

Original Research Article

The impact and pattern of WhatsApp use among the school students during the COVID-19 lockdown in a city of Western India: a cross-sectional study

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ABSTRACT

Background: COVID-19 pandemic has been a global serious problem adversely affecting human life. This study aimed at documenting the impact and pattern of WhatsApp use among the school students during these unprecedented times.

Methods: A cross-sectional study was conducted on 434 students belonging to grade IX, X, XI and XII, of 13-19 years age group, from randomly selected four English medium schools of Surat city, India. Univariate and bivariate analysis was carried out by Epi-info software.

Results: One out of every six students (16.5%) of Class IX used WhatsApp for >1 hour per day compared to 13.6% of Class XII students (χ^2 : 23.478, DF=6, $p=0.001$). The total time spent on WhatsApp per day by 22.8% of girls and 13.5% of boys was >1 hour (χ^2 : 11.532, DF=2, $p=0.003$). Almost 22% students of Class IX were checking WhatsApp status every time they hear message tone compared to 15.2% of Class XII students at work/ class (χ^2 : 19.168, DF=9, $p=0.024$) and at home/leisure time (χ^2 : 19.009, DF=9, $p=0.025$). A quarter (23.04%) of students reported that they would continue the use of WhatsApp even if it becomes a paid application. The most common reason for using WhatsApp among boys was its user-friendly nature while for the girls it was the ease of use.

Conclusions: Girls as compared to boys spend more time on WhatsApp per day and have more number of groups where they are active. Class IX students were more prone for problematic use of WhatsApp as compared to the rest.

Keywords: WhatsApp, Students, Addiction, Social media

INTRODUCTION

WhatsApp, one of the most sought-after platform of social media was found by two former employees of Yahoo! Brian Acton and Jan Koum in January 2009. Over a period of a few years, this platform now enables the users to send text messages, images, GIFs, documents, audio messages, GPS locations, do voice and video calls etc. by using standard internet connection, in unlimited number without any restrictions.¹ A study done in Kuwait has reported the addictive potential of WhatsApp by its users.² Similarly, another study from sub-Saharan region also depicts the

negative role of WhatsApp on learning.³ One study conducted on medical students and resident doctors of North India has showcased a positive impact on their academic performances, but a negative impact on mental and social health.⁴ Study carried out in university students of Saudi Arabia also concluded the non-academic use of this application, which lead to habitual usage, leading to distraction from their academic activities thus adversely affecting their performance, social interactions and sleep duration. The sedentary lifestyle and physical inactivity will further enhance the negative impact on physical, mental and social health of the students.⁵ Considering the

gravity of the situation and also the fact that despite a considerable number of studies being done in the field of social networking sites, limited research has been done specifically about WhatsApp use and its impact.⁶ Thus, this study has been conducted as an attempt to document the pattern of WhatsApp use, its impact on school students' health and academics, which is envisaged to help in guiding future research and priorities.

Objectives

This study aims to document the pattern of WhatsApp usage among the students and also to document the effect of WhatsApp on academics. Further, this study will help to explore the effects of socio-demographic factors on WhatsApp.

METHODS

A cross-sectional observational study was conducted among 434 students belonging to grade IX, X, XI and XII and 13-19 year age group from randomly selected four English medium schools of Surat city, India; between March 2021 to June 2021. The list of all the English medium schools of Surat was collected from the District Education Office. Four schools were randomly selected from the same, namely Vanita Vishram, Vidyabharati school, RSM Poonawala Sarvajanic Experimental school and Smt. Lilaba Dahyabhai Vajeram Kanya Vidhyalaya, all situated in Surat city. All those students from these selected schools who were present on the day of study and were willing to participate in the study were enrolled.

Sample size

The prevalence of social media addiction in urban Bengaluru among pre-university students was reported to be 36.9%.⁷ Based on this prevalence, the sample size was drawn using the formula;

$$4pq/L^2$$

The sample size was calculated using 5% allowable error and 95% confidence level. Taking prevalence as 36.9% i.e., $p=0.369$, $q=1-p=0.631$. Allowable error (L) is 5%. The sample size was thus calculated to be 372. Allowing 15% non-responders, so, final sample size was 434.

Methods of data collection

Prior written consent was obtained from the 'gatekeeper' (Principal of each school) to conduct the study, following which the selected schools were visited one by one after prior appointment. The study was conducted as per timings and convenience of the concerned school. The participants were briefed about the study and its significance for around 15 minutes following which the questionnaire was given to students. Self-administered questionnaire was used for data collection, which was thoroughly explained to the participants. The students were supervised and helped if

they had any query. Self-administered tool has been documented to provide more candid responses, hence the same was used for this study.

Statistical analysis

Data was entered in Microsoft Excel ver. 16.0 and analysed using Epi-Info ver. 7.0 software. Univariate and bivariate analysis was carried out and presented as mean and standard deviation as well as parametric test were applied. Non parametric test like chi square test were applied for categorical data. Arbitrarily a p value of <0.05 considered to be statistically significant.

RESULTS

The total population studied was 434 students aged between 13 to 19 years, studying in grades IX to XII in randomly selected four English medium schools of Surat city. The mean age of the participants was documented to be 15.70 ± 1.20 years with 61.52% boys and 38.48% girls. Almost half (55.99%) of the participants were coming from joint families, with 56.4% boys and 43.6% girls having more than five family members. Almost three fourth (76.73%) of the participants were residing in Surat since last 11-20 years (Table 1).

Table 1: Sociodemographic details of the participants.

Socio- demographic details	N	%
Age group (years)		
13-15	176	40.6
15-17	242	55.8
17-19	16	3.7
Gender		
Boys	267	61.5
Girls	167	38.5
Grade		
Class IX	188	43.2
Class X	5	1.2
Class XI	184	42.4
Class XII	57	13.1
Type of family		
Nuclear	108	24.9
Joint	243	56
Three generation	80	18.4
Hostel	3	0.7
Total family members		
Less than five	301	69.4
More than or equal to five	133	30.6

Time spent on WhatsApp

On an average 57 minutes per day was spent on WhatsApp by the study participants with a standard deviation of 54 minutes. A total of 202 (46.5%) respondents were documented to be using it for more than one hour, 12.4% of these exceeding the usage for more than 2 hours and 45 minutes.

Table 2: Distribution of the study participants according to their responses related to WhatsApp use (n=434).

Questions on WhatsApp use	Responses	Boys N (%)	Girls N (%)	Total N (%)
Why do you use WhatsApp?	Easy-to-use/user-friendly	68 (68.7)	31 (31.3)	99 (22.8)
	Easy to communicate	122 (55)	100 (45)	222 (51.2)
	Time-saving	20 (87)	3 (13)	23 (5.3)
	Saves money	3 (100)	0	3 (0.7)
	Speed of information retrieval and transfer	48 (60)	32 (40)	80 (18.4)
	Others	6 (85.7)	1 (14.3)	7 (1.6)
How many hours you normally spend on using WhatsApp?	< 0.5	149 (68.9)	67 (31.1)	216 (49.7)
	0.5-1	82 (56.9)	62 (43.1)	144 (33.2)
	>1	36 (48.6)	38 (51.4)	74 (17.1)
How many years have you been using WhatsApp?	<5	243 (62.5)	146 (37.5)	389 (89.6)
	>5	24 (53.3)	21 (46.7)	45 (10.4)
How many days have you continuously not checked WhatsApp in last 1 month?	0 day / Check daily	144 (58.5)	102 (41.5)	246 (56.7)
	1-5	110 (68.3)	51 (31.7)	161 (37.1)
	>5	13 (48.2)	14 (51.8)	27 (6.2)
How many times in an hour do you generally check your WhatsApp while in class?	Every time I hear an incoming message tone.	49 (62.8)	29 (37.1)	78 (18)
	<3	148 (65)	80 (35)	228 (52.5)
	3-6	52 (54.7)	43 (45.3)	95 (21.9)
	>6	18 (54.5)	15 (45.5)	33 (7.6)
How many times in an hour do you generally check your WhatsApp at leisure time?	Every time I hear an incoming message tone.	52 (75.4)	17 (24.6)	69 (15.9)
	<3	139 (62)	85 (38)	224 (51.6)
	3-6	56 (54.4)	47 (45.6)	103 (23.7)
	>6	20 (52.6)	18 (47.4)	38 (8.8)
What percentage of information you send from your WhatsApp account is forwarded content?	All of my messages are forwarded from elsewhere	26 (83.8)	5 (16.2)	31 (7.1)
	Most of the messages are forwarded from elsewhere.	72 (65.4)	38 (34.6)	110 (25.3)
	Some of my messages are forwarded from elsewhere	81 (57.8)	59 (42.2)	140 (32.3)
	None of my messages are forwarded from elsewhere.	88 (57.5)	65 (42.5)	153 (35.3)
Would you still continue to use WhatsApp even if it becomes a paid app?	Yes	55 (55)	45 (45)	100 (23.04)
	No	209 (62.6)	125 (37.4)	334 (76.96)
Has your use of other social media apps come down after you have installed WhatsApp on your mobile?	Yes	100 (63.3)	58 (36.7)	158 (36.41)
	No	167 (60.5)	109 (39.5)	276 (63.59)

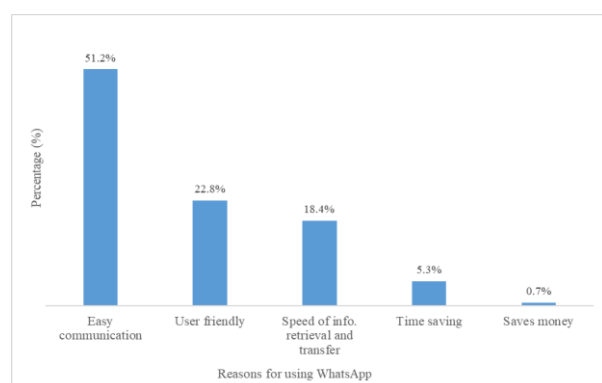
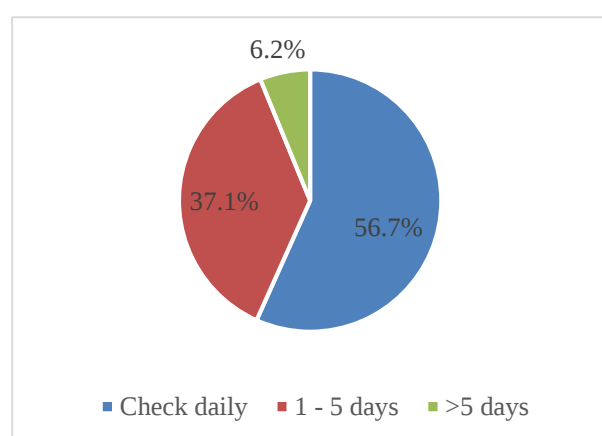
Table 3: Distribution of study participants on the basis of the most frequently used feature of WhatsApp (n=434).

What current features of WhatsApp you use mostly frequently?	1st place N (%)	2nd place N (%)	3rd place N (%)	4th place N (%)	5th place N (%)
Text messages	300 (69.1)	41 (9.4)	22 (5.1)	12 (2.8)	6 (1.4)
Photos	38 (8.8)	131 (30.2)	93 (21.4)	24 (5.5)	4 (1)
Videos	8 (1.8)	36 (8.3)	74 (17)	103 (23.7)	32 (7.4)
Forwarding info. (i.e., news, events, etc.)	63 (14.5)	50 (11.8)	50 (11.5)	56 (12.9)	45 (10.4)
Voice messages	24 (5.5)	32 (7.4)	23 (5.3)	43 (9.9)	118 (27.2)

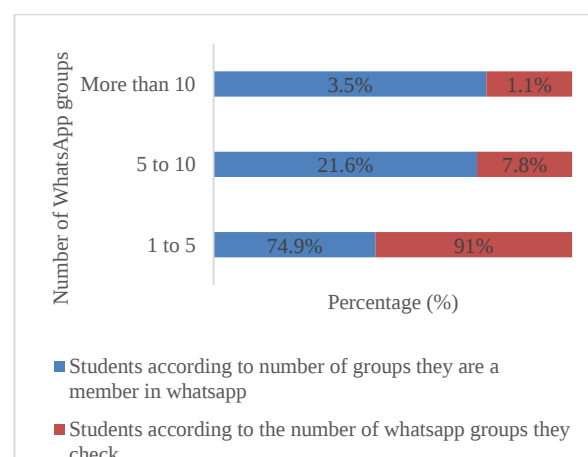
Table 4: Distribution of study participants on the basis of the type of information they forward on WhatsApp group (n=434).

What type of info. do you usually forward on WhatsApp group	1st place N (%)	2nd place N (%)	3rd place N (%)	4th place N (%)	5th place N (%)	6th place N (%)	7th place N (%)	8th place N (%)
News	103 (23.7)	81 (18.7)	45 (10.4)	13 (3)	13 (3)	15 (3.4)	5 (1.1)	2 (0.5)
Jokes/Humour	103 (23.7)	56 (12.9)	44 (10.1)	27 (6.2)	18 (4.1)	5 (1.2)	7 (1.6)	3 (0.7)
Inspirational quotes	23 (5.3)	66 (15.2)	42 (9.7)	46 (10.6)	11 (2.5)	13 (3)	6 (1.4)	2 (0.5)
Puzzles	7 (1.6)	19 (4.4)	42 (9.7)	40 (9.2)	40 (9.2)	31 (7.1)	9 (2.1)	1 (0.2)
Advertisements/ Promotional	7 (1.6)	7 (1.6)	22 (5)	23 (5.3)	31 (7.1)	37 (8.5)	21 (4.8)	9 (2.1)
Comments on other peoples' messages	29 (6.7)	23 (5.3)	16 (3.7)	24 (5.5)	24 (5.5)	22 (5)	44 (10.1)	9 (2.1)
Academic/Professional	126 (29)	25 (5.7)	19 (4.4)	16 (3.7)	22 (5)	24 (5.5)	13 (3)	2 (0.5)
Others	27 (6.2)	2 (0.5)	16 (3.7)	9 (2.1)	18 (4.1)	11 (2.5)	23 (5.3)	59 (13.6)

A total of 22.8% of girls and 13.5% of boys were found to be spending more than one hour on WhatsApp, this difference was statistically significant (χ^2 : 11.532, DF=2, $p=0.003$). Similar significant difference was observed in the WhatsApp use by the students of class IX as compared to the rest (χ^2 : 23.478, DF=6, $p=0.001$).

**Figure 1: Distribution of study participants based on reasons of their WhatsApp use.****Figure 2: Distribution of study participants on the basis of the number of days they haven't checked WhatsApp continuously.**

Nearly a quarter of students 115 (26.5%) agreed that they would spent more time on WhatsApp than intended. However, 43.1% of the students who were using WhatsApp for more than 1 hour were unaware of the extended period of time they were spending on WhatsApp. On further detailed investigation, it was observed that 10.4% of the students were using WhatsApp for more than five years which was a noteworthy observation. A total of 61.1% of the girls and 53.9% of boys were found to be checking WhatsApp daily in last one month and this difference was statistically significant (χ^2 : 6.112, DF=2, $p=0.047$).

**Figure 3: Distribution of study participants according to the number of WhatsApp groups they are part of and the number of the same they check.**

This observation was supported by the finding that 43.3% of the participants spent all of their time on WhatsApp rather than getting engaged in any other activities especially when they were alone. Among all the participants, 10.8% of the girls and 7.5% of the boys used to check WhatsApp status in leisure time more than 6 times in a day and this difference was statistically significant (χ^2 : 9.105, DF=3, $p=0.028$). Again, students from class IX had more tendency to check WhatsApp status while in class

(χ^2 : 19.168, DF=9, $p=0.024$) and also at home/leisure time (χ^2 : 19.009, DF=9, $p=0.025$) compared to students from higher classes (Table 2).

Reasons for WhatsApp use

The major reason for using WhatsApp was because of the fact that it made communication easier (51.2%, 55% for boys and 44% for girls). This was followed by user friendly nature of WhatsApp (22.8%) and speed of information retrieval and transfer (18.4%). The reasons for using WhatsApp varied according to gender. The most preferred reason to use WhatsApp for boys was its user-friendly nature (68.7%) and ease of communication for girls (45%). This difference was found to be statistically significant (χ^2 : 16.162, DF=5, $p=0.006$) (Table 2). A total of 51% of the girls and 40% of boys used WhatsApp to escape from reality or to elevate their mood (χ^2 : 5.965, DF=1, $p=0.015$). It was noted that one quarter of students (25.3%) would forward most of the messages. A total of 23.04% (21.72% boys and 25.15% girls) of the students affirmed about continuing the use of WhatsApp even if it becomes a paid app. However, it was noted that almost 3 out of every 4 participants would not use WhatsApp if it becomes a paid app. A total of 60.51% of boys responded that usage of other social media applications has not decreased even after they started using WhatsApp, this was also the case with 39.5% of the girls. The age group, class in which they are studying and the gender of the participants showed no significant association with its continuous use of WhatsApp despite becoming a paid app (Table 2).

Most used feature of WhatsApp

The most common feature of WhatsApp that is being used was sending text messages (69.1%), followed by sharing photos (51.6%), videos (23.7%) and forwarding information (12.9%). The least used feature of WhatsApp that is being used was sending voice messages (Table 3). The commonest information found to be shared by the students were those related to their academics (29%). This was followed by news (18.7%), inspirational quotes (10.6%), jokes/humour (10.1%), puzzles (9.2%) and advertisements (8.5%) (Table 4).

Regarding number of WhatsApp groups

There were 325 students (74.9%) who were a member in 1-5 groups, 94 (21.6%) in 5-10 groups while 15 students (3.5%) were a member in >10 groups. Overall, 395 students (91%) checked only 1-5 groups out of total groups in which they are a member. Similarly, the students who checked 5-10 groups and >10 groups on a regular basis were 34 (7.8%) and 5 (1.1%) respectively. Less than one tenth (31 students, 7.1%), had a tendency to forward all the messages they received in the group. The difference between the gender and the number of WhatsApp groups in which they are a member was statistically not significant (χ^2 : 5.342, DF=2, $p=0.069$). Here, girls were active on 5-10 WhatsApp groups whereas boys were active on less than 5 WhatsApp groups and this difference was

statistically significant (χ^2 : 7.648, DF=2, $p=0.022$). It was interesting to note that more girls (45.6%) than boys (35.6%) were working towards cutting down their WhatsApp usage; this association of efforts to cut down usage of WhatsApp and gender was found to be statistically significant (χ^2 : 4.242, DF=1, $p=0.039$). It was also observed that three out of every 20 students used to get late for school because of their excessive WhatsApp use. Among all the study participants, more than one-fifth (21.5%) of the students agreed that their productivity has decreased due to excessive WhatsApp use.

DISCUSSION

Our study documented the top 3 common reasons to use WhatsApp among students being ease of communication (51.2%), user-friendliness (22.8%) and speed of information retrieval and transfer (18.4%) (Figure 1). A study by Nagaraju et al done among the college students in Tirupati, India found similar results, where 88.5% felt ease of communication, 47% felt user-friendliness and 23.9% felt it was economical being free of cost.⁸ The result of our study found that 17.1% of the students were using WhatsApp for more than 1 hour in a day. A study conducted among only girl students of Saudi Arabia found that 59% of them used to spend more than 3 hours a day on social media.⁹ Another study among the university students of Sharjah concluded that the students used to spend an average of 2-3 hours in a day on social media. In addition, it also concluded that the academics was hampered for all the participants. Among them, the academics was more hampered among females than males.¹⁰ A study carried out among medical undergraduates of South India showed similar results where the students used to spend up to 3 hours per day in social media and WhatsApp was the widely used social media platform among all.¹¹ Our results found that 54% of boys and 61% of girls used to check WhatsApp status daily. Another study conducted in State Library of Shimla, India for students who were graduates and above concluded that 61% of males and 80% females used to check WhatsApp status daily.¹² This difference might be owing to the difference in the age group of the study participants as well as the methodology, but it is noteworthy that the usage of social media in adults can be hugely affected by their social media use at their younger age. Just like lifestyle disorders which manifest later in life have their roots in the form of unhealthy lifestyle habits cultivated early in life, social media addiction follows similar trajectory. Moreover, the inter relationship of social media addiction, sedentary lifestyle, lack of physical activities, obesity and other lifestyle diseases cannot be denied. Hence, social media addiction among children should be focused from early years. We found a total of 10.4% of the respondents using WhatsApp for more than 5 years. Similar study conducted by Irfan et al in Surat, India among college going participants found that more than quarter (26.7%) of the respondents were using WhatsApp for more than 5 years.¹³ This reiterates the likelihood of higher social media usage as one ages. Majority of the

participants (56.7%) in our study use to check WhatsApp daily. Similar results were obtained by Irfan et al in their study.¹³ This implies the reliance on WhatsApp by students across different ages. It was observed that the study participants would check their mobile phone frequently for the notifications of WhatsApp (Figure 2). A total of 18% of the students used to check their WhatsApp status every time they hear the incoming message tone while attending class. This shows the extent of WhatsApp use among school students particularly during class at school hours* when it is not permitted. More than half (51.6%) of the students used to check their WhatsApp status every time they hear the incoming message tone while at their leisure time. This implies the usage pattern of WhatsApp among students which may ultimately lead to its addiction. The students' involvement in excessive WhatsApp use at work/school may progress to an adverse effect on their academics leading to an unwelcoming distraction. There are many studies suggesting a negative relation of academic performances with the time spent on various social networking sites.¹⁴⁻¹⁶ In our study, 57% of the students used to check WhatsApp status daily, 17% devoted more than 1 hour every day and 23% would continue using the app even if it becomes a paid app. This points towards the at-risk students who have the probability of problematic use of WhatsApp. The top three current features of WhatsApp that is being used were sending text messages followed by sharing photos and videos. Results obtained by Meenakshi et al conducted among students in Chennai, India found that the order of preference among students were sending text messages followed by sending photos and videos and updating status.¹⁷ The results were at par with our study. Our results found that the school students used to monitor maximum of 1-5 WhatsApp groups. Similar result was obtained by Meenakshi et al. in their study were students using 1 to 4 WhatsApp groups was 82.2% (Figure 3).¹⁷ We found that 23.04% would continue to use WhatsApp even if it becomes a paid app while 36.54% agreed that their other social media use has come down after installing WhatsApp. With this we can estimate the probable at risk students being addicted to WhatsApp thereby leading to its addiction. This study was conducted during COVID-19 lockdown, hence 'school hours' are the ones when online classes were conducted which the students attended from home.

Limitations

The study was conducted only among English medium schools (even though following random sampling technique) the results obtained must be considered accordingly as they might lack generalisability.

CONCLUSION

The academics of all the students was hampered and it was observed that as the age increases, their productivity is likely to decrease due to excessive WhatsApp use. Being a girl studying in class IX had higher tendency of WhatsApp

use and to check WhatsApp status in class and/or at leisure time. The most common reason for using WhatsApp was user-friendliness and easy means of communication for boys and girls respectively. The total time spent on WhatsApp was more in girls. The total number of WhatsApp groups along with their activeness was more for girls. However, it was girls only who were trying more to reduce WhatsApp usage as compared to boys.

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REFERENCES

1. Golam M, Sarker R. Impact of Whatsapp messenger on the university level students: A sociological study. *Int J Nat Soc Sci*. 2015;2(4):118-25.
2. Sultan AJ. Addiction to mobile text messaging applications is nothing to "lol" about. *Soc Sci J*. 2014; 51(1):57-69.
3. Enyama D, Balti EV, Simeni Njonou SR, et al. Use of WhatsApp®, for distance teaching during COVID-19 pandemic: Experience and perception from a sub-Saharan African setting. *BMC Med Educ*. 2021;21(1): 23-9.
4. Singhal S, Chawla S. Effects of Whatsapp and Facebook on academic, professional and social lives of medical students and resident doctors of North India. *Int J Community Med Public Heal*. 2019;6(8):3570.
5. Kolhar M, Kazi RNA, Alameen A. Effect of social media use on learning, social interactions, and sleep duration among university students. *Saudi J Biol Sci*. 2021;28(4):2216-22.
6. Kross E, Verduyn P, Demiralp E. Facebook use predicts declines in subjective well-being in young adults. *PLoS One*. 2013;8(8):69841.
7. Ramesh MNR, Pruthvi S, Phaneendra MS. A comparative study on social media usage and health status among students studying in pre-university colleges of urban Bengaluru. *Indian J Commu Med*. 2018;43(3):180-4.
8. Y.Sudharani KN. WhatsApp usage among the Students of SVU College of Engineering, Tirupathi Y.Sudharani. *Euphytica*. 2016;18(2):22280.
9. Kolhar M, Kazi RNA, Alameen A. Effect of social media use on learning, social interactions, and sleep duration among university students. *Saudi J Biol Sci*. 2021;28(4):2216-22.
10. Alnjadat R, Hmaid MM, Samha TE, Kilani MM, Hasswan AM. Gender variations in social media usage and academic performance among the students of University of Sharjah. *J Taibah Univ Med Sci*. 2019; 14(4):390-4.

11. Bhandarkar AM, Pandey AK, Nayak R, Pujary K, Kumar A. Impact of social media on the academic performance of undergraduate medical students. *Med J Armed Forces India*. 2021;77(1):S37-41.
12. Dey S, Parabhoi L. Use of social networking site whatsapp among the user of state library, Shimla: a case study citation management software tools view project web citation view project. *Saudi J Biol Sci*. 2009;23:14
13. Irfan M, Dhimmarr S. Impact of whatsapp messenger on the university level students: a psychological study. 2019;6(1):572-86.
14. Jacobsen WC, Forste R. The wired generation: Academic and social outcomes of electronic media use among university students. *Cyberpsychol Behav Soc Netw*. 2011;14(5):275-80.
15. Skiera B, Hinz O, Spann M. Social Media and Academic Performance: Does The Intensity of Facebook Activity Relate to Good Grades? *Schmalenbach Bus Rev*. 2015;67(1):54-72.
16. Kirschner PA, Karpinski AC. Facebook® and academic performance. *Comput Human Behav*. 2010; 26(6):1237-45.
17. Meenakshi K, Anitha T, Lakshmi K. Impact and uses of whatsapp among college students. *Int J Innov Technol Explor Eng*. 2019;8(11):722-5.

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