



Associating Use of Digital Technology and Self-Reported Health Problems among College Going Students in Delhi-NCR, India

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INTRODUCTION: The increased use of digital media among college students has the tendency to cause various health problems based on the duration and medium used.

AIM: To assess the use of digital technology and self-reported health problems among college going students in Delhi-NCR, India

MATERIALS AND METHODS: Data was collected using a pre-tested and pre-validated questionnaire which was divided into three sections. The first section contained seven questions regarding demographic details, the second contained three questions regarding the device used, hours spent and the type of media assessed, while the third contained twelve questions regarding self-reported adverse events while accessing digital media. Statistical tests involved the Shapiro-Wilk test, Independent samples t-test, multivariate linear regression and the Pearson's correlation coefficient. The analysis was done using SPSS version 19.0.

RESULTS: Responses of 717 students were included in the final analysis. Most of the students were between 17-19 years (53.9%), the primary device used was smartphone (91.8%). Most students used their device for >1-4 hours (34.6%). The most common self-reported symptom was back and/or neck pain (18.4%) followed by sleep issues/ insomnia (17.7%) and headache (17.3). Multiple linear regression model revealed that good knowledge scores were significantly associated with age ($p = 0.04$) and the duration of device used ($p = 0.02$). A positive, linear, great strength of association ($r: +0.747$) and a significant relationship ($p = 0.037$) was found between self-reported health problems and the hours of device usage.

CONCLUSION: It is advised that college students be advised regarding the ill effects of digital medium without taking proper precautions.

KEYWORDS: Health, Technology, Back Pain

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INTRODUCTION

The use of digital media has grown exponentially over the years and most of its usage can be attributed to the use of the smart phone, which was once looked upon as a luxury commodity.¹ As per a recent study, young individuals have been pervasively using digital medium tools and especially social media for a variety of reasons which include entertainment, social enhancement, identity formation, and maintaining interpersonal connections.²

The launch of affordable 4G services and devices in the Indian market has made high speed constant internet a reality for all. It finds use in fields of education, marketing, communication and so forth. Various researchers have put forth the suggestion that social media has the ability provide users with a platform that overcomes barriers of distance and time to connect and reconnect with others and thereby expand and strengthen their offline networks and interactions.³⁻⁵

The world wide web today has approximately more than one billion active users, and it is estimated that in the future, this number will significantly increase, especially in developing countries. This is supported by the fact that the use of social media is prevalent across all ages and professions and is pervasive around the world.⁶

However, few researchers have associated use of digital medium with several psychiatric disorders, examples of which include depressive symptoms, anxiety, and low self-esteem. Such effects depend on many factors such as the type and duration of the used device. A few milder and initial symptoms while using digital media include headache, eye pain, postural problems, insomnia, etc.⁷

With the use of digital content on the rise, users are spending an increased time on their devices, and this



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has the potential to affect their health and hence, the present study was undertaken with the aim to assess the use of digital technology and self-reported health problems among college going students in Delhi-NCR, India

MATERIALS AND METHOD

Prior to implementation of this study, the questionnaire designing, validation, pilot study and strategies for maximum participation were discussed. The main instrument to collect data was a pre-validated and pre-tested questionnaire containing three sections and after ethical approval, was distributed to students. Necessary permissions from the management of the concerned institutions were duly obtained. The first section contained seven questions regarding demographic details, the second contained three questions regarding the device used, hours spent and the type of media assessed, while the third contained twelve questions regarding self-reported adverse events while accessing digital media. The first page of the questionnaire assured confidentiality of data, informed the study objectives and stated that participation was purely voluntary. The consent to participate (inclusion criteria) was implied when the students agreed to answer the questionnaire and they had complete freedom to decline at any time. Access to data was only to the principal investigator and no personal details (e-mail id, phone number, name etc.) were asked. Among total submissions, if a student failed to answer ≥ 1 question, it was excluded from the analysis.

The study duration was from 01st October 2016 to 28th February, 2017 (5 months) through convenience sampling so that maximum participation could be ensured. The questionnaire was distributed personally and a pilot study was done on 25 participants to validate the questionnaire and its Cronbach alpha (α) was found to be .69. The pilot study responses and incomplete responses were excluded from the main analysis.

Data analysis included tests for normalcy Shapiro-Wilk test, Independent samples t-test, multivariate linear regression and the Pearson's correlation coefficient. Coded data was sent to the statistician so that confidentiality of the data could be maintained. The analysis was done using SPSS version 19.0.⁸

RESULTS

The response rate of the present study was 79.8% as of a total of 899 responses recorded, only 717 were

complete responses and hence, were subsequently analysed.

Age characteristics and device used for accessing social media (Table 1)

Most of the students belonged to 17-19 years (53.9%) while the least belonged to >25 years of age (14.4%). The primary device used for accessing social media was smartphone (91.8%) followed by laptop (6.8%) and tablet (1.4%).

VARIABLE	n,%
AGE (in years)	
17-19	387 (53.9)
20-22	101 (14.1)
23-25	126 (17.6)
>25	103 (14.4)
PRIMARY DEVICE USED	
Smartphone	658 (91.8)
Laptop	49 (6.8)
Tablet	10 (1.4)

Table 1. Age Characteristics and Device Used for Accessing Social Media among the Students

Device duration and Use (Table 2)

It was observed that most students used their device for >1-4 hours (34.6%). Only 7.7 % of the participants used their device for >8 hours. The most commonly used digital medium used was Social media (35.9%) followed by YouTube(24.8%), music(14.1%) and movies(11.4%).

VARIABLE	n,%
DAILY USAGE OF DEVICE	
<1 Hour	134 (18.7)
>1- 4 Hours	248 (34.6)
4-6 hours	147 (20.5)
6-8 hours	133 (18.5)
>8 hours	55 (7.7)
MAIN USE	
Social Media (Including Social Messaging Apps)	258 (35.9)
Games	47 (6.5)
Youtube	178 (24.8)
Movies	82 (11.4)
Music	101 (14.1)
Other	51 (7.3)

Table 2. Device Duration and Use among Students

Self-Reported Symptom(s)	<1 hour	1-4 Hours	4-6 hours	6-8 hours	> 8hours	Total	p Value
Headache	15(11.2%)	43 (17.3%)	36(24.5%)	21(15.8%)	9 (16.4%)	124 (17.3%)	NS
Eye Pain	26(19.4%)	56(22.5%)	18(12.2%)	10(7.5%)	7 (12.7%)	117 (16.3%)	0.01*
Blurry Vision	12(8.9%)	9(3.6%)	13 (8.8%)	11 (8.3%)	5 (9.1%)	50 (6.9%)	NS
Sleep Issues/ Insomnia	34(25.8%)	35(14.1%)	23 (15.6%)	29 (21.8%)	6 (10.9%)	127 (17.7%)	0.04*
Back and/or Neck pain	12(8.9%)	58(23.4%)	33 (22.4%)	20 (15.0%)	9 (16.4%)	132 (18.4%)	0.04*
Painful Fingers	22(16.4%)	12(4.8%)	5 (3.4%)	19 (14.3%)	6 (10.9%)	64 (8.9%)	NS
Tiredness and/or Lethargy	10(7.2%)	28(11.3%)	16 (10.8%)	20 (15.0%)	7 (12.7%)	81 (11.3%)	NS
Hearing Problems	3 (2.2)	7(3.0%)	3 (2.3%)	3 (%)	6(10.9%)	22 (3.2%)	NS
Total	134 (100%)	248 (100%)	147 (100%)	133 (100%)	55 (100%)	717 (100%)	--

Table 3. Self-Reported Symptoms of the Students on the Basis of Duration Spent on Digital Media (NS: Non-significant)

Self-reported symptoms of the study respondents on the basis of duration spent on digital media (Table 3)

It was observed that overall the most common self-reported symptom was back and/or neck pain (18.4%) followed by sleep issues/ insomnia (17.7%) and headache (17.3). The least symptom reported was hearing problems (3.2%). The association between eye pain($p=0.01$), sleep issues/ insomnia($p=0.04$) and back and/or neck pain($p=0.04$) was found to be statistically significant to the duration spent by the patients on digital learning.

Association between self-reported problems, age and duration of device usage (Table 4).

The multiple linear regression model to analyze the Association between d Self-Reported Problems, age and Duration of device used revealed that good knowledge scores were significantly associated with age($p = 0.04$) and the duration of device used ($p = 0.02$).

Relationship between self-reported health problems and hours of device usage (Table 5)

A positive, linear, great strength of association ($r: +0.747$) and a significant relationship ($p = 0.037$) was found between Self-reported health problems and the hours of device usage using the Pearson's correlation coefficient (Table 5).

Predictor	Coefficient	SD	t	P value
Self-Reported Problems				
Constant	44.27	5.26	67.21	0.00
Age	-4.32	3.11	-1.43	0.04*
Duration of Device Used	1.09	0.33	1.00	0.02*

Table 4. Association between Self-Reported Problems, Age and Duration of Device Usage

DISCUSSION

In the present study, it was revealed that the most common health problem reported among college going students in Delhi-NCR, India was Back and/or Neck pain (18.4 %) and this primarily is due to poor posture while using their devices. This finding is also suggestive of the fact that students prefer viewing comfort more than postural comfort. These results is in agreement with Dol KS who reported that 21.1 % and 31.4% of university students complained of pain in their shoulder and neck due to usage of internet, respectively.⁹ Similar results were also observed by Waersted M et al.¹⁰ However, it was observed by Madeleine P et al.¹¹ among computer users that the hand and forearm regions were more susceptible to physical pain resulting from computer as compared to

Relationship Between		Karl Pearson's	CI	P Value
		coefficient of correlation		
Self-reported health problems	Hours of Device Usage	+ 0.747	0.87-45.84	0.037*

Table 5. Relationship Between Self-Reported Health Problems and Hours of Device Usage

the neck/back region.

Most of the students(34.6%) reported using digital media for 1-4 hours on an average. Such durations are acceptable as usually the college gets over in the afternoon/early evening and in particular mobile/laptop usage in college premises except for educational purposes is not allowed. Such results are consistent with Anderson KJ et al.¹² who stated that the typical Internet-using student uses the internet for 100 minutes per day. Similarly, Perry TT et al. reported that 43.8% of university students used the internet for atleast one hour a day.¹³ In contrast, Wang Q et al.¹⁴ reported that that 45% of the college students admitted that they were spending spent 6-8 hours per day checking social media sites, while 23% spent more than 8 hours; 20% spent 2-4 hours and only 12% spent less than 2 hours on this task. The results indicate that students need to be constantly reminded about the duration of their course regarding the benefits of physical exercise.

It was observed that social media (35.9%) was the most preferred digital media used by the students and is in agreement to Sponcil M et al. who reported that 45% of college students are using social media site at least once a day.¹⁵ This is consistent with the statement that the use of internet is increasing over time. Such figures are also expected to rise as universities include online courses for their students.

This study is prone to certain limitations, one of them being the lack of generalizability due to the selection of a convenience sample. There is also a tendency to either over or under-report self-reported health problems which might have affected the results. However, the possibility for such an event was significantly reduced as confidentiality of the data was assured and no personal data was obtained from the students. Despite such limitations, the results of the present study promotes future opportunities and adds data to existing literature documenting the self-reported health

problems and digital media usage among college students.

CONCLUSION

With the results of the present study, it is important that college students be advised regarding the ill effects on the used of digital medium without taking proper precautions. The need of the hour is to educate the students and encouraging them to limit their use and adopt healthy lifestyle choices.

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