Prevalence of Internet Use among Adolescents of 15 to 18 Years of Age in A Village under RHTC of A Medical College: Cross-Sectional Study

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ABSTRACT

Background: The environment in which today's adolescents are growing has changed drastically and affected their access to internet as well. The study was conducted with the aim of estimating the prevalence of internet use and pattern of internet use among adolescents of a village area.

Methods: About 114 adolescents of a village in Western Maharashtra belonging to age group 15-18 years participated in the study. They were selected based on the inclusion criteria of age group and willingness to participate in the study via universal sampling method and were interviewed with the help of semi-structured questionnaire, which included questions regarding socio-demography, internet use and its interrelationship with other variables. Chi-square test was used as a test of statistical significance to study the association between the predictor variable and the outcome with ($p<0.05$) as a level of significance.

Results: The prevalence of internet use was 99.12%. Where 74% of adolescents used internet for an average of 1-2 hours in a day and 26% used internet for an about 2-4 hours in a day. Taking $p < 0.05$ as a level of significance we found gender was significantly associated with duration of internet use ($p = 0.01$) and Purpose of internet use ($p = 0.004$).

Conclusion: Almost all adolescents have access to internet and are more inclined towards its use for non-educational purpose which can be detrimental for their educational progress and long-term career goals. Hence, monitoring of internet use by adolescents has to be done by guardians/teachers. Further studies should be conducted on cause-effect relationship to study the either way of association.

Keywords: Adolescents, behaviour addictive, internet use, mental health

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Introduction

The environment in which today's adolescents are growing has been changed drastically and their access to internet as well (1, 2). Internet has become an important tool for education, entertainment, communication, and information-sharing (3). According to the 2011 Census, India is home to 253 million adolescents aged 10-19 years, representing 20.9 percent of the country's total population (4). In India, internet usage has surged dramatically, rising from 4% in 2007 to 48.7% in 2022. According to the IAMAI KANTAR Report titled 'Internet in India,' out of 759 million active internet users in 2022, 399 million are from rural areas, which accounts for over 50% of the total active users (5). While internet use and access to it has increased substantially, researchers have found that the majority of the users are adolescents and young adults. Which may further lead to maladaptive internet behavior termed 'internet addiction' (6). This age group is particularly vulnerable and may find the internet appealing as a form of escape, where they often seek acceptance. Social networking platforms like Facebook, WhatsApp, YouTube, and online gaming are especially attractive to them (7). However, these adolescents are more prone to develop addictive behaviour mainly due to easy access and social networking. Whereas excessive, uncontrolled use of Internet can lead to problematic Internet use (PIU) which is defined as "a constellation of thoughts, behaviours, and outcomes, rather than a disease or addiction" (3, 7, 25).

However, with the increasing prevalence of smartphones and internet usage among adolescents, there are growing concerns that excessive reliance on these technologies may pose significant risks, potentially leading to psychological and physical issues in later life. The rise of problematic internet use among adolescents is becoming a pressing public health issue, with potential repercussions for both families and society at large (8-11). It is also associated with some social and psychological variables which may lead to various legal problems such as being posting hateful post on social media, posting threats online, depression, lower self-esteem and poor mental health (12, 13, 25).

Over the past decade, internet access and usage within this age group have surged, prompting more research focused on adolescent internet habits compared to the adult population. (14). The study was conducted with the objective to estimate the prevalence of internet use and various patterns of internet use among adolescents.

Methods

A cross-sectional study was conducted in a village under Rural Health Training Centre (RHTC) of a medical college in western Maharashtra during the period April-June 2023 with the help of semi-structured questionnaire to estimate the prevalence of internet use. The study was conducted after obtaining permission from both the college authorities and Institutional ethics committee. The nature of study and broad categories on which questions are to be asked was explained to the study subject in presence of guardian/parents, assent from the study subjects and consent from parents was taken before collecting the data.

Participants

Sample size was calculated using formula i.e. $n=Z^2pq/d^2$ by taking a prevalence of 98.9% from previous study, absolute precision of 2%, 95% confidence interval and 80% power, it came out to be 104, by taking 10% of non-response rate we got the final sample size as 114 (15). The study subjects selected for research were from age group 15-18 years. Study subjects using internet for at least last 6 months were selected through universal sampling method. They participated in the study on their own will without any peer pressure or extra influential factors. There were no monetary benefits given or rewards given for participation in the study. Thus, a total of 114 adolescents were included in this study.

Materials

For the study semi-structured questionnaire was used to collect the data from the participants via one-to-one conversation by asking the questions

and noting down the responses given. Questionnaire consisted of 2 major sections first being the demographic details of the participant and second the internet use pattern.

Demographic details- This part of questionnaire included questions assessing participants information such as name, age, gender, date of birth, address, education and contact details.

Internet use pattern-This part of questionnaire consisted of questions mainly on smartphone use, internet use, purpose of internet use and duration of internet use.

Statistical analysis

The EPI INFO 7.2.5.0 version was used for statistical analysis of the data collected. The test of statistical significance used was chi-square test and p-value of < 0.05 as the level of significance.

Results

The prevalence of internet use within the study population was 99.12%. Whereas, among total internet users 52 (100%) were boys and 61(98.38%) were females (Table 1).

Table 1. Distribution of subjects according to socio-demographic variables and internet use pattern

Variables	Number (Percentage)
a) Age (years)	
15	28 (24.56%)
16	48 (42.10%)
17	21 (18.42%)
18	17 (14.92%)
b) Gender	
Male	52 (45.61%)
Female	62 (54.38%)
c) Class	
9th	15 (13.15%)
10th	62 (54.38%)
11th	23 (20.17%)
12th	14 (12.28%)
d) Have a smartphone	
Yes	113 (99.12%)
No	01 (0.87%)
e) Internet usage	
Yes	113 (99.12%)
No	01 (0.87%)
f) Duration of Internet use	
0-1 hour	19 (16.81%)
1-2 hours	65 (57.52%)
2-4 hours	28 (24.77%)
> 4 hours	01 (0.88%)
g) Purpose Of internet use	
Online games	08 (7.07%)
Social media (Facebook, Instagram or Snapchat)	41 (36.28%)
Financial reasons	02 (1.76%)
Entertainment	32 (28.31%)
Educational	30 (26.54%)

In the present study 114 adolescents participated among which 76 (66.66%) participants were from age group 15-16 and 38 (33.33%) participants were from age group 17-18. 113 adolescents gave history of having a smartphone and using internet in the device (Fig.1).

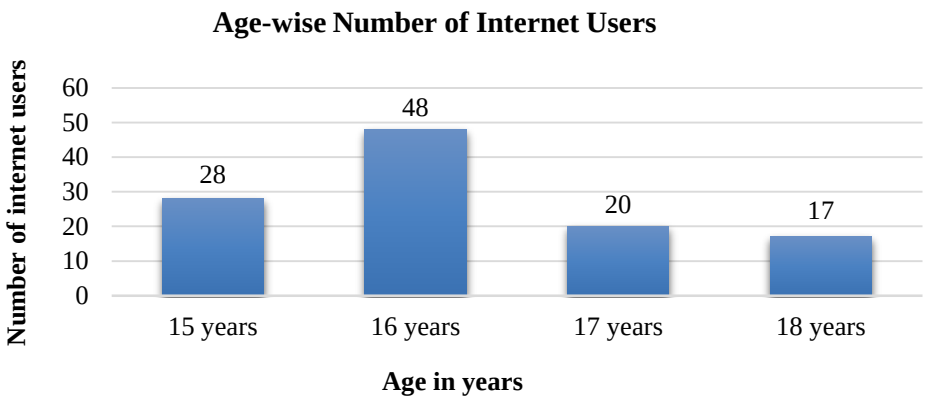

Figure 1. Age-wise use of internet among adolescents.

It was noted that most of the study participants were using internet for last 1-2 years and the duration of internet use among 65 study participants was for 1-2 hours per day whereas 28 of them used internet for 2-4 hours per day and 1 participant used internet for > 4 hours per day (Fig.2)

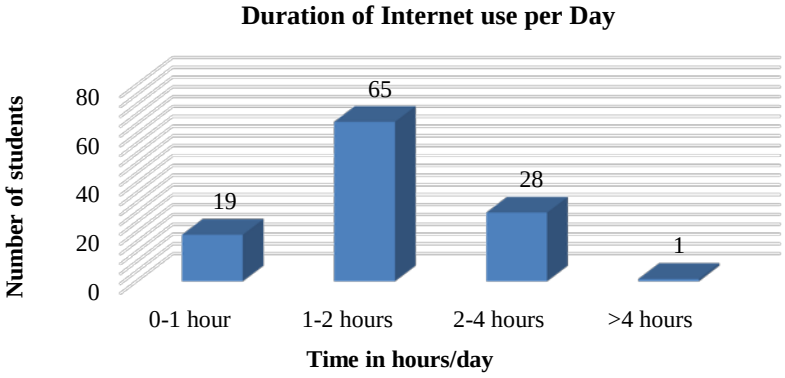

Figure 2. Duration of Internet use per day by adolescents.

Among all the participants, the most prevalent method of accessing the internet was via mobile devices, and the primary location for internet use was their own homes. The main reasons for using the internet were education, entertainment (such as watching movies and TV shows), and social networking. Of which 36.28% adolescents used internet for social media networking, 28.31% used for entertainment purpose, 26.54% used for educational purpose and rest 8.87% participants used internet for other than above mentioned purpose (Fig.3)

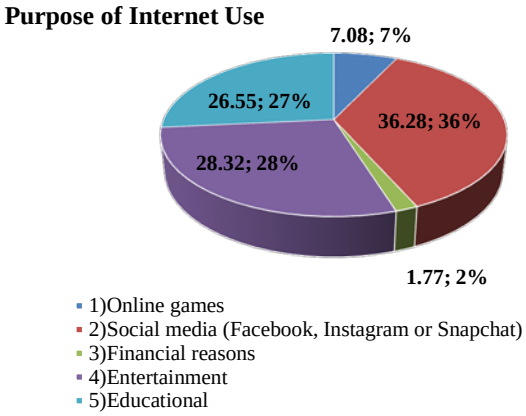

Figure 3. Purpose of internet use among adolescents

On applying the chi-square test to the qualitative data obtained and taking p-value of < 0.05 as the level of significance, significant association was seen between gender and duration of internet use [Chi-square value (□2) = 5.97, p = 0.014)] Table 2.

Table 2. Association of gender with duration of internet use among adolescents

Gender	Duration of internet use		Total
	0-2 hours	> 2 hours	
Male	33	19	52
Female	51	10	61
Grand Total	84	29	113

(□2 = 5.97, p = 0.014)

In this study we found there was no significant association between class in which study participants are taking education and purpose of internet use [Chi-square value (□2) = 0.96, p = 0.32)] Table 3 and there was significant association seen between gender and purpose of internet use where on contrary most of the boys used internet for entertainment and social media networking purpose, where girls used internet more for educational purpose when compared to boys [Chi-square value (□2) = 7.93, p = 0.004)] Table 4.

Table 3. Association of class and purpose of internet use among adolescents

Class	Purpose of internet use		Total
	Entertainment	Other	
9^{th} & 10^{th}	53	24	77
11^{th} & 12^{th}	28	8	36
Grand Total	81	32	113

(□2 = 0.96, p = 0.32)

Table 4. Association of Gender and purpose of internet use among adolescents

Gender	Purpose of internet use		Total
	Entertainment	Other	
Male	44	8	52
Female	37	24	61
Grand Total	81	32	113

(□2 = 7.93, p = 0.004)

Discussion

In the current study, the prevalence of internet use among adolescents of a village was found to be 99.12% and most of the adolescents were using the internet on regular basis since past few years. These findings in our study were almost similar to study conducted in school going adolescents where the prevalence of internet use among school going adolescents was 98.9% (15). The main reason for internet use among majority of the adolescents was for entertainment and social media purpose but the percentage of internet use for educational purpose was more in female group contrary to male group where they mainly used internet for entertainment purpose (16). Suggesting that adolescents are the larger group of active users for deriving entertainment by the use of internet in smartphones. All the adolescents from village enrolled in this study have given history of home access to internet specifically on mobile and this gives them readily access to internet which enables greater use of internet due to easy availability of source at ease and no travel or search for access to internet use at a distant place.

The illicit behavior with respect to internet use was found in majority of adolescents in this study, who used internet on daily basis for about 2-4 hours/day. In this aspect of internet use for > 2 hours a day there were more male participants who used to surf internet for 2-4 hours/day which was mainly for entertainment and social media purpose, in spite of more number of females enrolled in this study the proportion of male participants was more in the category of duration of internet use for 2-4 hours/day indicating that adolescent males have more tendency of prolong internet use and higher chances of illicit behavior resulting out of excess internet use, these findings of male being spending more time on internet was also reported in a previous study (17). Social media platforms like Facebook and Instagram have emerged as key venues for forming online friendships. Research by Hong et al. (18) indicates that traits associated with depression, coupled with Facebook use, are significant predictors of Facebook addiction, which can be an early indicator of broader internet addiction (19).

Here in our study, we found that gender and purpose of internet use had significant association indicating that the internet use was more in male participants and also the purpose of internet use in them was more for entertainment and social media purpose rather than using it for educational purpose. Whereas contrary to this we found more proportion of female participants were inclined towards use of internet for educational purpose when compared with the proportion of male participants for same reason. Which is similar with the findings in previous study conducted in Bengaluru by Krishnamurthy and Chetlapalli states that reduced use of the internet for coursework was a predictor of internet addiction (20). Where adolescents using internet for educational purpose is form of constructive utilization of internet rather than using it more for entertainment and social media purpose which is preventing them from getting addicted to it. These findings suggest of illicit internet use by participants mainly for the purpose of entertainment and social networking rather than using it for educational purpose which puts them at the risk of internet addiction probably due to the psychological and stress cope up mechanism which increases their craving for internet use for longer duration due to unrestricted access to internet services and minimal or absent parental supervision. With above findings it is suggested that adolescents used internet mainly for non-essential purpose (entertainment, social media and online games) rather than for essential purpose. Which was seen in previous study by Srijampana et al. (21)

In this study we found that there was statistically significant association between gender and the length of time spent on the internet. Where male participants have used internet for more duration in a day as compared to the female adolescents ($p = 0.01$) where these adolescents are at more risk of developing internet addiction if not intervened on right time for excessive use of internet (22). Various study has reported that such excessive and

immoderate use of internet in future can lead to internet addiction which is associated with the psychological symptoms as some individuals use the internet as a way to find relief from the psychological stress in day-to-day life with different reasons for different age groups (22, 23, 25). Here in this study the adolescents are more prone for stress related to studies and the online relationships which can enforce them to use internet to cope up with such stress related factors and may lead to internet addiction. It specifically includes avoiding cognitive tasks and engaging in activities that implicitly serve to distract from responsibilities or tasks that need to be completed (23-24).

The findings of this study will aid in understanding the patterns of internet usage among adolescents of village area and its association with demographic variables such as age and gender of study group so that we can intervene at earliest and prevent further risk of internet addiction in adolescents with current pattern of internet use.

Conclusion

Majority of study participants were females and most of them used internet for 1-2 hours/day. The primary reasons for internet use among the study population were social networking and entertainment. The majority of internet use by study participants was for non-educational purpose. There are few limitations to the study; though the data collection strategy was better planned, biased responses might be present as cross questions regarding the responses were not done. Moreover, the data does not delve into the specific duration spent on various internet activities (such as education, social media, entertainment, etc.), and the long-term effects of internet usage on mental health were not studied in this research.

The future implications of the study findings such as unregulated use of Internet can lead to significant consequences such as internet addiction and resulting out of its serious psychological illness such as depression, inattentiveness in the class and low self-esteem.

To tackle this issue, we can plan the BCC activities with the help of school teachers to guide them on appropriate and essential use of internet and also encourage them to develop interest in outdoor sports rather than using internet and to promote face to face peer interactions. Set a defined optimal time for internet use (< 2 hours). Also, there is a need to conduct more such studies on larger scale with multicentric approach to find use of internet and other factors associated with it, so that appropriate and timely action can be taken in the welfare of such adolescents taking into concern those living in village area, as the number of internet users are rapidly increasing in village area as compared to urban area.

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Conflicts of Interest

There are no conflicts of interest.

Funding

Nil

Ethical considerations

The study was carried out in accordance with the institutional ethical standards and the Helsinki Declaration. Before the start of study institutional ethics committee permission was taken also the assent and informed consent was taken from the participating adolescents and their parents/caretakers.

Code of ethics

Ref no: BJGMC/IEC/Pharmac/ND-Dept.0423086-086.

Authors' contributions

M. BV wrote the research protocol and also the first draft of manuscript and managed the statistics part; D. JV, K.V and T.M has designed the research, helped in preparing the study protocol, revised the manuscript and supervised the study

progress; K.V has contributed in the data compilation, organization and analysis part along with it reviewing the statistic part. All authors contributed to the preparation of the final manuscript and jointly approved the final version for submission.

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