

Influence of Online Work on Social Media Relations of Higher Education Teachers before and during COVID-19 pandemic

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ABSTRACT

This ex-post facto study was carried out to explore the social media relationships of higher education teachers before and during the unprecedented COVID-19 lock-down. A descriptive survey method was followed to achieve the predetermined objectives. Random sampling technique was used to gather the data from higher education teachers. Researchers' self-constructed questionnaire (Google Form) was administered on the selected sample. The obtained data was analyzed with the help of frequencies, percentages, Pearson's chi-square test and Wilcoxon signed-ranks test. The findings revealed that *before* the COVID-19 lockdown, 59.75% of the higher education teachers were active on social media platform and Whatsapp was the major social media platform as almost three-fourth (75.61%) of them used it. A majority (i.e. 57.32%) of the higher education teachers learnt and applied new soft-wares and ICT tools during the lockdown on the cost of social relationships. Almost one-third (i.e. 32.93%) of them felt that their active participation on social media platforms has reduced in lockdown and they couldn't spare the time for interaction on social media due to over involvement in online programs during the lock-down. Almost one-fourth (i.e. 24.39%) of them perceived that their closely friends and relatives complaint them regarding their non-availability on social media during COVID-19 lock-down. During the lockdown, the percentage of higher education teachers spending their time up to one hour, two hours and three hours daily on social media platform were 32.93%, 30.49% and 36.58% respectively. This was a significant increase in time devoting social media platforms during the COVID-19 lock-down among higher education teachers. Gender was significantly associated with social media activeness *before* lockdown and male teachers were found to be more active on social media *before* the lockdown. No significant Association of Teachers' Relationships through Social Media with Type of Institution was found before as well as during the lock-down. Also, gender was not associated with Teachers' Relationships through Social Media during the lock-down. The findings of the study may help to develop an insight to the teachers, social-health workers, psychologists, administrators and policy-makers to strengthen the social relationships by reducing their workloads during such types of exceptional conditions.

Keywords: Higher education teacher; Social media relations; COVID-19 lock-down.

Introduction

Social media is a gift of ICT to the mankind. Social Media has proved an effective platform for building social relations, communication, sharing ideas, carrying out teaching-learning process, and contributed in improving the academic achievement of the students (Tess, 2013; McCay-Peet & Quan-Haase, 2016; Holmes, 2020; Islam, Laato, Talukder, & Sutinen, 2020; Vordos et al., 2020; Khan, Ashraf, Seinen, Khan, & Laar, 2021). It has also the potential to reduce the isolation. ICT, in general, and Social Media such as Facebook, Whatsapp, Instagram, Telegram, Twitter, LinkedIn, YouTube, Reddit and Gab in particular, have influenced the human beings socially, mentally, physically, emotionally and many more. *before* COVID-19 outbreak, it was primarily used for building and nurturing the social relations (Shao, 2009) followed by gaining information (Tsao, Chen, Tisseverasinghe, Yang, Li, & Butt, 2021) and career planning & commercial activities (Pew, March 2015). Even though, in COVID-19 pandemic, it was used as an only mean for entertainment and communication (Fancourt, Bu, Mak, & Steptoe, 2021a).

Means of Social Media has helped a lot in imparting education during the COVID-19 phase. Also, it was one of the dominant mean that has helped in maintaining the social relations during this crisis. At global level, COVID-19 affects the physical and mental health (Pierce et al., 2020) of human beings and caused anxiety (Huang and Zhao, 2020), depression and stress (Aperribai, Cortabarria, Aguirre, Verche, & Borges, 2020; Besser, Lotem, & Zeigler-Hill, 2020); negatively affected emotional wellbeing (Jakubowski & Sitko-Dominik, 2021) among teachers (Ozamiz-Etxebarria, Berasategi Santxo, Idoaga Mondragon, & Dosil Santamaría, 2021). It affected social aspect (Aperribai et al., 2020) more than the educational aspect (Alghamdi, 2021). This was the time when all institutions

of education shut down worldwide (United Nations [UN], 2020; Organization for Economic Cooperation and Development [OECD], 2020); and in-classroom practices were demotivated (Jones & Kessler, 2020). Therefore, higher education institutions switched over to the distant learning mechanisms for imparting education online (OECD, 2020; Koob, Schröpfer, Coenen, Kus, & Schmidt, 2021; Çakiroğlu, Saylan, Çevik, Mollamehmetoğlu, & Timuçin, 2022) and in all these processes social media has helped a lot to support the mankind socially, emotionally, morally, economically, medically, educationally and so forth played a significant role.

Physical distancing, during COVID-19 lock-down, has significantly changed the perception, attitude, practices and trends among teachers to use social media for online teaching and learning (Jogezai et al., 2021). Social media has also helped in spreading as well as tackling the 'Infodemics' and misinformation (Tsao et al., 2021). At the same time, it creates the new challenges to the educational institutions across the globe (Pérez-Escoda, Jiménez-Narros, Perlado-Lamo-de-Espinosa, & Pedrero-Esteban, 2020). Largely, this crisis has confined our interpersonal, familial and social relationships (Khan et al., 2021) to the closest ones and in some cases leads to breaking the relations or isolation (OECD, 2020; Smith & Lim, 2020; Long et al., 2022). But, the use of social media has helped to maintain the social relationship to a maximum extent (Fancourt, Bu, Mak, & Steptoe, 2021b). Its usage in the lock-down period became essential (Khan et al.) and inevitable for everyone including teachers. This study has an attempt to describe one of such ex-post facto social media relationships of higher education teachers before and during the COVID-19 lock-down.

Literature Review

A blend of positive and negative effects of internet, social networking websites and social media platforms have been reported in the previous researches carried out on the related fields. Study showed that smart phones and social media addiction reduced the emotional wellbeing, increased the anxiety (Cheever, Rosen, Carrier, & Chavez, 2014; Seo, Park, Kim, & Park, 2016), decline in self-esteem (Seo et al., 2016), attention, increased the depression (Underwood & Findlay, 2004; Kerkhof, Finkenauer, & Muusses, 2011; Seo et al.) and caused low efficiency of users in work (Underwood & Findlay, 2004; Seo et al.). Also, excessive use of Facebook caused the feeling of disconnected and depression among users (Tandoc, Ferrucci, & Duffy, 2015). Social media increased physical isolation (Kerkhof et al., 2011; Primack et al., 2017). The prominent negative consequence of social media in the form of excessive use of smart phones is diminishing face to face interactions with nearer and dearer ones (Christensen, 2018) besides this, the most dangerous one is spreading fake, misleading and vulnerable information (Das, 2020; Jishnu & Shamala, 2021; Singh, 2021) but its positive impact is that smart-phones strengthen the social networks among young people (Garg, 2022). It enabled the people safe, informed (Tsao et al., 2021) and connected during the COVID-19 lock-down (Volkmer, 2021). Similar kind of findings were reported by Fancourt et al. (2021b) revealing that majority of peoples' social relationships with other peoples were remain unaffected during the lockdown period whereas; younger ones reported that their relationships with parents outside of the house were worsened. A sizable number of people (i.e. 22%) felt complete breakdown in all type of relationships. Also, depression among younger adults was still prevailing higher by the end of February 2021. Hajek & König (2019) explored that adults of frequently using social media resources were found to be less isolated socially as compared to the adults of occasionally or non-using social media resources.

Usage of internet, social networking websites and social media platforms had increased manifolds during the lockdown in COVID-19 outbreak. Amid the entire period of lockdown due to COVID-19, the most discussed topics on social media were COVID related health issues and

death tolls. Findings of the study of Cinelli et al. (2020) showed that topics were almost similar across the major social media platforms. Fancourt, Bu, Mak, & Steptoe (2020) revealed that relationship of young people was more affected during the COVID-19 lock-down than the elder ones. Jakubowski & Sitko-Dominik (2021) found that stress and social relations were inversely related to each other. In another study, Fancourt et al. (2021a) reported that during the lockdown the most prominent activity (97%) of the people was watching movies, TV or games and sports, followed by communication to family members and friends (96%), sparing time for news of COVID-19 (95%) and enjoying music (93%). By the end of May 2020, people resuming their work and devoting less time to other activities. Mental health problems like anxiety, depression and stress were prevailing in this period. Volkmer (2021) reported that 43.9% of people shared scientific content on social media.

Some researches describe the sharing of different social media platforms. Pérez-Escoda et al. (2020) explored that YouTube is the social media platform in which maximum engagement found. Report of UN (2020) revealed that Twitter was the most neutral platform of social media. But in Indian context, it was the major platform to disseminate the fake news followed by Facebook, WhatsApp and YouTube (Jishnu and Shamala, 2021). Further, OECD (2020) came out the fact that WhatsApp was used by teachers for sharing educational materials to the students and also in teachers training programs. Whereas finding of (Jogezai et al., 2021) exhibits that Facebook was the mostly used platform (66.4%) followed by YouTube (21.4%). Some studies show that use of internet, social networking sites and social media have contributed in self-motivated learning and also in the academic achievement of students. Students communicate with teachers and peers to get the study materials and clarify their doubts. Thereby enhancing their cognitive ability and academic achievement.

Objectives

The study has been spread over the following objectives:

1. To explore the Higher Education Teachers' Relationships through Social Media *before* the COVID-19 lock-down.
2. To explore the Higher Education Teachers' Relationships through Social Media *during* the COVID-19 lock-down.
3. To find the influence of COVID-19 lock-down on Higher Education Teachers' Relationships through Social Media in terms of Time Spent in Social Media.
4. To find out the Association of Teachers' Relationships through Social Media with Gender and Type of Institution (University or College) *before* the COVID-19 lock-down.
5. To find out the Association of Teachers' Relationships through Social Media with Gender and Type of Institution (University or College) *during* the COVID-19 lock-down.

Hypotheses

Null hypotheses were formulated for objective third, fourth and fifth which are stated respectively as:

1. There will be no significant influence of COVID-19 lock-down on Higher Education Teachers' Relationships through Social Media in terms of Time Spent in Social Media. (for objective third)
2. There will be no significant Association of Teachers' Relationships through Social Media with Gender and Type of Institution (University or College) *before* the COVID-19 lock-down. (for objective fourth)
3. There will be no significant Association of Teachers' Relationships through Social Media with Gender and Type of Institution (University or College) *during* the COVID-19 lock-down. (for objective fifth)

Method

An ex-post facto study was conducted on 82 higher education teachers by using the Descriptive survey method. The sample comprised 29 female and 53 male teachers selected by the random sampling technique. Also, it comprised 47 University teachers and 35 College teachers. Researchers' self-prepared questionnaire (Google Form) was used to gather the data. The tool comprised 11 closed-ended items spread over two sections of social media usage before and during the COVID-19 Lock-down. Frequency, Percentage, Pearson's chi-square test and Wilcoxon signed-ranks test were employed for analyzing the data and interpretation of the obtained output are discussed in the following section.

Results and Discussion

Outputs obtained from data analysis have been presented in the respective tables and discussed as per objectives. The first objective of the study was, to explore the Higher Education Teachers' involvement in Social Media Relationships *before* the COVID-19 lock-down. In order to achieve this objective, the related items were analyzed through frequencies and percentages. The item-wise responses and their analysis have been given below in Table 1.

Table 1: Distribution of Responses Related to Higher Education Teachers' Relationships through Social Media *before* the COVID-19 lock-down

S. N o.	Items	Responses					
		SDA	DA	N	A	SA	Total
1	I was very much active on social media platform.	3 (3.66%)	13 (15.85%)	17 (20.73%)	37 (45.12%)	12 (14.63%)	82 (100%)
2	I was not active on social media platform.	14 (17.07%)	41 (50.00%)	9 (10.98%)	14 (17.07%)	4 (4.88%)	82 (100%)
3	I used to spend up to hour/ hours	Half an Hour	One Hour	One and Half Hours	Two Hours	Two and Half Hours	Three Hours Total

	daily to interact on social media platform.	17 (20.73 %)	23 (28.05 %)	4 (4.88%)	14 (17.07%)	10 (12.20 %)	14 (17.07 %)	82 (100%)	
4	Mostly I used the following social media platform.	Facebo ok 7 (8.54%))	Instagr am 1 (1.22%))	Linked in 3 (3.66%))	Telegra m 0 (0%))	Twitte r 0 (0%))	Whats app 62 (75.61%))	YouTu be 9 (10.98%))	Total 82 (100%))

It is distinct from Table 1 that, majority 59.75% (45.12% + 14.63%) of the higher education teachers, in response to the first item, has agreed that *before* lock-down they were active on social media platform whereas 19.51% (3.66% + 15.85%) of them disagreed to this. This fact has been cross verified from the next item, in reply to which, 21.95% (17.07% + 4.88%) of the teachers agreed that they were not active on social media platform *before* lockdown whereas 57.07% (17.07% + 50.00%) were disagreed to this. In both the items, almost similar result was received in which 57.07% to 59.75% higher education teachers active on some type of social media platform. Further, in reply to third item, majority 48.78% (20.73 + 28.05%) of higher education teachers spent up to one hour daily on social media platform; 21.95% (4.88% + 17.07%) of them used it up to two hours daily; and 29.27% (12.20% + 17.07%) of them were using up to three hours daily *before* the lockdown. Among all the social media platforms, Whatsapp emerged as the major social media platform as almost three-fourth (75.61%) of higher education teachers was using it *before* the lock-down; whereas Telegram and Twitter weren't used by them at all.

The second objective of the study was, to explore the Higher Education Teachers' involvement in Social Media Relationships *during* COVID-19 lock-down. For achieving this objective, its related items were analyzed through frequencies and percentages. The item-wise responses and their analysis have been given below in Table 2.

Table 2: Distribution of Responses Related to Higher Education Teachers' Relationships through Social Media *during* the COVID-19 lock-down

S. No	Items	Responses					
		SDA	DA	N	A	SA	Total
5	COVID-19 lockdown has provided me an opportunity to learn and apply new softwares and ICT tools; that's why I preferred it on the cost of Social Relationship.	5 (6.10 %)	13 (15.85 %)	17 (20.73%)	40 (48.78 %)	7 (8.54 %)	82 (100 %)
6	Due to over involvement in online programs; I hardly spare the time for interaction	4 (4.88 %)	36 (43.90 %)	15 (18.29%)	24 (29.27 %)	3 (3.66 %)	82 (100 %)

	on social media.							
7	My friends and relatives have criticized me regarding my lack of interaction (non-availability) on social media platforms.	7 (8.54 %)	38 (46.34 %)	17 (20.73 %)	19 (23.17 %)	1 (1.22 %)		
8	COVID-19 lockdown has reduced my active participation on Social Media Platforms.	5 (6.10 %)	33 (40.24 %)	17 (20.73 %)	24 (29.27 %)	3 (3.66 %)		
9	COVID-19 has made no effect on my active participation in social media platforms.	0 (0%)	20 (24.39 %)	22 (26.83 %)	31 (37.80 %)	9 (10.98 %)		
		Yes	No	Can't Say	Total			
10	I think due to my involvement in online programmes has weakened my social relationships.	25 (30.49 %)	45 (54.88 %)	12 (14.63 %)	82 (100%)			
11	I am spending daily to interact on social media platform during the lock-down.	Half an Hour	One Hour	One and Half Hours	Two Hours	Two and Half Hours	Three Hours	Total
		10 (12.20 %)	17 (20.73 %)	5 (6.10%)	20 (24.39 %)	11 (13.41%)	19 (23.17%)	82 (100%)

It is evident from Table 2 that, in response to the fifth item, 57.32% (48.78% + 8.54%) of the higher education teachers agreed that lock-down has provided them opportunity to learn and apply new soft-wares and ICT tools on the cost of social relationships whereas 21.95% (6.10% + 15.85%) of them not agreed to this. In reply to sixth item, almost one-third i.e. 32.93% (29.27% + 3.66%) of the higher education teachers agreed that due to over involvement in online programs during the lock-down, they hardly spare the time for interaction on social media whereas majority of them i.e. 48.78% (4.88% + 43.90%) were denied this statement. Further, in response to the seventh item, almost one-fourth i.e. 24.39% (23.17% + 1.22%) of them opined that their closely friends and relatives complaint them regarding their non-availability on social media during COVID-19 lock-down whereas more than half i.e. 54.88% (8.54% + 46.34%) of them were not agreed to this. In response to the eighth item, near about one-third i.e. 32.93% (29.27% + 3.66%) of the higher education teachers affirmed that their active participation on social media platforms has reduced during lock-down whereas most of them i.e. 46.34% (6.10% + 40.24%) were not in favor to this item. In reply to the item ninth, 48.78% (37.80% + 10.98%) of the higher education teachers believed that COVID-19 has not affected their active

participation in social media platforms whereas almost one-fourth (i.e. 24.39%) of them disagreed to this statement. In reply to the tenth statement, 30.49% of higher education teachers opined that their social media relationships has weakened due to their involvement in online programmes during COVID-19 lock-down whereas majority i.e. 54.88% of them were not believed so. Moreover, in response to the eleventh item, 32.93% (12.20% + 20.73%) of higher education teachers spent up to one hour daily on social media platform during COVID-19 lockdown; 30.49% (6.10% + 24.39%) of higher education teachers spent up to two hours daily on social media platform during COVID-19 lockdown; and 36.58% (13.41% + 23.17%) of them used it up to three hours daily during COVID-19 lockdown. Similar kind of finding has been reported by the study of Jakubowski & Sitko-Dominik (2021) that the isolation caused by pandemic affected the social relationships of teachers.

The third objective of the study was, to find the influence of COVID-19 lock-down on Higher Education Teachers' Relationships through Social Media in terms of Time Spent in Social Media. Its related Null hypothesis (H_0) was, there will be no significant influence of COVID-19 lock-down on Higher Education Teachers' Relationships through Social Media in terms of Time Spent in Social Media. To test this H_0 , Wilcoxon signed-ranks test was applied and results are presented in the following tables 3(A), 3(B) & 3(C):

Table 3(A): Negative and Positive Ranks of Social Media Used During and Before COVID-19 lock-down in terms of Time Spent

		N	Mean Rank	Sum of Ranks
During Lockdown - Before Lockdown	Negative Ranks	13 ^a	22.15	288.00
	Positive Ranks	32 ^b	23.34	747.00
	Ties	37 ^c		
	Total	82		
a. During Lockdown < Before Lockdown				
b. During Lockdown > Before Lockdown				
c. During Lockdown = Before Lockdown				

The above rank table 3(A) indicates that, 13 participants had spent more time in social media before the lockdown whereas 32 participants had spent more time in social media during the lockdown.

Table 3(B): Percentiles of Social Media Used During and Before COVID-19 lock-down in terms of Time Spent

	N	Percentiles		
		25 th	50 th (Median)	75 th

Before Lockdown	82	2.00	3.00	5.00
During Lockdown	82	2.00	4.00	5.00

It is clear from the table 3(B) that the median values for time spent in social media before and during lock-down are 3 and 4 respectively which shows that there was an increase in time spending in social media during lock-down.

Table 3(C): Wilcoxon Signed Rank Test Statistics

	During Lockdown - Before Lockdown
Z	-2.622
Asymp. Sig. (2-tailed)	.009

The output of Wilcoxon signed-ranks test denotes by the Z statistics. The value of z, as table 3(C) indicates, is -2.62 which is significant at .01 level. This means time spending in social media by higher education teachers raised significantly during the lockdown period ($Z = -2.62, p = 0.009$). It can also be verified from comparing the median values of before and during lock-down period which was higher in during lock-down period.

The fourth objective of the study was to find out the Association of Teachers' Relationships through Social Media with Gender and Type of Institution (University or College) *before* the COVID-19 lock-down. The concerned Null Hypothesis (H_0) to this objective was, there will be no significant Association of Teachers' Relationships through Social Media with Gender and Type of Institution (University or College) *before* the COVID-19 lock-down. Before testing the Association of Teachers' Relationships through Social Media with Gender and Type of Institution (University or College), this H_0 has been further divided into two null hypotheses for Gender and Type of Institution separately. These are:

- a) There will be no significant Association of Teachers' Relationships through Social Media with Gender before the COVID-19 lock-down.
- b) There will be no significant Association of Teachers' Relationships through Social Media with Type of Institution (University or College) before the COVID-19 lock-down.

To test these Null Hypotheses, responses on items concerned with social media relationships namely; 'Social Media Activeness'; and 'Time Spent on a Particular Social Media' were analyzed in terms of Male & Female; and University & College teachers with the help of Chi-square test. The item-wise numbers of responses and chi-square output obtained have been presented in the tables 4 to 7 followed by their interpretation:

- a) **Association of Teachers' Relationships through Social Media with Gender (Male & Female) before the COVID-19 lock-down**

The responses on Higher Education Teachers' involvement in Social Media Relationships with respect to Gender *before* the COVID-19 Lock-down has been presented in table 4

Table 4: Distribution of Responses on Higher Education Teachers' Relationships through Social Media with respect to Gender *before* the COVID-19 Lock-down

Item	Gender	Responses					Total
		SDA	DA	N	A	SA	
I was very much active on social media platform.	Male	2	4	12	27	8	53
	Female	1	9	5	10	4	29
	Total	3	13	17	37	12	82
I was not active on social media platform.	Male	9	27	8	7	2	53
	Female	5	14	1	7	2	29
	Total	14	41	9	14	4	82

Item	Gender	Half an Hour	One Hour	One and Half Hours	Two Hours	Two and Half Hours	Three Hours	Total
I used to spend up to hour/ hours daily to interact on social media platform.	Male	9	15	2	10	6	11	53
	Female	8	8	2	4	4	3	29
	Total	17	23	4	14	10	14	82

The frequencies (responses) under Strongly Disagree and Strongly Agree were few against some items; hence these frequencies were merged into the frequencies of Disagree and Agree respectively which are presented in table 5 with the *p*-value of chi-square statistics.

Table 5: Cross-tabulation (2X3 contingency table) of Gender X Teachers' Relationships through Social Media before the COVID-19 Lock-down

Item	Gender	Responses				<i>p</i> -Value
		DA	N	A	Total	
I was very much active on social media platform.	Male	6	12	35	53	.041
	Female	10	5	14	29	

For the above item, the *p*-value of chi-square test is .041 which is less than .05. It shows that the difference in observed and expected frequencies is significant at .05 level. Hence, it can be inferred that there is an association of gender with responses on social media activeness *before* lockdown. The frequency of male to the response of agreement (i.e. 35) was significantly higher than others. This means males were found to be more active on social media *before* lockdown.

Item	Gender	Responses				<i>p</i> -Value
		DA	N	A	Total	
I was not active on	Male	36	8	9	53	.134

social media platform.	Female	19	1	9	29
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For the above item, the *p*-value of chi-square statistics is .134 which is greater than .05. It shows that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be inferred that there is no association of gender with responses on social media non-activeness *before* lockdown.

Similarly, the frequencies under Half an Hour, One & Half an Hour and Two & Half an Hours were few against the item related to ‘Time Spent on a Particular Social Media’; hence these frequencies were merged into the frequencies of One Hour, Two Hours and Three Hours to make the new levels as Up to One Hour, Up to Two Hours and Up to Three Hours respectively and presented with the output of chi-square statistics.

Item	Gender	Responses				<i>p</i> -Value
		Up to One hour	Up to Two hours	Up to Three hours	Total	
I used to spend up to hour/ hours daily to interact on social media platform.	Male	24	12	17	53	.666
	Female	16	6	7	29	

Similarly, the *p*-value of chi-square test for the above item is .666 which is greater than .05. It shows that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be inferred that there is no association of gender with responses on time spent on social media *before* lockdown.

b) Association of Social Media Relationships with Type of Institution (University or College) before the COVID-19 lock-down

The responses on Higher Education Teachers' involvement in Social Media Relationships with respect to Type of Institution *before* the COVID-19 Lock-down has been presented in table 6

Table 6: Distribution of Responses on Higher Education Teachers' involvement in Social Media Relationships with respect to Type of Institution *before* the COVID-19 Lock-down

Item	Type of Institution	Responses					
		SDA	DA	N	A	SA	Total
I was very much active on social media platform.	University Teachers	3	8	13	15	8	47
	College Teachers	0	5	4	22	4	35
	Total	3	13	17	37	12	82
I was not	University	10	23	5	7	2	47

active on social media platform.	ty Teacher s						
	College Teacher s	4	18	4	7	2	35
	Total	14	41	9	14	5	82

Item	Type of Institution	Half an Hour	One Hour	One and Half Hours	Two Hours	Two and Half Hours	Three Hours	Total
I used to spend up to hour/ hours daily to interact on social media platform.	University Teachers	13	11	3	7	4	9	47
	College Teachers	4	12	1	7	6	5	35
	Total	17	23	4	14	10	14	82

The frequencies under Strongly Disagree and Strongly Agree were few against some items; hence these frequencies were merged into the frequencies of Disagree and Agree respectively which are presented in the following table 7 with the output of chi-square test.

Table 7: Cross-tabulation (2X3 contingency table) of Type of Institution X Teachers' Relationships through Social Media before the COVID-19 Lock-down

Item	Type of Institution	Responses			p-Value
		DA	N	A	
I was very much active on social media platform.	University Teachers	11	13	23	47
	College Teachers	5	4	26	35

For the above item, the *p*-value of chi-square test is .062 which is greater than .05. It shows that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be inferred that there is no association of type of institution with responses on social media activeness *before* lockdown.

Item	Type of Institution	Responses			p-Value
		DA	N	A	
I was not active on	University	33	5	9	47

social media platform.	y				
	Teachers				
	College				
	Teachers	22	4	9	35

Further, the *p*-value of chi-square statistics for the above item is .753 which is far greater than .05. It shows that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be inferred that there is no association of type of institution with responses on social media non-activeness *before* lockdown.

Similarly, the frequencies under Half an Hour, One & Half an Hour and Two & Half an Hours were few against the item related to ‘Time Spent on a Particular Social Media’; hence these frequencies were merged into the frequencies of One Hour, Two Hours and Three Hours respectively to make the new levels as Up to One Hour, Up to Two Hours and Up to Three Hours respectively which are presented with the *p*-value of chi-square statistics.

Item	Type of Institutio n	Responses			<i>p</i> -Value
		Up to One hour	Up to Two hours	Up to Three hours	
I used to spend up to hour/ hours daily to interact on social media platform.	Universit y Teachers	24	10	13	47
	College Teachers	16	8	11	35

Moreover, the *p*-value of chi-square test for the above item is .888 which is far greater than .05. It shows that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be inferred that there is no association of type of institution with responses on time spent on social media *before* lockdown.

The fifth objective of the study was to find out the Association of Teachers’ Relationships through Social Media with Gender and Type of Institution (University or College) *during* the COVID-19 lock-down. The concerned Null Hypothesis (H_0) to this objective was, there will be no significant Association of Teachers’ Relationships through Social Media with Gender and Type of Institution (University or College) *during* the COVID-19 lock-down. In order to test the Association of Teachers’ Relationships through Social Media with Gender and Type of Institution (University or College), this H_0 has also been further divided into two separate null hypotheses for Gender and Type of Institution. These are:

- c) There will be no significant Association of Teachers’ Relationships through Social Media with Gender *during* the COVID-19 lock-down.
- d) There will be no significant Association of Teachers’ Relationships through Social Media with Type of Institution (University or College) *during* the COVID-19 lock-down.

To test these Null Hypotheses, responses on items concerned with social media relationships namely; ‘Social Media Activeness’; and ‘Time Spent on a Particular Social Media’ were again

analyzed in terms of *Male & Female*; and University & College teachers with the help of Chi-square test. The item-wise numbers of responses and chi-square outputs obtained have been presented in the tables 8 to 11 followed by their interpretation.

c) Association of Teachers' Relationships through Social Media with Gender (Male & Female) during the COVID-19 lock-down

The responses on Higher Education Teachers' involvement in Social Media Relationships with respect to Gender *during the COVID-19 Lock-down* have been presented in the following table 8:

Table 8: Distribution of Responses on Higher Education Teachers' Relationships through Social Media with respect to Gender *during the COVID-19 Lock-down*

Item	Gender	Responses					Total
		SDA	DA	N	A	SA	
COVID-19 lockdown has provided me an opportunity to learn and apply new soft-wares and ICT tools; that's why I preferred it on the cost of Social Relationship.	Male	4	9	11	24	5	53
	Female	1	4	6	16	2	29
	Total	5	13	17	40	7	82
Due to over involvement in online programs; I hardly spare the time for interaction on social media.	Male	2	22	10	17	2	53
	Female	2	14	5	7	1	29
	Total	4	36	15	24	3	82
My friends and relatives have criticized me regarding my lack of interaction (non-availability) on social media platforms.	Male	2	30	9	12	0	53
	Female	5	8	8	7	1	29
	Total	7	38	17	19	1	82
COVID-19 lockdown has reduced my active participation on Social Media Platforms.	Male	2	20	11	17	3	53
	Female	3	13	6	7	0	29
	Total	5	33	17	24	3	83

<u>COVID-19 has made no effect on my active participation in social media platforms.</u>	Male	0	12	16	20	5	53
	Femal e	0	8	6	11	4	29
	Total	0	20	22	31	9	82

Item	Gender	Half an Hour	One Hour	One and Half Hours	Two Hours	Two and Half Hours	Three Hours	Total
I am spending daily to interact on social media platform during the lock-down.	Male	4	12	2	14	6	15	53
	Femal e	6	5	3	6	5	4	29
	Total	10	17	5	20	11	19	82

The responses received under Strongly Disagree and Strongly Agree were very few against the items; hence their frequencies were merged into the frequencies of Disagree and Agree respectively which are represented in the following table 9 with the *p*-value of chi-square statistics.

Table 9: Cross-tabulation (2X3 contingency table) of Gender X Teachers' Relationships through Social Media during the COVID-19 Lock-down

Item	Gender	Responses				<i>p</i> -Value
		DA	N	A	Total	
COVID-19 lockdown has provided me an opportunity to learn and apply new soft-wares and ICT tools; that's why I preferred it on the cost of Social Relationship.	Male	13	11	29	53	.730
	Female	5	6	18	29	

For the above item, the *p*-value of chi-square test is .730 which is greater than .05. It indicates that the difference in observed and expected frequencies is not significant at .05 level. Therefore, it may be concluded that there is no association of gender with responses on 'preference to learn ICT tools and soft-wares' during the lockdown.

Item	Gender	Responses				<i>p</i> -Value
		DA	N	A	Total	
Due to over	Male	24	10	19	53	.673

involvement in online programs; I hardly spare the time for interaction on social media.	Female	16	5	8	29
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For the above item, the *p*-value of chi-square statistics is .673 which is greater than .05. It means that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can, further, be inferred that there is no association of gender with responses on ‘social media time devotion’ during the lockdown.

Item	Gender	Responses				<i>p</i> -Value
		DA	N	A	Total	
My friends and relatives have criticized me regarding my lack of interaction (non-availability) on social media platforms.	Male	32	9	12	53	.362
	Female	13	8	8	29	

Further, the *p*-value of chi-square test for the above item is .362 which is greater than .05. It indicates that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be concluded that there is no association of gender with responses on ‘criticism over non-availability on social media platforms’ during the lockdown.

Item	Gender	Responses				<i>p</i> -Value
		DA	N	A	Total	
COVID-19 lockdown has reduced my active participation on Social Media Platforms.	Male	22	11	20	53	.405
	Female	16	6	7	29	

Further, the *p*-value of chi-square test for the above item is .405 which is greater than .05. It indicates that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be concluded that there is no association of gender with responses on ‘reduction in active participation on social media platforms’ during the lockdown.

Item	Gender	Responses				<i>p</i> -Value
		DA	N	A	Total	
COVID-19 has made no effect on my active participation in social media platforms.	Male	12	16	25	53	.638
	Female	8	6	15	29	

For the above item, the *p*-value of chi-square statistics is .638 which is much greater than .05. It denotes that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be inferred that there is no association of gender with responses on ‘effect of COVID-19 lockdown on active participation on social media platforms’ during the lockdown.

Item	Gender	Responses			<i>p</i> -Value
		YES	NO	Can't Say	
I think due to my involvement in online programmes has weakened my social relationships.	Male	17	30	6	53
	Female	8	15	6	29

Furthermore, the *p*-value of chi-square test for above item is .514 which is more than .05. It implies that the difference in observed and expected frequencies is not significant at .05 level. Therefore, it may be concluded that there is no association of gender with responses on ‘online programmes weakened social relationships’ during the lockdown.

Again from table 8, the frequencies under Half an Hour, One & Half an Hour and Two & Half an Hours were few against the item related to ‘Time Spent on a Particular Social Media’; hence these frequencies were combined into the frequencies of One Hour, Two Hours and Three Hours to make the new categories as; Up to One Hour, Up to Two Hours and Up to Three Hours respectively and represented with the output of chi-square statistics.

Item	Gender	Responses			<i>p</i> -Value
		Up to One hour	Up to Two hours	Up to Three hours	
I am spending daily to interact on social media platform during the lock-down.	Male	16	16	21	53
	Female	11	9	9	29

From the above table, the *p*-value of chi-square test for the item is .696 which is much greater than .05. It indicates that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be inferred that there is no association of gender with responses on ‘time spent on social media’ during the lockdown.

d) Association of Teachers’ Relationships through Social Media with Type of Institution (University or College) during the COVID-19 lock-down

The responses on Higher Education Teachers’ involvement in Social Media Relationships with respect to Type of Institution *during* the COVID-19 Lock-down has been presented in table 10

Table 10: Distribution of Responses on Higher Education Teachers' Relationships through Social Media with respect to Type of Institution during the COVID-19 Lock-down

Item	Type of Institution	Responses					
		SDA	DA	N	A	SA	Total
COVID-19 lockdown has provided me an opportunity to learn and apply new soft-wares and ICT tools; that's why I preferred it on the cost of Social Relationship.	University Teachers	4	8	11	18	6	47
	College Teachers	1	5	6	22	1	35
	Total	5	13	17	40	7	82
Due to over involvement in online programs; I hardly spare the time for interaction on social media.	University Teachers	2	21	9	14	1	47
	College Teachers	2	15	6	10	2	35
	Total	4	36	15	24	3	82
My friends and relatives have criticized me regarding my lack of interaction (non-availability) on social media platforms.	University Teachers	5	23	10	8	1	47
	College Teachers	2	15	7	11	0	35
	Total	7	38	17	19	1	82
COVID-19 lockdown has reduced my active participation on Social Media Platforms.	University Teachers	5	20	11	11	0	47
	College Teachers	0	13	6	13	3	35
	Total	5	33	17	24	3	83
COVID-19 has made no effect on my active participation in social media platforms.	University Teachers	0	11	14	14	8	47
	College Teachers	0	9	8	17	1	35
	Total	0	20	22	31	9	82

Item	Type of Institution	Half an Hour	One Hour	One and Half Hours	Two Hours	Two and Half Hours	Three Hours	Total
I am spending daily to interact on social media platform during the lock-down.	University Teachers	8	7	5	13	5	9	47
	College Teachers	2	10	0	7	6	10	35
	Total	10	17	5	20	11	19	82

The frequencies under Strongly Disagree and Strongly Agree were few against some items; hence these frequencies were combined into the frequencies of Disagree and Agree respectively which are presented in the following table 11 with the output of chi-square test.

Table 11: Cross-tabulation (2X3 contingency table) of Type of Institution X Teachers' Relationships through Social Media during the COVID-19 Lock-down

Item	Type of Institution	Responses			p-Value
		DA	N	A	
COVID-19 lockdown has provided me an opportunity to learn and apply new soft-wares and ICT tools; that's why I preferred it on the cost of Social Relationship.	University Teachers	12	11	24	47
	College Teachers	6	6	23	35

For the above item, the *p*-value of chi-square test is .412 which is greater than .05. It indicates that the difference in observed and expected frequencies is not significant at .05 level. Therefore, it may be concluded that there is no association between type of institution and responses on 'preference to learn ICT tools and soft-wares' during the lockdown.

Item	Type of Institution	Responses			p-Value
		DA	N	A	
Due to over involvement in online programs; I hardly spare the time for interaction on social media.	University Teachers	23	9	15	47
	College Teachers	17	6	12	35

For the above item, the *p*-value of chi-square statistics is .961 which is extremely greater than .05. It means that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can, further, be inferred that there is no association between type of institution and responses on ‘social media time devotion’ during the lockdown.

Item	Type of Institutio n	Responses				<i>p</i>-Value
		DA	N	A	Total	
My friends and relatives have criticized me regarding my lack of interaction (non-availability) on social media platforms.	Universit y Teachers	28	10	9	47	.428
	College Teachers	17	7	11	35	

Further, the *p*-value of chi-square test for the above item is .428 which is greater than .05. It indicates that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be concluded that there is no association between type of institution and responses on ‘criticism over non-availability on social media platforms’ during the lockdown.

Item	Type of Institutio n	Responses				<i>p</i>-Value
		DA	N	A	Total	
COVID-19 lockdown has reduced my active participation on Social Media Platforms.	Universit y Teachers	25	11	11	47	.104
	College Teachers	13	6	16	35	

Further, the *p*-value of chi-square test for the above item is .104 which is greater than .05. It indicates that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be concluded that there is no association between type of institution and responses on ‘reduction in active participation on social media platforms’ during the lockdown.

Item	Type of Institutio n	Responses				<i>p</i>-Value
		DA	N	A	Total	
COVID-19 has made no effect on my active participation in social media platforms.	Universit y Teachers	11	14	22	47	.782
	College Teachers	9	8	18	35	

For the above item, the *p*-value of chi-square statistics is .782 which is much greater than .05. It denotes that the difference in observed and expected frequencies is not significant at .05 level.

Hence, it can be inferred that there is no association between type of institution and responses on ‘effect of COVID-19 lockdown on active participation on social media platforms’ during the lockdown.

Item	Type of Institutio n	Responses			Total	<i>p</i> -Value
		YES	NO	Can't Say		
I think due to my involvement in online programmes has weakened my social relationships.	Universit y	11	29	7	47	.253
	Teachers College Teachers	14	16	5	35	

Furthermore, the *p*-value of chi-square test for above item is .253 which is more than .05. It implies that the difference in observed and expected frequencies is not significant at .05 level. Therefore, it may be concluded that there is no association between type of institution and responses on ‘online programmes weakened social relationships’ during the lockdown.

Again from table 8, the frequencies under the column of Half an Hour, One & Half an Hour and Two & Half an Hours were very few against the item related to ‘Time Spent on a Particular Social Media’; hence these frequencies were combined into the frequencies of One Hour, Two Hours and Three Hours to make the new categories as; Up to One Hour, Up to Two Hours and Up to Three Hours respectively and represented with the output of chi-square statistics.

Item	Type of Institutio n	Responses			Total	<i>p</i> -Value
		Up to One hour	Up to Two hours	Up to Three hours		
I am spending daily to interact on social media platform during the lock-down.	Universit y	15	18	14	47	.163
	Teachers College Teachers	12	7	16	35	

From the above table, the *p*-value of chi-square test for the item is .163 which is higher than .05. It indicates that the difference in observed and expected frequencies is not significant at .05 level. Hence, it can be inferred that there is no association between type of institution and responses on ‘time spent on social media’ during the lockdown.

Findings

The main findings of the study are:

1. Before the COVID-19 lockdown, 59.75% of the higher education teachers were active on social media platform.

2. Before the lockdown, the percentage of higher education teachers spending their time up to one hour, two hours and three hours daily on social media platform were 48.78%, 21.95% and 29.27% respectively.
3. Before the lockdown, Whatsapp was the major social media platform as almost three-fourth (75.61%) of higher education teachers used it whereas Telegram and Twitter weren't used by them at all.
4. A majority (i.e. 57.32%) of the higher education teachers reported that lock-down has provided them an opportunity to learn and apply new soft-wares and ICT tools but on the cost of social relationships.
5. Almost one-third (i.e. 32.93%) of the higher education teachers agreed that due to over involvement in online programs during the lock-down, they hardly spare the time for interaction on social media.
6. Almost one-fourth (i.e. 24.39%) of them opined that their closely friends and relatives complaint them regarding their non-availability on social media during COVID-19 lock-down.
7. Near about one-third (i.e. 32.93%) of the higher education teachers felt that their active participation on social media platforms has reduced during lock-down.
8. As many as 48.78% of the higher education teachers believed that COVID-19 has not affected their active participation in social media platforms.
9. 30.49% of them perceived that their social media relationships have weakened due to their involvement in online programs during COVID-19 lock-down.
10. During the lockdown, the percentage of higher education teachers spending their time up to one hour, two hours and three hours daily on social media platform were 32.93%, 30.49% and 36.58% respectively.
11. There has been a significant increase in time devoting social media platforms during the COVID-19 lock-down among higher education teachers.
12. There was a significant partial Association of Social Media Relationships with Gender before the COVID-19 lock-down among higher education teachers. Gender was significantly associated with responses on social media activeness before lockdown. Male teachers were found to be more active on social media before the lockdown.
13. There was no significant Association of Teachers' Relationships through Social Media with Type of Institution (University or College) before the COVID-19 lock-down.
14. No significant Association of Teachers' Relationships through Social Media with Gender and Type of Institution (University or College) were found during the COVID-19 lock-down.

Conclusion

Social relations are helpful in reducing the anxiety and stress; and enhancing work efficiency by addressing the mental health and social wellbeing. Attention should be paid upon emotional well-being of the teachers so that quality of teaching-learning can be enhanced (Ozamiz-Etxebarria et al., 2021). In this regard, teachers' training through online platform should be provided (Aperribai et al., 2020) during such crisis. It is necessary to establish and maintain the social relationships up to an optimum level (Jakubowski & Sitko-Dominik, 2021). Flexibility should be provided to the teachers (Çakiroğlu et al., 2022) to maintain their relationships along-

with performing routine duties effectively. Also, management and administration of the institution should provide the opportunity to teachers for mixing up, mingling up through the means of get-to-gather, celebrations of academic and social events during the normal days. Special focus should be given on those faculty members whose behaviour is not normal. Sometimes if a person share his/her problem, then his/her stress and anxiety level reduced. So, the administrators of the institutions should take the meeting regularly to know about their faculty. They should build close bond with all the staff members and provide assistance to overcome their problem. Then only we can develop the healthy minds in the body of teachers.

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