Original Research Article

Impact of social media and over the top media during COVID-19 lockdown, a cross-sectional study

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ABSTRACT

Background: Covid-19 outbreak has forced the governments of several countries to enforce lockdown to control the spread of the virus. Staying at their homes, people are subjected to use Social media (SM)/Over the top media (OTTM) for communication, information, and entertainment. The objective is to know the usage of SM/OTTM and the frequently used applications during the lockdown. Also, its association with health, information usage and education.

Methods: An online survey was conducted for a month with a specially framed questionnaire which includes the aspects of SM/OTTM usage, health issues due to SM/OTTM usage, education, and information during Covid-19 lockdown.

Results: Wilcoxon Signed-Rank test showed a significant difference between time spent on SM/OTTM before and after the lockdown and the median time used was shifted from 2-4 hours to 4-6 hours. Pearson Chi-Square test was done comparing the usage of SM/OTTM to other variables which showed significance in the aspects of interpersonal problems, usage out of boredom, staying connected to friends/family, online workouts/diet plans, false information, awareness on Covid-19, and cyberbullying. Sleeplessness, headache, eye complaints were predominant among the physical ailments whereas Stress, irritability, restlessness, anxiety were predominant among psychological affections due to SM/OTTM usage.

Conclusions: SM/OTTM was frequently used and played a key role during the Covid-19 lockdown. SM has helped people to stay connected, acquire information, and stay updated on the pandemic. SM is also responsible for physical and mental health affections due to prolonged usage and exposure to false information during the lockdown.

Keywords: Covid-19, Information, Mental health, Over the top media, Physical health, Social media

INTRODUCTION

World Health Organization (WHO) has declared a novel coronavirus outbreak a public health emergency of international concern on 30th January, 2020.[1] Globally, as of, 19 October 2020, there have been 39,944,882 confirmed cases of COVID-19, claiming 1,111,998 lives.[2] Governments all over the globe have issued lockdown in their countries by distancing people socially and physically. During this grave situation, Social media (SM) is playing a key role in providing information regarding the virus, its spread, and the precautions to be taken.

SM can be defined as web-based and mobile-based Internet applications that allow the creation, access, and exchange of user-generated content that is ubiquitously accessible.[3] Over the top (OTT) services refers to film

and television content provided via a high-speed Internet connection rather than a cable or satellite provider.[4] SM has provided people to have some kind of participation and interaction with friends, family, and new people with common interests despite the distance. It was initially treated or referred to as novel but it became less noticed, more expected and continues to be an integrated part of our personal and professional lives.[5]

Research done on the association of social media usage and mental health problems as well as physical health problems is not conclusive. But research has shown the influence of SM on stress, depression, anxiety, self-esteem, restlessness, sleeplessness, cyberbullying.[6-14] Also, ergonomic disturbances affecting the neck, back, shoulder, muscle tension, and eye strain, headache are seen in the usage of devices.[12,15,16]

Most importantly SM provides easy access to news coverage during mass emergency events for people.[17] This study aims to understand the influence of SM/OTTM in mental, physical, and social health during Covid-19 lockdown in the aspects of usage, information, and education.

METHODS

Design and participants

This is a cross-sectional study that was done in National Homoeopathy Research Centre in Mental health, Kottayam through an online survey that was conducted from May 21 to June 22, 2020. In this survey, 20 questions were framed along with demographic data that includes name, age, gender, e-mail id, educational qualification, occupation, country, area, and marital status. This was uploaded in the Google documents which were registered with the author's email. The participant information on the study was provided. Consent for the study was by participation and ethical approval was not considered due to the absence of any intervention. The whole survey was divided into 5 sections i.e., participant information, demographic data, usage, health, education, and information. The survey was shared through social media applications i.e., WhatsApp, Facebook, Telegram, and Gmail. A total of 2049 responses were recorded in the survey. Options for the questionnaire varied for each to fulfil the required criteria and for every question, the participant was given an option "not prefer to say/not applicable". After removing the multiple entries 1945 participants were included in the study for analysis.

Exclusion criteria

Population aged 17 years and below are excluded.

Statistical analysis

The data was statistically analysed using IBM SPSS Software Version 20.0. Wilcoxon Signed-Rank test was used for comparing the time spent on Social Media or OTT platforms before and during the lockdown period. Pearson Chi-square test was used to check the association between variables.

RESULTS

Demographic data

Data are expressed in Table 1.

Table 1: Demographic data (n=1945).

	N	Percentage
Age group (years)		
≤18	50	2.6
19-29	1539	79.1
30-39	221	11.4
40-49	75	3.9
50-59	47	2.4
>60	13	0.7
Gender		
Female	1121	57.6
Male	824	42.4
Educational qualification		
Degree	953	48.99
Post-graduate	589	30.28
Diploma	101	5.19
Doctorate	90	4.62
Intermediate/plus 2	87	4.47
SSC/CBSE	19	0.97
Below SSC/CBSE	9	0.46
Other	97	4.98

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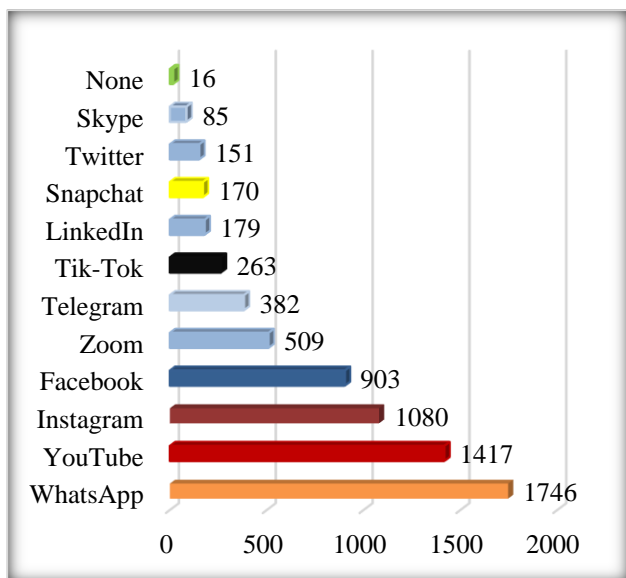|	N	Percentage
Occupation		
Student	743	38.2
Medical	491	25.24
Software/IT	199	10.23
Teacher	100	5.14
Unemployed	71	3.65
Government & public administration	64	3.29
Business	57	2.93
Marketing	47	2.41
Home maker	42	2.15
Others	131	6.73
Country		
India	1855	95.37
USA	23	1.18
Australia	10	0.51
Canada	8	0.41
UAE, Saudi Arabia	7(2)	0.35
United Kingdom	5	0.25
Malaysia, Germany, New Zealand	3(3)	0.15
Bulgaria, Kuwait, Qatar.	2(3)	0.1
Bahrain, Bangladesh, Belgium, Haiti, Kyrgyzstan, Nepal, Oman, Philippines, Singapore, Sweden, Uganda, Antigua and Barbuda, Iraq, Ireland, south Korea,	1(15)	0.05
Area		
Urban	1256	64.57
Rural	646	33.21
Others	43	2.21
Marital Status		
Single	1394	71.67
Married	536	27.55
Divorced	8	0.41
Living together	5	0.25
Separated	2	0.1

Figure 1: Most frequently used social media applications.
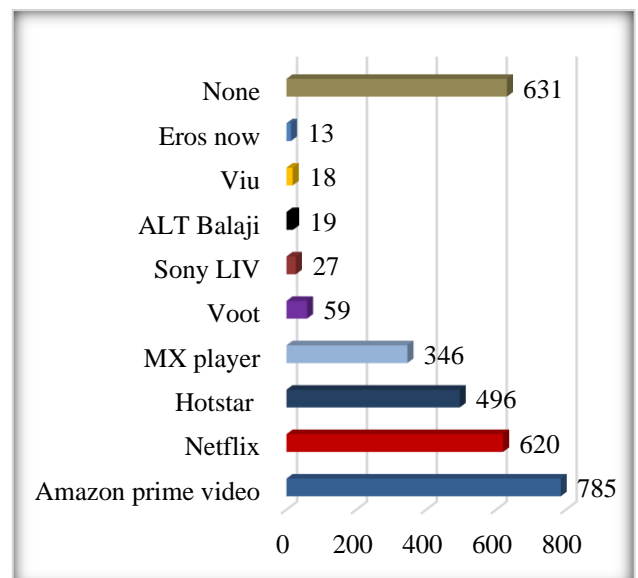

Figure 2: Most frequent over the top (OTT) media applications.

Usage

WhatsApp, YouTube, Instagram and Facebook were the leading SM apps respectively that were being used most frequently during lockdown whereas <1% responded: "none" (Figure 1).

Amazon prime video, Hotstar, Netflix and MX player were the leading OTT apps respectively whereas 32% have responded that they were not using any (Figure 2).

Wilcoxon signed-rank test showed that there is a statistically significant difference between the time spent on social/ OTT media before and during the lockdown. (Z=-26.559, p<0.001, ES= 0.44). The Median time spent on Social /OTT Media before Lockdown was 2-4 hours

which became 4-6 hours during the lockdown. Values are expressed in Table 2.

Total 86.3% responded that they are using Social/OTT media out of boredom during lockdown while 8.5% responded never and 5.2% did not prefer to say. Statistically, significant association is seen with time spent on Social/OTT media during lockdown upon Pearson Chi-Square test (χ^2=367.968, p<0.001, ES=0.46). About 79.5% responded that they are watching movies/web series which they haven't considered before lockdown while 17.8% responded they are not and 2.7% preferred not to say. Statistically, significant association is seen with time spent on Social/OTT media during lockdown (χ^2=142.345, p<0.001, ES=0.28). Values are expressed in Table 4.

Table 2: Changes in time spend on social media/OTT media before and during lock down.

How long did you spend social/OTT media BEFORE lock-down?	How long do you spend on social/OTT media DURING the lock-down?				Total	Z statistic	P value	Effect size(r)
	0-2 hrs	2-4 hrs	4-6 hrs	>6 hrs				
0-2 hours	332	373	164	66	935			
2-4 hours	38	165	274	125	602	-26.559*	<0.001	0.44 (Medium effect size)
4-6 hours	14	28	72	93	207			
>6 hours	3	7	6	59	75			
Total	387	573	516	343	1819			

*Wilcoxon Signed rank test is used. P<0.05 was considered as statistically significant.

Table 3: Health aspects during Covid-19 lockdown (n=1945).

	N	Percentage (%)
Physical affections due to SM/OTTM usage		
Sleeplessness	450	23.13
Headache	345	17.73
Eye complaints	340	17.48
Neck	184	9.46
Backache	141	7.24
None	1049	53.93
Psychological affections due to SM/OTTM usage		
Stress	253	13
Irritability	252	12.95
Restlessness	243	12.49
Anxiety	189	9.71
Depression	142	7.3
None	1273	65.44
Symptoms when no access to SM		
Restlessness	264	13.57
Frustration	231	11.87
Anger	170	8.74
Anxiety	151	7.76
Emotional outburst	119	6.11
Panic	57	2.93
Palpitations	17	0.87
None	1286	66.11

Continued.

	N	Percentage (%)
Neglect due to prolonged use of SM		
Neglect daily activities	539	27.71
Neglect Professional Duties	274	14.08
Neglect Family relations	213	10.95
Neglect personal hygiene	175	8.99
Neglect friends	155	7.96
None	1065	54.75

Health

Among the 1945 respondents, 46% of them responded to have been suffering from physical ailments and around 35% of the responders responded to have psychological affections. Almost 34% responded to having problems when there was no access to SM/OTTM and 45% responded that they were neglecting activities in daily life due to prolonged SM usage. Values are expressed in Table 3.

Total 40.0% responded that they had interpersonal problems (e.g., Quarrels/misunderstandings) because of Social/OTT media while 55.1% reported that they never had any interpersonal problems and 4.7% responded "none". Statistically, significant association is seen with time spent on Social/OTT media during lockdown (χ^2=54.953, p<0.001, ES=0.18). Values are expressed in Table 4.

Total 92.6% responded that SM is helping them to stay connected with their family and friends while 5.7%

responded not at all and 1.7% preferred not to answer. Statistically, significant association is seen with time spent on Social/OTT media during lockdown (χ^2=32.468, p=0.001, ES=0.13). Values are expressed in Table 4.

Total 76.3% responded that SM has been helping them with online workouts, diet plans, etc. during lockdown while 21.4% responded "not at all" and 2.3% preferred not to say. Statistically, significant association is seen with time spent on Social/OTT media during lockdown (χ^2=29.612, p=0.003, ES=0.13). Values are expressed in Table 4.

Total 54% responded to have made new friends/relationships during lockdown through SM while 41.7% responded that they did not and 2.3% preferred not to say. Statistically, no significant association is seen with time spent on Social/OTT media during lockdown (χ^2=14.525, p=0.268, ES=0.09). Values are expressed in Table 4.

Table 4: Association between the responses and the time spent on social/OTT media during lockdown.

Questionnaire	Responses	N	How long do you spend on social/OTT media DURING the lock-down?				Test statistic #	P value	Effect size
			0-2 hours	2-4 hours	4-6 hours	>6 hours			
How often are you using social/OTT media out of boredom during lockdown?	Never	151	73(48.3)	49(32.5)	18(11.9)	11(7.3)	367.968	<0.001*	0.46
	Occasionally	624	206(33.0)	238(38.1)	137(22.0)	43(6.9)			
	Frequently	611	52(8.5)	190(31.1)	229(37.5)	140(22.9)			
	Often	194	26(13.4)	53(27.3)	68(35.1)	47(24.2)			
	Very often	187	17(9.1)	34(18.2)	49(26.2)	87(46.5)			
How often are you watching movies/web-series etc. which you haven't considered before this lock-down?	Never	319	112(35.1)	106(33.2)	68(21.3)	33(10.3)	142.345	<0.001*	0.28
	Occasionally	671	161(24.0)	246(36.7)	179(26.7)	85(12.7)			
	Frequently	446	60(13.5)	117(26.2)	155(34.8)	114(25.6)			
	Often	181	22(12.2)	60(33.1)	52(28.7)	47(26.0)			
	Very often	171	23(13.5)	36(21.1)	59(34.5)	53(31.0)			
How often did you have interpersonal problems (e.g., quarrels/misunderstandings) because of Social/OTT media?	Frequently	78	10(12.8)	18(23.1)	24(30.8)	26(33.3)	54.953	<0.001*	0.18
	Never	1015	252(24.8)	348(34.3)	267(26.3)	148(14.6)			
	Frequently	577	10(12.8)	18(23.1)	24(30.8)	26(33.3)			
	Often	45	9(20.0)	9(20.0)	16(35.6)	11(24.4)			
	Very Often	58	17(29.3)	17(29.3)	17(29.3)	7(12.1)			
How much is social media helping you to stay connected with your family & friends during this Lock-down?	Extremely	309	55(17.8)	99(32.0)	86(27.8)	69(22.3)	32.468	0.001*	0.13
	Very much	670	128(19.1)	210(31.3)	215(32.1)	117(17.5)			
	Moderately	504	99(19.6)	162(32.1)	146(29.0)	97(19.2)			
	Slightly	217	64(29.5)	69(31.8)	48(22.1)	36(16.6)			
	Not at all	99	34(34.3)	28(28.3)	18(18.2)	19(19.2)			

Continued.

Questionnaire			How long do you spend on social/OTT media DURING the lock-down?				Test statistic #	P value	Effect size
How much is social media helping you stay healthy with online workouts; diet plans etc. during lockdown?	Extremely	147	28(19.0)	46(31.3)	43(29.3)	30(20.4)	29.612	0.003*	0.13
	Very much	323	63(19.5)	108(33.4)	98(30.3)	54(16.7)			
	Moderately	512	91(17.8)	165(32.2)	166(32.4)	90(17.6)			
	Slightly	411	87(21.2)	132(32.1)	119(29.0)	73(17.8)			
	Not at all	390	105(26.9)	114(29.2)	79(20.3)	92(23.6)			
How much did social media help you in making new friends/relationships during lockdown?	Extremely	96	24(25.0)	27(28.1)	19(19.8)	26(27.1)	14.525	0.268	0.09
	Very much	216	43(19.9)	70(32.4)	65(30.1)	38(17.6)			
	Moderately	333	60(18.0)	113(33.9)	104(31.2)	56(16.8)			
	Slightly	371	73(19.7)	114(30.7)	110(29.6)	74(19.9)			
	Not at all	771	180(23.3)	239(31.0)	211(27.4)	141(18.3)			
How often do you encounter information on social media regarding COVID-19 that you know to be FALSE?	Never	285	86(30.2)	95(33.3)	56(19.6)	48(16.8)	32.770	0.001*	0.14
	Occasionally	677	140(20.7)	219(32.3)	208(30.7)	110(16.2)			
	Frequently	411	72(17.5)	130(31.6)	123(29.9)	86(20.9)			
	Often	240	44(18.3)	65(27.1)	76(31.7)	55(22.9)			
	Very Often	115	26(22.6)	36(31.3)	31(27.0)	22(19.1)			
How often are you being subjected to cyber-bullying during this lock-down?	Never	1427	302(21.2)	437(30.6)	427(29.9)	261(18.3)	25.974	0.011*	0.12
	Occasionally	136	27(19.9)	57(41.9)	32(23.5)	20(14.7)			
	Frequently	67	18(26.9)	24(35.8)	7(10.4)	18(26.9)			
	Often	51	13(25.5)	11(21.6)	15(29.4)	12(23.5)			
	Very Often	37	5(13.5)	15(40.5)	8(21.6)	9(24.3)			
9. How often are you using social media to create awareness regarding COVID-19 during lockdown?	Never	281	77(27.4)	96(34.2)	63(22.4)	45(16.0)	20.939	0.051	0.12
	Occasionally	721	163(22.6)	206(28.6)	214(29.7)	138(19.1)			
	Frequently	483	85(17.6)	163(33.7)	147(30.4)	88(18.2)			
	Often	210	45(21.4)	65(31.0)	55(26.2)	45(21.4)			
	Very Often	121	23(19.0)	40(33.1)	30(24.8)	28(23.1)			
How often are you using social media for educational purposes i.e., to do online courses, to read books online, etc.?	Never	186	52(28.0)	50(26.9)	58(31.2)	26(14.0)	20.050	0.066	0.11
	Occasionally	482	100(20.7)	165(34.2)	130(27.0)	87(18.0)			
	Frequently	584	126(21.6)	172(29.5)	182(31.2)	104(17.8)			
	Often	238	48(20.2)	70(29.4)	63(26.5)	57(23.9)			
	Very Often	305	55(18.0)	108(35.4)	81(26.6)	61(20.0)			
How often are you creating new content (e.g., creating new pages/platforms) in the social media during this lock-down?	Never	998	229(22.9)	306(30.7)	282(28.3)	181(18.1)	15.570	0.212	0.09
	Occasionally	405	78(19.3)	139(34.3)	120(29.6)	68(16.8)			
	Frequently	162	34(21.0)	51(31.5)	40(24.7)	37(22.8)			
	Often	109	19(17.4)	26(23.9)	39(35.8)	25(22.9)			
	Very often	86	15(17.4)	31(36.0)	20(23.3)	20(23.3)			
How much useful are online classes/webinars during lock-down?	Extremely	264	61(23.1)	79(29.9)	71(26.9)	53(20.1)	12.250	0.426	0.09
	Very much	570	117(20.5)	186(32.6)	176(30.9)	91(16.0)			
	Moderately	450	91(20.2)	152(33.8)	115(25.6)	92(20.4)			
	Slightly	217	36(16.6)	69(31.8)	68(31.3)	44(20.3)			
	Not at all	168	40(23.8)	50(29.8)	43(25.6)	35(20.8)			

Values are expressed in n (%). #Pearson Chi square test is used. P<0.05 considered as statistically significant

Education and information

There were 76.4% responded that they have encountered false information on SM regarding Covid-19 while 16.1% responded never and 6.3% preferred not to say. Statistically, significant association is seen with time spent on Social/OTT media during lockdown ($\chi2$=32.770, p=0.001, ES=0.14). Values are expressed in Table 4.

Only 15.9% have responded that they were subjected to Cyberbullying during lockdown while 76.9% responded never and 7.2% preferred not to say. Statistically, significant association is seen with time spent on Social/OTT media during lockdown ($\chi2$=25.974, p=0.011, ES=0.12). Values are expressed in Table 4.

There were 82.8% responded that they were using SM to create awareness on Covid-19 while 15.5 responded never and 2.7% preferred not to say. Statistically almost significant association is seen with time spent on Social/OTT media during lockdown ($\chi2$=20.939, p=0.051, ES=0.12). Values are expressed in Table 4.

There were 88.6% responded to using SM for educational purposes while 10.4% responded never and 2% preferred not to say. Statistically, no significant association is seen with time spent on Social/OTT media during lockdown (χ^2=20.050, p=0.066, ES=0.11). Values are expressed in Table 4.

There were 42.9% responded to creating new content in SM while 54% responded never and 4.1% preferred not to say. Statistically, no significant association is seen with time spent on Social/OTT media during lockdown (χ^2=15.570, p=0.212, ES=0.09). Values are expressed in Table 4.

There were 83.2% responded that online classes/webinars were useful during lockdown while 9.3% responded they were not and 8.5% were not applicable. Statistically, no significant association is seen with time spent on Social/OTT media during lockdown (χ^2=12.250, p=0.426, ES=0.09). Values are expressed in Table 4.

DISCUSSION

The study aimed to understand the influence of social media during the Covid-19 lockdown in various aspects. Prior studies have shown that there has been a significant increase in the usage of social media during covid-19 than pre-lockdown and the significance was seen in this study too.[18,19] This study significantly showed that they have been using social media out of boredom and have considered watching movies/web series that weren't in consideration before. Also, increased usage of social media resulted in interpersonal problems among respondents.

Previous studies have tried to find an association between SM and physical health which was seen in this study too.[20] There are several individual aspects that surround physical health with the usage of SM/OTTM through phone, laptops, etc. Association of Insomnia with increased social media use was seen in other studies especially during Covid-19 which is majorly seen in this study.[13,21,22] Several studies have mentioned ergonomic problems in using the devices and posture problems like neck complaints, eye-straining, backache which was also seen in this study.[16] Recent studies have shown a strong association between anxiety, depression, and SM usage especially during Covid-19 and other psychological distresses.[7,8] But in this study stress, irritability and restlessness was seen in most of the responders whereas anxiety and depression were seen in a few of them. During this lockdown, most of them responded that SM has helped them to stay connected with their friends and family and also helped them with online workouts, diet plans, etc. Cyberbullying during lockdown is speculated to rise significantly but, in this study, only a few responded to have been subjected to it.[23] No significance was seen in the response of making new friends/relationships. Further studies are needed to signify the results.

A recent study has shown that SM can be used to share information that may be invalidated, incorrect, and false especially during a pandemic.[19] In this study, we saw that most of them encountered false information regarding Covid-19 but most of them were using SM to create awareness on Covid-19. Significance of SM in education/communication during a pandemic was seen in previous studies and several responded the usefulness of online classes/webinars or in the aspects of creating new content but no significance was seen in association with time spent during the lockdown.[24,25] More research is needed to signify the result.

This study has several limitations. Since this study is based on an online survey there may be respondent bias. Even though responses are from 28 countries most of the responders are from India. Health problems in the questionnaire are self-diagnosing so the response can be biased. Too many variables were studied in the questionnaire and further study on individual aspects would give a more significant result.

CONCLUSION

Social media has become an integrated part of everyone's life. From the beginning of Covid-19 pandemic social media has been frequently used for various aspects. Our findings in this study have shown that SM/OTTM was accessed significantly at an increased rate during the lockdown compared to pre-lockdown. This study shows both positive and negative impacts on the aspects of mental and physical health. It also showed that SM played a key role in sharing information regarding Covid-19 but significant exposure of false information was also seen. Further research is needed to validate these results.

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