

Original Research Article

Impact of an educational intervention on internet usage, among students of an urban higher secondary school in Kochi, Kerala

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ABSTRACT

Background: Two-thirds of the 1.11 billion internet users globally are from developing countries. In India, there were 243 million internet users, in 2014. The objectives were to determine the impact of an educational intervention, on internet usage, to estimate the prevalence and to assess the pattern of usage and to assess factors associated with internet usage among students of a higher secondary school.

Methods: A school-based interventional study was carried out in Model Technical Higher secondary school, randomly selected from a list of schools in the field practice area of the department. The minimum calculated sample size was 50. All students from 11th and 12th standards were included in the study. The intervention was an interactive health education session focussing on the efficient and safe use of the internet. Post-test data were collected one month after the intervention.

Results: The prevalence of internet use was 97%, with the majority starting to use the internet between the ages of 11 and 14 years. Our intervention did not bring a significant change to the number of internet users; however, there was a significant decrease in the number of students using the internet from cafés, the safety concerns of which were addressed during the educational talk.

Conclusions: The educational intervention had a positive impact on internet use among students. Therefore, identifying patterns of internet use among students and educating the youth regarding the proper use of the internet is essential.

Keywords: Adolescence, Internet, Kochi, Students

INTRODUCTION

Studies from various parts of the world and India reveal widespread internet access and use. Globally, in 2007 there were 1.1 billion internet users. By 2010, the number rose to 1.97 billion and 2017 witnessed 3.6 billion people using the internet around the world, two-thirds of whom were from developing countries.^{1,2}

India ranks second after China, with the maximum internet users, accounting to 699 million.³ As per the 2018 ICUBE report, 293 million active internet users reside in urban India and there has been an 18% annual growth in the number of internet users.⁴ In 2015, in Kerala, the mobile internet penetration was 30 million for a population of 33 million.⁵

Extensive internet use is rampant among students as well. Prevalence of internet use among school students ranged from 68.8% in Chennai and 70% in a survey by Tata Consultancy Services in various cities of India, to 88% among Chinese and 99.8% in Netherlands.⁶⁻⁸

Portals and gadgets to access the internet are numerous. It has been highlighted in reports of various studies that mobile phones and personal computers are the most common devices utilized to access the internet; 52% students preferred to access the internet via these devices according to a study in Trichy whereas Tata Consultancy Services reported this preference among 76.6% students.^{5,6,8-10}

Reports vary regarding the time students spend accessing the internet. Duration of internet use among students in Oman was 4 hours per day, which was similar to a study in Tamil Nadu.^{11,12} However, among students in a study in Varanasi, the reported use was only 2-4 hours per week.¹³

Social networking sites are popular among students, with a majority of them accessing one or more of these sites. Prem Singh et al reported that 86% students in a study done in Trichy, had accounts on social networking sites.¹⁰ Tata Consultancy Services reported that among the internet users, 90% used Facebook and 58% used Whatsapp.⁶

According to a study done in Puducherry, the use of internet was found to be significantly higher among boys (30.9%), students from urban areas (39%) and from government schools (26.3%).¹⁴

Online activities have replaced conventional methods in many areas. Among school students 71% shopped online as reported by Tata Consultancy Services.⁶ Internet was used by students in a study in Chennai, mostly for academic purposes and in Varanasi, chatting was stated as the most popular non-academic purpose for internet use.¹⁵ A study in Puducherry reported that 62% students used internet for gaming and entertainment.¹⁴

Use of internet has been reported to negatively impact academic performance, social relationships and emotional well-being. A study in Trichy reported that 60% students had reduced marks due to internet use and 33.3% spent reduced face-to-face time with friends.¹⁰

Internet addiction has been studied by many researchers with a high prevalence of addiction reported in Bangalore (34%) and Tamil Nadu (57%).¹⁶ According to the study in Bangalore, internet addiction was associated with male gender, continuous availability of the internet, using the internet less for coursework/assignments, making new friendships online and getting into relationships online.^{12,16}

Physical and psychological problems related to internet use are gaining attention. Negative academic consequences have also been associated with internet addiction. Identifying patterns of internet use which can be detrimental to health and scholastic performance and educating the youth regarding proper use of the internet, are therefore essential. The primary research objective was to determine the impact of an educational intervention on internet usage among students of a higher secondary school. Estimating the prevalence, pattern and factors associated with internet use were also part of the research objectives.

METHODS

A school based interventional study was carried out in August 2016 in Ernakulam District of Kerala. From the list of schools in the field practice area of AIMS, one school was randomly selected and all students from the higher secondary classes were included in the study. The sample size was calculated based on the prevalence of internet use among higher secondary school students in Chennai; with 95% confidence and 20% allowable error the minimum calculated sample size was 50.¹⁵ A semi structured self-administered questionnaire was used to collect information regarding socio-demographic profile, prevalence, pattern and impact of internet use. A set of 10 and 8 questions were used to assess the pattern and impact of internet use respectively. The questions for impact were scored 0 and 1 based on responses, with score 1 for favorable responses. The educational intervention was planned based on the findings of the pre-test survey. The intervention was an interactive educational session of 20-30 minute duration addressing the use of the internet, ways in which it can be misused, health problems related to internet use and options for safe and proper use of the same. The post-test survey was carried out a month after the educational intervention. Students who were not present in the school for either the pre-test or post-test were excluded from the study. Data were entered and analyzed using SPSS version 20 and the results were analyzed using chi square to look for statistical significance of association between the percentage of positively and negatively impacted students.

RESULTS

The questionnaire was administered to 459 students of grade 11 and 12, all of whom were included in the primary data analysis. A month after the educational intervention, when the questionnaire was administered, 21 students were absent, so they have not been included in the further analysis.

Majority of the students, (65.6%) were males and the mean age of students was 16±0.7 years. Table 1 shows their socio demographic characteristics.

Table 1: Socio Demographic characteristics of the study participants (n=459).

Variables	Frequency	Percentage (%)
Age in years		
≤16	282	61.4
>16	177	38.6
Religion		
Hindu	275	59.9
Muslim	64	13.9
Christian	119	25.9
Others	1	0.2
Father's education		
Graduate and above	175	38.1
Others	284	61.9
Mother's education		
Graduate and above	218	47.5
Others	241	52.5
Father's occupation*		
Profession	193	42.2
Skilled	244	53.4
Unskilled	16	3.5
Unemployed	4	0.9
Mother's occupation		
Profession	144	31.37
Skilled	80	17.4
Unskilled	5	1.13
Unemployed	230	50.1
Type of family		
Nuclear	396	86.3
Joint	27	5.9
Three generation	34	7.4
Single parent	2	0.4
Socioeconomic status		
Lower middle	106	23.1
Upper	75	16.3
Upper lower	32	7
Upper middle	246	53.6

*Fathers who were no longer alive were not included in the analysis (n=457)

The prevalence of internet use was 97.4%. Majority started using internet between the ages of 11 and 14 years. Students who used internet less than 5 hours per week were 82.1%. Majority (66.4%) accessed internet at their home, while 27.5% had multiple access sites. Majority of the students (78.1%) used mobile phones for internet access.

In our study, we found that students used internet for multiple purposes; 87% used internet for educational purposes, and 86.6% for entertainment. Majority (69.8%) of the students reported that they were only sometimes supervised by their parents and the monthly expenditure for internet access was less than Rs.150 for about 42.3% of the students.

Almost all students (95.7%) felt that the internet helped them with their academic work. Most of the students (74.3%) were of the belief that their grades are not affected by the amount of time they spend on the internet. Around 75.8% of the students felt that the internet did not decrease their physical activity. Out of all the students 44.7% reported that the information available online was helpful in improving health. Majority (69.1%) of the students did not have physical problems which they could attribute to internet use.

Out of the students who had negative physical effects attributed to internet use, most of them had eyestrain and headache. Almost all the students reported that the internet did not prompt them to use substances, like tobacco and alcohol. Most of the students (75.8%) felt that face to face interaction with family did not decrease because of internet use. Students who felt that internet usage helped reduce their stress were 46.3%.

Of the 459 students, 18.6% reported that they were exposed to sexually explicit content online. Minority of the students (31.1%) were not aware of the privacy settings in their social networking sites. The activities which the students preferred to do online were chatting with friends/relatives, followed by reading educational materials and online shopping.

There was a set of 8 questions to assess the impact of internet use on students. The questions were scored 1 and 0 for positive and negative impact, respectively. The questions to assess impact focused on whether grades have been affected by internet use decreased their physical activity, prompted in substance use or expose to sexually explicit content and reduced face to face interaction with family. The findings revealed that 68.7% of the students were positively impacted by their internet use.

Various variables were found to have association with internet use. Prevalence of internet use was significantly higher among children of parents with higher education ($p=0.03$, $OR=34.83$). There were also significant associations between duration of internet use per week (>5 hours) and factors like 'Physical problems', 'prompted substance use' and 'decreased face to face interaction' ($p<0.001$). Significant statistical associations were noted between 'grades being negatively affected' and 'longer duration of use'. Socio demographic factors like 'age <16 years', 'female gender' and 'paternal education of graduate and above' showed a significant positive impact of internet use on the students ($p<0.01$).

After the educational intervention; there was a significant reduction in the number of students who accessed internet from cafes [121 to 83 students; $OR=1.41$ (1.02-1.93)], decrease in the money spent by students to access internet ($<Rs. 150$ from 183 to 212 students; p value <0.01), a decrease in the number of students who were exposed to sexually explicit content online [from 77-52

students, OR=1.58 (1.08-2.32)] and increase in the number of students who were aware of privacy settings

[296-328 students; OR=0.68 (0.50- 0.92)] (Table 2).

Table 2: The effect of educational intervention on internet use (n=438).

Variable	Pre-test (%)	Post-test (%)	P value	OR (95% CI)
Internet use				
Yes	426 (97.3)	425 (97)	0.04 (0.84)	1.08 (0.48-2.41)
No	12 (2.7)	13 (3)		
Hours of internet use (hours)*				
<5	351 (93.2)	357 (83.8)	5.52 (0.06)	
5-10	58(13.6)	63 (14.8)		
>10	17 (4)	6 (1.4)		
Place of internet access*				
Home				
Yes	397 (93.2)	399 (93.7)	0.07 (0.78)	0.92 (0.53-1.59)
No	29 (6.8)	27 (6.3)		
School				
Yes	32 (7.5)	39 (9.2)	0.75 (0.38)	0.81 (0.49-1.31)
No	394 (92.5)	387 (90.8)		
Café				
Yes	121 (28.4)	83 (19.5)	4.53 (0.03)	1.41 (1.02-1.93)
No	355 (71.6)	343 (80.5)		
Others				
Yes	11 (2.6)	9 (2.1)	0.20 (0.65)	1.22 (0.50- 2.9)
No	415 (97.4)	417 (97.9)		
Has internet use prompted them to use substances*				
Yes	9 (2.1)	2 (0.5)	4.90 (0.08)	
No	408 (95.8)	412 (96.7)		
Don't Know	9 (2.1)	12 (2.8)		
Expenditure for internet access*				
<150	183 (43)	212 (49.8)	10.29 (0.01)	
150-300	91 (21.4)	88 (20.7)		
>300	71 (16.7)	77 (18.1)		
Don't know	81 (19)	49 (11.5)		
Exposure to sexually explicit content online*				
Yes	77 (18.1)	52 (12.2)	5.71 (0.01)	1.58 (1.08-2.32)
No	349 (81.9)	374 (87.8)		
Awareness of privacy settings in social networking site*				
Yes	296 (69.5)	328 (77)	6.13 (0.01)	0.68 (0.50- 0.92)
No	130 (30.5)	98 (23)		

*n=426, after excluding students who don't use internet.

DISCUSSION

With the internet growing rapidly across the world, it has led to a series of dramatic changes and developments in the ways of generating, storing and sharing knowledge. Teenagers of today have adopted the internet as a basic necessity, and those who do not, are left behind in this information age.

This study showed that out of 459 secondary school students, the overall internet usage prevalence is extremely high (97.4%), which is higher than that seen in a similar study conducted in Varanasi, where prevalence was 75%.¹³

In our study, internet was used by 86.6% of students for entertainment purpose was similarly in a study done in Pondicherry, 63% used it for gaming and entertainment.¹⁴

Analysing the gender wise internet usage prevalence reveals that male and female secondary school children differ significantly in their usage pattern. More male students (65.6%) were internet users than female students in this study. Similar results are seen in other studies done in Kochi, Chennai, Thailand and Riyadh city.^{9,15-18} However, in a study done in Bangalore, results showed that 56% of the students using internet were females.¹⁶ In a study done in Philippines, there was no gender wise difference in internet use.¹⁹

It was seen that most students started using the internet between the ages of 11-14 years in our study, while 60% of the students in a study in Philippines, started using internet between the ages 8-11 years.¹⁹

Most students in our study (82.1%) used less than 5 hours of internet per week (82.1%) and only 3.8% used more than 10 hours of internet weekly. The results of a study done in Varanasi showed a similar pattern, that is, 4% students used the internet for more than 8 hours a week and 78% used it for 2-4 hours per week. However, in Chennai, 18% students used the internet for more than 21 hours per week, and in Thailand most students used the internet for 5-98 hours per week, both of which are relatively more than our findings.^{13,15,18}

In our study, most students preferred to access Internet at home (92.8%). However, in other studies not as many students preferred to do so. Only 50% of students from Kochi used internet at home, in Chennai 29.9%, in Varanasi only 33% and in Thailand only 43%.^{9,13,15,18}

In Varanasi, majority of the students preferred to access the internet from cafes (52%) and this was similar to finding from a study in Puducherry (63%), but in our study, only 28.6% of the students accessed internet from cafes. In Chennai, 48.8% accessed internet at schools whereas in our study, only 7.2% students did so.^{9,13-15}

In our study, the most used gadget to access internet is Mobile devices (78.1%) and another study done in Kochi also revealed the same (76.6%).⁹

Most students in our study used internet for educational purposes (87%) whereas in the study done in Varanasi, only 40% use was for educational purposes.¹³ In studies done in Bangalore and Philippines, internet use was mostly for communication purposes.^{16,19}

Majority of the students (84.8%) were supervised while accessing the internet. Another study done in Kochi also had a similar result of 60% and in Thailand, it was 48.4%.^{9,18} Most students reported that the internet helped them in their school work (95.7%) and study done in Varanasi also showed a similar result.¹³

Most students (74.3%) said that their grades were not affected by the use of internet which contrasts with a study done in Lucknow which showed that increasing use of internet does have a negative effect on academic performance.²⁰

Research which has looked at the effect of an educational intervention showed a significant decrease in internet use and addiction among students.^{21,22} These findings are similar to our research findings.

CONCLUSION

As our study points out, educating today's youngsters about the negative effects accompanying their internet use

along with numerous positive effects might help us change their perception about internet.

Enlightening the youth regarding safe and effective use of internet is as important as informing them about the negative effects of indiscriminate use, whether for academic or non-academic purposes. Educational interventions to create awareness of the same are therefore the need of the hour for preserving and maintaining health of our youngsters.

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