychological distress might be due to high risk of pathogen exposure, insufficient understanding of the virus, insufficient prevention and control, lack of personal protective equipment which can be exemplified from Chinese study impacting the mental health of 1257 health care workers [24]. Interestingly, residing with the family acted as protective factors against the negative mental impact caused by COVID-19.

Limiting external outing due to lockdown has significant implications on quality of life especially reduced physical activity. COVID-19 had considerable consequence immune response, especially involving and injuring helper and suppressor T cells [25]. As immunity and psychological stress are related inversely, Yoga therapy aims to reduce psychological stress and strength immunity. Studies have suggested yogic practices (40-min) aims to improve overall health, enhance lung capacity and biorhythm [26].

The study highlighted social media exposure and effect implications. As our data was congruous with previous studies reporting SME was associated with higher odds of anxiety and stress [27]. The reason behind this association might be due to the global epidemic of misinformation and rumours through social media platforms which may confuse and affect mental health. So, the WHO infodemics team is working hand in hand with agencies and countries [28]. Additionally, government and health care authorities should provide evidence-based information to the general public to avoid psychological reactions as higher satisfaction with health information is directly related to lower levels of depression, anxiety, and stress.

Government of India is taking measures on the front to preserve the mental health of citizens indirectly or directly through providing all necessary information of pandemic on the government portal, various helpline numbers had been activated to assist regarding any inquiry and advisories, videos and webinars are being conducted for handling issues on mental health [29]. Possible limitations of the study were a cross-sectional design which doesn't elucidate strong evidence. Thus, longitudinal study designs are essential for future studies. Studies targeting elderly and frontline workers in the future from India will help in understanding greater mental health impact.

The self-reporting pattern and snow-ball sampling technique can't align with the assessment percepts of mental health professionals. Lastly, the possibility of some effect due to residual confounding in unmeasured characteristics.

CONCLUSION

In summary, our finding identified targeting population i.e. women especially housewives, elderly, frontline workers and respondents with low education levels are influential factors for mental health problems. Positive association poor QoL and frequent social media exposure to psychological distress. Therefore, the Government should develop imperative resources and methods to provide psychological resilience and well-being to all sections of society considering socio-demographic characteristics.

ABBREVIATION

QoL-Quality of life, ISI-Insomnia Severity Index, SME-Social media exposure,

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AUTHORS CONTRIBUTIONS

Data collection and drafting of data was done by Dr. Preeti Raj and Dr. Pratima Singh, Dr. Supriya suman contributed in data analysis, interpretation and critical revision of the manuscript. Final approval was done by Mr. Deepak Nathiya and Dr. Balvir Singh Tomar.

CONFLICT OF INTERESTS

The author declares that they have no conflict of interest.

REFERENCES

1. Coronavirus Graphs: Worldwide Cases and Deaths; 2020. Available from: <https://www.worldmeters.info/coronavirus> [Last accessed on 05 Jul 2020]

2. Xiao C. A novel approach of consultation on 2019 novel coronavirus (COVID-19)-related psychological and mental problems: structured letter therapy. *Psychiatry Investigation* 2020;17:175-6.
3. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y. Early transmission dynamics in wuhan, china, of novel coronavirus-infected pneumonia. *New England J Med* 2020;382:1199-207.
4. COVID-19: too little, too late? *The Lancet* 2020;395:755.
5. Day M. Covid-19: surge in cases in Italy and South Korea makes pandemic look more likely *Br Med J* 2020;368:m751.
6. Mak I, Chu C, Pan P, Yiu M, Chan V. Long-term psychiatric morbidities among SARS survivors. *General Hospital Psychiatry* 2009;31:318-26.
7. Xiang Y, Yang Y, Li W, Zhang L, Zhang Q, Cheung T. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *Lancet Psychiatry* 2020;7:228-9.
8. Rubin E, Baden L, Morrissey S, Campion E. Medical journals and the 2019-nCoV outbreak. *New England J Med* 2020;382:866-6.
9. India Situation Report; 2020. Available from: <https://www.who.int/india/emergencies/india-situation-report> [Last accessed on 05 Jul 2020]
10. Lovibond P, Lovibond S. The structure of negative emotional states: comparison of the depression anxiety stress scales (DASS) with the beck depression and anxiety inventories. *Behaviour Res Ther* 1995;33:335-43.
11. McAlonan G, Lee A, Cheung V, Cheung C, Tsang K, Sham P. Immediate and sustained psychological impact of an emerging infectious disease outbreak on health care workers. *Canadian J Psychiatry* 2007;52:241-7.
12. Niharika D, Niharika B, Aishwarya T, Nikitha A, Butool R, Ibrahim M, et al. Coronavirus-a virus in learning. *Int J Curr Pharm Res* 2020;12:7-10.
13. Kroenke K, Spitzer R, Williams J. The PHQ-15: validity of a new measure for evaluating the severity of somatic symptoms. *Psychosomatic Med* 2002;64:258-66.
14. Lindholt JS, Ventegodt S, Henneberg EW. Development and validation of QoL 5 for clinical databases. a short, global and generic questionnaire based on an intergrated theory of the quality of life. *Eur J Surg* 2002;168:107-13.
15. Wang C, Pan R, Wan X. A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain Behavior Immunity* 2020;87:40-8.
16. Rossie R, Socci V, Pacitti F, Di LG, Di MA, Siracusano A. R mental health outcomes among frontline and second-line health care workers during the coronavirus disease 2019 (COVID-19) pandemic in italy. *JAMA Network Open* 2020;3:e2010185.
17. Pradeep K Gau, Vinay Bhatia, Parveen Singla, Abhishek Sharma, Gagandeep Kaur, Gurpreet Singh. Unified approach to detect covid-19 in patients. *JCR* 2020;7:2518-23.
18. Viljoen M, Panzer A. Proinflammatory cytokines: a common denominator in depression and somatic symptoms? *Canadian J Psychiatry Revue Canadienne De Psychiatrie* 2005;50:128.
19. Singh S, Badaya S. Health care in rural India: A lack between need and feed. *South Asian J Cancer* 2014;3:143-4.
20. Wang C, Pan R, Wan X, Tan W, Xu L. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health* 2020;17:1729.
21. World Health Organisation. Health care for women subjected to intimate partner violence or sexual violence: A clinical handbook. Geneva; 2014.
22. Giorgi G, Arcangeli G, Mucci N, Cupelli V, Giorgi G. Economic stress in workplace: the impact of fear the crisis on mental health. *Work* 2015;51:135-42.
23. Nicola M, Alsaifi Z, Sohrabi C, Kerwan A, Al-Jabir A, Iosifidis C. The socio-economic implications of the coronavirus pandemic (COVID-19): a review. *Int J Surgery* 2020;78:185-93.
24. Lai J, Ma S, Wang Y, Cai Z, Hu J. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open* 2020;3:e203976.

25. Qin C, Zhou L, Hu Z, Zhan S, Yang S, Tao Y. Dysregulation of immune response in patients with COVID-19 in Wuhan, China. *Clin Infect Dis* 2020;12:248.
26. Segerstrom S, Miller G. Psychological stress and the human immune system: a meta-analytic study of 30 y of inquiry. *Psychological Bulletin* 2004;130:601-30.
27. Gao J, Zheng P, Jia Y, Chen H, Mao Y, Chen S. Mental health problems and social media exposure during COVID-19 outbreak. *SSRN Electronic Journal* 2020;15:e0231924.
28. WHO. Director-General's remarks at the media briefing on 2019 novel coronavirus; 2020. Available from: <https://www.who.int/dg/speeches/detail/director-general-s-remarks-at-the-media-briefing-on-2019novel-coronavirus>. [Last accessed on 08 Feb 2020].
29. Hiremath P, Suhas K, Manjunath M, Shettar M. COVID 19: impact of lock-down on mental health and tips to overcome. *Asian J Psychiatry* 2020;51:102088.