

Influence of Social Media Exposure on Mental Health in Relation with Covid-19 Pandemic in the State of Tamil Nadu, India

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ABSTRACT

BACKGROUND

Social media has now become the main information sharing platform, even though its reliability is questionable. Undoubtedly most of the news related to this Covid-19 pandemic has been widely spread through social media. This study aims to assess the prevalence of mental health problems in relation to social media exposure.

METHODS

A cross-sectional study was conducted via online survey through Google forms, from May 15th to May 25th 2020 among people aged 18 years and above in Tamil Nadu, India. Depression, Anxiety and Stress were measured by using DASS-21 (Depression, Anxiety and Stress Scale) and general health state was measured by GHQ 12 (General Health Questionnaire) along with sociodemographic details & social media exposure. Descriptive statistics were performed on sociodemographic data & Chi square analysis was performed to evaluate the magnitude of the association between social media exposure and psychological distress.

RESULTS

In a total of 1200 respondents, 35.5 % of people (427) were reported as often & most often exposed to social media and 37.9 % of people were reported as 'sometimes' exposed to social media. DASS 21 domains revealed that there was some form (mild to severe) of depression in 34 % of respondents, 37.1 % having anxiety and 19.3 % experienced stress, and its association with social media exposure was statistically significant.

CONCLUSIONS

Social media exposure does have a high impact in people's perception about Covid-19 which has been significantly affecting public mental health. Controlling the spread & monitoring the reliability of the information in social media about Covid 19 would be a great help in managing the public mental health.

KEY WORDS

Covid-19, Social Media, Exposure-Mental Health Issues

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BACKGROUND

WHO¹ (World Health Organization) declared Covid 19 as a pandemic on 11 March 2020 and issued certain guidelines on how to handle the global crisis. The virus spreads through small respiratory droplets when an infected person coughs sneezes and speaks, and by aerosols that tend to remain in the air and surfaces for longer time. When people come into contact with these contaminated surfaces² they also get infected. Covid-19 transmissibility, has been estimated at 4.08, suggesting that on an average, every Covid-19 infected person will spread the infection to 4 new persons.¹ As of 3rd August 2020, the WHO reported 1,79,18, 582 cases and 6,86,703 deaths worldwide² and 5,86,244 confirmed cases in India, with 39,795 total deaths as of August 5th as released by the Indian Ministry Of Health And Family Welfare. Maharashtra & Tamilnadu in India, being in the top 2.³ This global outbreak has created panic among people and triggered mental health problems. Based on previous findings it had been found that, the Covid-19 pandemic has caused a severe psychological impact on people, affecting their personal and social life. As an individual, during a pandemic, a person is likely to experience anxiety of falling sick and dying, feelings of helplessness, and other stigma associated with the illness.⁴ Psychological reactions of people during any public health emergency play a key role in controlling the outbreak and dealing with emotional distress and the prevalence of mental health problems increases during such outbreaks which was also evident during this Covid-19 pandemic.⁵ The official departments and various NGO's have stepped in to help in this crisis by providing awareness, essential commodities. Many Health organizations have started tele-consultation and are providing counselling services.⁶ Though Indian central & state Governments and national & regional medias have been regularly providing awareness and updating the prevalence about Covid 19, people using several social media platforms such as Facebook, WhatsApp, YouTube, have been circulating information that are sometimes incorrect and misleading. This has been infusing stigma about the illness and causing panic among people.⁷

The aim of the study is to understand the three major mental health conditions such as depression, anxiety & stress among people in India and their association with social media exposure.

METHODS**Design and Participants**

This cross-sectional study was conducted online from May 15th, 2020 to May 25th 2020, which is the 4th phase of lockdown when the infection rate was increasing alarmingly. The study approval was obtained from the Institute Ethics committee (Radianz Healthcare & Research, Madurai, Tamil Nadu State, India) and informed consent obtained from people with given assurance of no personal identification details will be revealed such as personal phone number or mail ID obtained. People above 18 years and people from various districts of Tamil Nadu in India were included in this study. The study consisted of basic socio-demographic details, statements regarding usage of social media to get information about Covid 19 and questions in the Depression, Anxiety and Stress Scale and GHQ-12.

An online survey through Google survey platform in English & local language Tamil (with back translation verified – (<https://forms.gle/NoEs17ArwJcU5EYD7>) was created to assess the mental health problems among people during Covid-19 and shared in public platforms. In total, 1,232 participants took part in the survey. 32 incomplete samples were excluded and 1200 participants from various districts of Tamil Nadu were involved in this study.

Measurements

Based on previous studies, 3 major mental disorders such as depression, anxiety & stress were assessed in the current study. GHQ-12 is a measure of current mental health and was developed by Goldberg in 1970.⁸ Each item is rated on a 4-point scale (less than usual–no more than usual–rather more than usual–more than usual). It gives a total score of 36 and the most common scoring method is bi-modal (0-0-1-1) and Likert scoring style (0-1-2-3).

A self-reporting scale called Depression, Anxiety and Stress Scale consisting of 21 Items (DASS-21–short version) was used. It is a 4-point Likert scale developed by Lovibond, S.H. & Lovibond, P.F. (1995)⁹ used to assess the levels of depression, anxiety & stress. DASS-21 contains 7 items for each disorder and the summed scoring indicates the severity of each disorder ranging from normal, mild, moderate, severe & extremely severe. Scores of the DASS 21 has to be multiplied with 2 and then summed. The total score of the items of each disorder indicates its severity level.

A questionnaire was prepared to evaluate the social media exposure about Covid-19 “how involved are you when you receive information about Covid-19 on social media platform” and scored with 3 point Likert scale “ Never, Less, Sometimes, Often, Very Often”.¹⁰

Covariates

The following covariates were included in this study: gender, age (18 - 25, 26 - 30, 31 - 40, 41 - 50, 51 - 60, 61 & above), educational level (till school, diploma, graduation, post-graduation, PhD, miscellaneous) marital status (married, unmarried, separated, widowed, divorcee) and occupation (student, private employee, government employee, self-employed, unemployed).

Method of Data Collection

An online survey through Google survey platform in English & local language Tamil (with back translation verified – (<https://forms.gle/NoEs17ArwJcU5EYD7>) was created. The survey contained statements pertaining to personal information, socio-demographic details and place of residence. It had closed ended questions regarding their use of social media in relation to receiving information about Covid 19. It had also statements in DASS-21 and GHQ-12. The survey link was shared through WhatsApp, Instagram pages and through status updates from May 15th, 2020 to May 25th 2020, with an open invitation to participate in the survey explaining that the survey was to study the influence of social media in processing information regarding Covid 19. Participants were assured that no personal information would be collected and that individual responses would be held confidential.

Statistical Analysis

Received data was statistically analysed using Statistical Package for Social Services software, (IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp). Descriptive statistics was performed to evaluate the prevalence of psychological distress as assessed in GHQ and levels of depression, anxiety & stress as assessed in DASS. Mean \pm standard deviation (SD), median for covariates. 2 tailed Pearson correlation with 0.01 significance level was performed to analyse the inter correlation of sub-domains of GHQ & DASS. Association between social media exposure & psychological distress, depression, anxiety & stress were analysed using Chi square test and presented as Relative Risk Ratios (RRR) with 95 % CI (Confidence Interval). Goodness-of fit-test¹¹ was used to assess the model fit. $P < 0.05$ was considered statistically significant.

RESULTS

	Never	Less	Sometime	Often	Most Often	P-Value
	N (%)	N (%)	N (%)	N (%)	N (%)	
Age Group	18 to 25 yrs. (8.4 %)	72 (17.7 %)	189 (46.6 %)	76 (18.7 %)	35 (8.6 %)	0.000
	26 to 30 yrs. (14.0 %)	22 (14.0 %)	70 (44.6 %)	35 (22.3 %)	8 (5.1 %)	
	31 to 40 yrs. (4.7 %)	64 (20.3 %)	104 (32.9 %)	99 (31.3 %)	34 (10.8 %)	
	41 to 50 yrs. (10.8 %)	37 (21.0 %)	53 (30.1 %)	58 (33.0 %)	9 (5.1 %)	
	51 to 60 yrs. (4.8 %)	15 (14.3 %)	32 (30.5 %)	44 (41.9 %)	9 (8.6 %)	
	61 yrs. and above (15.0 %)	7 (17.5 %)	7 (17.5 %)	20 (50.0 %)	0 (0.0 %)	
Sex	Male (7.5 %)	115 (19.2 %)	204 (34.1 %)	183 (30.6 %)	51 (8.5 %)	0.029
	Female (9.3 %)	102 (16.9 %)	251 (41.7 %)	149 (24.8 %)	44 (7.3 %)	
Education	Till School (16.7 %)	15 (13.9 %)	38 (35.2 %)	27 (25.0 %)	10 (9.3 %)	0.000
	Diploma (22.0 %)	13 (15.9 %)	30 (36.6 %)	18 (22.0 %)	3 (3.7 %)	
	Graduate (6.9 %)	77 (16.5 %)	196 (42.0 %)	121 (25.9 %)	41 (8.8 %)	
	Post graduate (5.0 %)	80 (21.2 %)	141 (37.3 %)	117 (31.0 %)	21 (5.6 %)	
	PhD (1.8 %)	18 (16.2 %)	36 (32.4 %)	36 (32.4 %)	19 (17.1 %)	
	Miscellaneous (22.2 %)	14 (25.9 %)	14 (25.9 %)	13 (24.1 %)	1 (1.9 %)	
Occupation	Student (6.3 %)	40 (16.7 %)	105 (43.8 %)	55 (22.9 %)	25 (10.4 %)	0.002
	Self employed (8.3 %)	40 (17.5 %)	70 (30.7 %)	89 (39.0 %)	10 (4.4 %)	
	Private employed (9.5 %)	83 (17.6 %)	186 (39.4 %)	115 (24.4 %)	43 (9.1 %)	
	Govt employment (9.1 %)	23 (16.1 %)	55 (38.5 %)	39 (27.3 %)	13 (9.1 %)	
	Unemployed (7.7 %)	31 (26.5 %)	39 (33.3 %)	34 (29.1 %)	4 (3.4 %)	
	Unmarried (9.4 %)	86 (17.2 %)	211 (42.3 %)	106 (21.2 %)	49 (9.8 %)	
Marital Status	Married (6.9 %)	113 (17.7 %)	231 (36.2 %)	208 (32.6 %)	43 (6.7 %)	0.000
	Separated (16.7 %)	11 (22.9 %)	10 (20.8 %)	16 (33.3 %)	3 (6.3 %)	
	Widowed (14.3 %)	7 (50.0 %)	3 (21.4 %)	2 (14.3 %)	0 (0.0 %)	
Current Domicile	Tamil Nadu (8.4 %)	214 (18.6 %)	441 (38.3 %)	310 (26.9 %)	89 (7.7 %)	0.018
	Non-Tamil Nadu (8.2 %)	3 (6.1 %)	14 (28.6 %)	22 (44.9 %)	6 (12.2 %)	

Table 1. Demographic Variables in Association with Social Media Exposure

In total of 1200 respondents received from various districts of Tamil Nadu, India, there were almost equal distribution

between 598 males (49.8 %) & 602 females (50.2 %) and most of them were aged 18 to 25 (402 – 33.8 %). 845 (70.4 %) people were graduates or postgraduates and 111 (9.2 %) were PhD holders. 639 (53.2 %) people were married. 843 (70.3 %) people were employed either self or private or government sector and 49 (4 %) people though native to the state of Tamil Nadu lived in other states. As shown in Table 1, the distribution of the study population in terms of age group, sex, education, occupation, marital status and domicile was not uniform between social media exposure. With relation to social media exposure, 35.5 % of people (427) reported as 'often & most often' and 37.9 % of people reported as 'sometime'.

Based on the descriptive statistical analysis Mean \pm SD [minimum-maximum], the results of GHQ 12 in association with social media exposure with respect to the domains such as depression & anxiety, social dysfunction, loss of confidence was 4 ± 3.10 [0 - 12], 6.92 ± 3.6 [0 - 18] and 1.27 ± 1.55 [0 - 6] respectively. The mean overall score for GHQ 12 psychological distress was 12.19 ± 7.28 [0 - 36]. There is a difference in scores of GHQ 12 domains with statistical significance (Table 2). There was not much difference in the mean scores of the domains of GHQ 12 in relation to amount of exposure to social media. But there is a significant difference in the mean score of people who were never using social media in relation to people using social media as a platform to obtain information about Covid-19. This indicated that social media exposure in context of the Covid-19 pandemic, had a significant influence in measures of GHQ 12.

		N	Mean	Std. Deviation	95 % Confidence Interval for Mean	Kruskal Wallis Test P-Value
					Lower Bound Upper Bound	
GHQ12 Depression & Anxiety	Never	101	1.3465	1.97198	.9572 1.7358	0.000
	Less	217	3.5253	3.10474	3.1099 3.9408	
	Sometime	455	3.9802	2.94846	3.7086 4.2519	
	Often	332	4.9639	3.03831	4.6358 5.2919	
	Most often	95	4.6000	3.20372	3.9474 5.2526	
	Total	1200	3.9975	3.10250	3.8218 4.1732	
GHQ12 social dysfunction	Never	101	3.6436	3.41053	2.9703 4.3168	0.000
	Less	217	6.6267	3.54649	6.1522 7.1013	
	Sometime	455	7.0923	3.35168	6.7835 7.4011	
	Often	332	7.6807	3.35068	7.3190 8.0425	
	Most often	95	7.6105	3.98213	6.7993 8.4217	
	Total	1200	6.9217	3.60018	6.7178 7.1256	
GHQ12 Loss of confidence	Never	101	.4851	.95513	.2966 .6737	0.000
	Less	217	1.1014	1.25420	.9336 1.2692	
	Sometime	455	1.3538	1.59848	1.2066 1.5011	
	Often	332	1.4970	1.70214	1.3132 1.6808	
	Most often	95	1.3263	1.65312	.9896 1.6631	
	Total	1200	1.2725	1.55411	1.1845 1.3605	
GHQ12 Psychological distress	Never	101	5.4752	5.45269	4.3988 6.5517	0.000
	Less	217	11.2535	7.04584	10.3107 12.1962	
	Sometime	455	12.4264	6.89079	11.7915 13.0612	
	Often	332	14.1416	7.09418	13.3757 14.9075	
	Most often	95	13.5368	7.56927	11.9949 15.0788	
	Total	1200	12.1917	7.27764	11.7795 12.6038	

Table 2. Mean \pm SD of GHQ 12 Domains in Association with Social Media Exposure

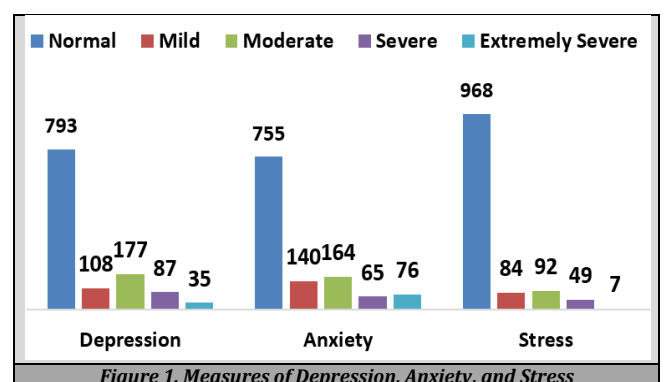


Figure 1. Measures of Depression, Anxiety, and Stress

Social Media Exposure	N	Mean	SD	95 % Confidence Interval for Mean		(Kruskal Wallis Test) P-Value
				Lower Bound	Upper Bound	
DASS_ stress	Never	101	4.97	7.71	3.45	0.000
	Less	217	8.66	7.73	9.70	
	Sometime	455	8.86	7.28	8.19	
	Often	332	10.52	8.01	9.65	
	Most often	95	10.84	8.15	9.18	
DASS_ depression	Total	1200	9.11	7.81	8.67	0.000
	Never	101	4.00	7.40	2.54	
	Less	217	7.21	8.13	6.12	
	Sometime	455	7.25	8.23	6.49	
	Often	332	9.34	9.06	8.36	
DASS_ anxiety	Most often	95	10.13	9.52	8.19	0.000
	Total	1200	7.77	8.62	7.28	
	Never	101	3.58	6.79	2.24	
	Less	217	5.82	7.10	4.87	
	Sometime	455	5.80	6.40	5.21	
	Often	332	7.22	7.17	6.44	
	Most often	95	8.91	7.86	7.30	
	Total	1200	6.26	7.00	5.86	

Table 3. Mean \pm SD of DASS 21 Domains in Association with Social Media Exposure

Inter correlation between GHQ-12 domains and DASS-21 domains were performed using 2 tailed Pearson correlation analysis which showed very good correlation at sig = 0.01. Influence of social media exposure on DASS 21 domains was significant at p = 0.000 [Table 3]. The scores revealed depression in 34 % of respondents, 37.1 % suffered from anxiety and 19.3 % were experiencing stress as shown in Figure 1.

Correlations		GHQ12 Depression & Anxiety	GHQ12 social dysfunction	GHQ12 Loss of confidence	GHQ12 Psychological distress	DASS Stress	DASS Depression	DASS anxiety
GHQ12 Depression & Anxiety	Pearson Correlation	1.00	.682**	.655**	.903**	.557**	.548**	.468**
	Sig. (2-tailed)		0.00	0.00	0.00	0.00	0.00	0.00
GHQ12 social dysfunction	Pearson Correlation	.682**	1.00	.574**	.908**	.527**	.559**	.465**
	Sig. (2-tailed)	0.00		0.00	0.00	0.00	0.00	0.00
GHQ12 Loss of confidence	Pearson Correlation	.655**	.574**	1.00	.776**	.587**	.660**	.547**
	Sig. (2-tailed)	0.00	0.00		0.00	0.00	0.00	0.00
GHQ12 Psychological distress	Pearson Correlation	.903**	.908**	.776**	1.00	.624**	.651**	.546**
	Sig. (2-tailed)	0.00	0.00	0.00		0.00	0.00	0.00
DASS STRESS	Pearson Correlation	.557**	.527**	.587**	.624**	1.00	.835**	.828**
	Sig. (2-tailed)	0.00	0.00	0.00	0.00		0.00	0.00
DASS DEPRESSION	Pearson Correlation	.548**	.559**	.660**	.651**	.835**	1.00	.806**
	Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00		0.00
DASS ANXIETY	Pearson Correlation	.468**	.465**	.547**	.546**	.828**	.806**	1.00
	Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00	0.00	

Table 4. Pearson Correlation between GHQ 12 & DASS 21 Domains p < 0.01

** Correlation is Significant at the 0.01 level (2-tailed).

DISCUSSION

According to the National Mental Health Survey conducted in India in 2015, the prevalence of any mental disorder in India is about 10.6 % and the prevalence of depressive disorder and neurotic disorder is 2.7 % & 6.6 % respectively.¹² In comparison with the national data, this study revealed a significant increase, with 34 %, 37.1 % and 19.3 % experiencing some level of depression, anxiety & stress respectively during this Covid-19 pandemic. The study shows that the social media exposure was high among the sample, with 35.5 % of people reported as 'often & most often' and of people reported as 'sometime'.

This study sample shows that people in age group of 18 - 25 yrs. and 31 - 40 yrs. were using social media as the most used media for collecting information about Covid 19 and higher percentage of older people between age group of 50 yrs. and above reported that they never used social media or used it to a minimal range to gather information. While comparing education with relation to social media, the results show that the education has no influence on how people gathered information. The scores in the GHQ domains indicate that the use of social media has a significant influence on the general health of the sample as seen by the scores in loss of confidence, psychological distress, anxiety, depression and social dysfunction. The scores in DASS domains show that social media exposure has a high significance in influencing the level of stress, depression and anxiety among the sample. Correlation between the subdomains of DASS and GHQ scale indicates that psychological distress is highly correlated with stress, anxiety and depression.

In accordance with other studies showing social media as the main medium of assessing news,¹³ the current study had also shown that a high percentage of people (83 %) received information about Covid-19 through social media and that it had a significant influence in causing psychological distress.

During Covid-19 outbreak, false information and unscientific treatment plans about the Covid-19 have been spread through social media which has created panic and fear among many netizens, which caused confusion and anxiety among people which attributed to people's mental health problems.¹⁴ Besides, many people reacted by expressing their negative feelings such as fear, worry, nervousness and anxiety in social media, which is contagious.¹⁵

There have been some limitations that should be considered in this study. This study is cross-sectional, and causal relationship between social media exposure and mental health could not be definitely said and additional longitudinal studies, such as cohort studies or nested case-control studies are essential in the future to establish a strong temporal correlation between social media exposure & mental health issues. Although the sample was in adequate size, the survey was conducted online for the convenience of doing rapid assessment. There is possibility of respondent bias and the fact that people who are educated and having knowledge about internet usage responded in this, may have affected the results. Finally, although the authors were able to control for many covariates, the possibility of residual unmeasured confounding factors cannot be excluded.

CONCLUSIONS

Social media has become a tool for news collection and people exposed to social media were unaware of the reliability of the news, which plays a major role in creating irrational beliefs & unscientific action towards Covid-19 pandemic management.¹⁶ This study revealed a significant correlation between social media exposure and mental health issues. Mental health issues are going to be the ongoing problem which affects the country's-state's, socio-economic balance¹⁷ and more attention has to be paid to it along with the battle of containing the Covid-19. Guidance for managing this mental health crisis issued by NIMHANS (National Institute of Mental Health and Neuro-Sciences) suggests various psychosocial measures including tele-consultation.¹⁸ Depression, anxiety & psychological stress are the most common mental health issues which can affect the quality of life, family happiness, and socioeconomic status. It is the need of the hour to pay more attention in dealing with these major mental health disorders.^{19,20}

Data sharing statement provided by the authors is available with the full text of this article at jemds.com.

Financial or other competing interests: None.

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