

ORIGINAL ARTICLE

**EXPLORATION OF TECHNOLOGY USE PATTERN
AMONG TEENAGERS AND ITS RELATIONSHIP
WITH PSYCHOLOGICAL VARIABLES**

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Abstract

Objectives: Technology use is common among adolescents. It is due to availability, curiosity and as a coping method to manage boredom, fill up free time and for having pleasant experience. The present study aims to explore the pattern of information technology usage among 200 adolescents in the age group of 13-17 years and its impact on psychological distress. **Methods:** Semi structured interview schedule, Technology addiction survey and Strength and difficulty questionnaire on 200 randomly selected participants. **Results:** Addictive use of gaming was present for 39 adolescents (19.5%); addictive use of mobile/cell phone was present in 31 adolescents (15.5%) and addictive usage of Internet was present among 36 (18%) of them. It was associated with difficulties in various daily activities such as academics, sports, meeting friends, socializing and emotional difficulties. **Conclusions:** This study found addictive use of technology devices and social media among adolescents. This Study has implications for screening technology usage pattern among adolescents; its relation with psychological distress and need for development of intervention programme for technology addiction. *ASEAN Journal of Psychiatry, Vol. 17 (2): July – December 2016: XX XX.*

Keywords: Teenagers, Addiction, Information Technology

Introductions

Technologies like mobile phones, internet, television, gaming, and social networking sites are the frequently used technology devices and applications in the developed and developing countries. There are 8.5% of the Internet users in India. Most of the internet users are males in the age group of 16 to 45 years [1]. 91.7 % of the teenagers between 14 and 17 have their own mobile phones and used it as a mediums for a better communication [2]. Adolescents are using excessively due to anonymity, asynchronicity, and accessibility, of online communication. It stimulates controllability of online self-presentation and self-disclosure among adolescents [3]. They use the SMS function more frequently than older people [4].

9% of 3034 children displayed signs of video game addiction. These children are more likely to receive the diagnosis of attention deficit disorder or attention deficit and hyperactivity disorder. It effect users family life, health, moral values and school performance. A meta analysis of 91 studies of high-school students' problematic mobile phone use revealed presence of loneliness, anxiety due to lack of phone, psychiatric and sleeping disorders [5]. 18.3% of pathological internet users had academic, social, and interpersonal problems. The pathological Internet users had lower self-esteem and were more socially disinhibited [6].

From a sociological perspective, these technology communication use narrows

people's interaction and thus prevents them from having new and different social environments [7]. Due to its usages, people also experience negative emotions in actual or anticipated interactions with computers [8, 9]. Studies also revealed implication of the risks and opportunities of online self-presentation and self-disclosure for the adolescents' psychosocial development, including identity (self-unity, self-esteem), intimacy (relationship formation, friendship quality, cyber bullying), and sexuality (sexual self-exploration & unwanted sexual solicitation) [10]. Therefore, excluding oneself from the social surrounding or unwillingness to be included, losing control (as opposed to unwillingness that causes someone to overindulge in activities) and salience (desire to be dominant in activities) were the signs of addictive behavior [11]. A Pew Research Center survey found that nearly 90 percent of teachers believe that digital technologies were affecting the attention spans among teenagers. Koreans use mobile phone not for meeting new people but for keeping in touch with already-known people and the same problem was also noticed among people in Italy [12, 13].

The most frequent type of Internet use was online games, representing 50.9% of Internet users, whereas 46.8% used it for information service. 8.2% has Internet addiction and it is more among males who visited cyber café. 70.8% of the adolescents (within the age group of 12 to 18) in Greece had access to the Internet. 11% of them frequent internet users fulfilled five YDQ criteria [14]. Examination marks were negatively correlated with gaming frequency among 713 students. i.e. Frequent gamers generally achieved lower marks than less frequent gamers [15]. Subjects who had higher levels of trait anxiety, aggressive behavior, and neuroticism were at a higher risk for video game addiction [16]. Korean college students experienced anxiety if they did not use mobile phones in a day [17]. People also experience negative emotions in actual or anticipated interactions with computers [8, 9].

Adolescents are using technology for gratification which includes self development, wider exposure, user friendliness, relaxation, career opportunities and global exchange.

General and excessive use of technology leads to a variety of physical health issues/ risks. As of 2010, there are 52 million active users of internet: the usage has gone up from 9.3hrs/week to 15.7hrs/ week and around 4% browse through mobiles [18] Negative effects of technology over use involved in such as academic, social, emotional, financial, occupational and physical problems. In Indian context, 12 % of youth have problematic use of internet [19] 1-2% of youth misrepresented their identity on social network sites and 5% had addictive use of social networking ²⁰. The present study explored the technology usage (i.e: mobile phone/ video game/ internet/ social networking sites) pattern among adolescents who were studying in 8th to 12th standard. The findings have implications in understanding the pattern of technology usage among adolescents. It will be helpful for promotion of Healthy use of technology and promotion of wellbeing.

Methods

The main aim of the study was to explore information technology usage patterns among adolescents and its correlates with psychosocial variables. Other objectives were (i) to estimate the pattern of information technology usage among the adolescents, (ii) to estimate the psychological impact of information technology usage among the adolescents and (iii) to assess psychosocial correlates of information technology usage among the adolescents.

Sample

A total of 200 students in the age group of 13 to 17 years aged, studying from 8th to 12th Standard were selected from the 2 Schools and Pre-university college of Bangalore city using random sampling. The subjects (Male and Female students) were using one of available technology. Students with the presence of any health problems which interfered in taking the survey were excluded.

Assessment

1. **Semi Structured Interview Schedule:** It was prepared by investigator to collect information pertaining to socio-

demographic details, age of initiation and maintaining factors for technology use, duration of use per day per activity/ group activities, leisure activities, physical activity, impact of technology use on daily activities.

2. **Information Technology Addiction survey:** It was developed in 2013 [20] for the Indian Council of Medical Research (ICMR), India, for exploration of behavioral addiction in the community. An adopted version of Technology addiction survey for the present study consists of 24 items. The questions were evolved using the domains of control, craving, compulsion and consequences. The items were evolved for the assessment of mobile/ cell phone addiction and gaming addiction. Each domain has 4 items to be scored in the range from None (0) to always (4). Score of 12 and above indicate presence of addiction. The content validity was established through focus group discussion.
3. **Strength and Difficulty Questionnaire (SDQ).** It is a brief behavioural screening questionnaire for 3-16 year olds. Low-risk/ general population version will be used, in which three-subscale division of the SDQ into 'internalizing problems' (emotional+ peer symptoms, 10 items), 'externalizing problems' (conduct+ hyperactivity symptoms, 10 items) and the prosocial scale (5 items) [22].
4. **Face book intensity questionnaire:** It measure Facebook usage beyond simple

measures of frequency and duration, incorporating emotional connectedness to the site and its integration into individuals' daily activities [23].

Procedure

The school and colleges based in Bangalore city were approached for getting their permission to collect data from the students who were studying in their school. Informed consent were taken from the school, colleges, participants and parent prior to administration of the semi Structured Interview Schedule, technology Addiction survey, facebook intensity questionnaire and strength and difficulty questionnaire were administered. It was carried out in a group of 10-15 students.

Statistical Analysis

Descriptive statistics such as mean, standard deviation, frequency and percentages along with 95% confidence intervals were used to express data. Relationship between socio-demographic variables and technology addiction, other psychological variables, relationship satisfaction were analyzed using student's t-test Pearson's product movement correlation and non parametric tests like chi-square were used.

Results

A total of 200 adolescents (male (n=100) and female (n=100) 100 high school aged between 13-15years) in the age group of 16-17 years were taken. 79% were from the nuclear families. 83 % were from the middle socioenonomic families.

Table for sociodemographic profile

Table 1. Pattern of information technology addiction screening among adolescents

| Variable | | Sample | Score above 12 indicates -addictive use |
|--------------|-----------|------------|---|
| Gaming | Age range | 13-15years | 20(10%)(6.5% male & 3.5%female) |
| | | 16-17years | 19(9.5%) |
| Mobile phone | Age range | 13-15years | 10(5%)(3.2%male &2.1% female) |
| | | 16-17years | 21(10.5%)(7.5% male & 3% female) |
| Internet | Age range | 13-15years | 10(5%)(2.7% male and 2.3% female) |
| | | 16-17years | 24(12%)(7.7% male &4.3% female) |

The Table 1 revealed presence of increase percentage addictive use for gaming,

mobile phone and internet in the 16-17 years age group and more for the males.

Table 2. Pattern of Facebook addiction screening among adolescents

| Variable | Sample | | Number | Total (%) | Mean | S.D | t-test |
|------------|-----------|------------|-------------------------------------|------------|-------|-------|---------------|
| Facebook | Gender | Male | 47(23.5%) | 93 (46.5%) | 19.57 | 7.60 | 1.240 |
| | | Female | 46(23%) | | 17.99 | 10.22 | |
| | Age range | 13-15years | 50(25%)(14% male & 11% female) | 93 (46.5%) | 20.30 | 6.84 | 2.412* |
| | | 16-17years | 43(21.5%)(11.5% male and 10 feamle) | | 17.26 | 10.58 | |
| Total | 200 | | 93 | | | | |
| Percentage | | | (46.5%) | | | | |

**p<0.05*

Table 2 showing the results of screening for addictive pattern of Facebook usage among adolescents. Totally 93 (46.5%) of the participants has shown the addictive pattern of facebook usage among which 47(23.5%) of them were male and 46(23%) of them were females. 50 (25%) of the adolescents of 13-15 years age range and 43(21.5%) of 16-17 years

age ranged adolescents were screened to have addictive pattern of facebook usage. The comparison of mean of two gender group was not found any significant difference between the groups but there was significant difference was found between the 2 age groups (t- score 2.412*).

Piechart-1: Different activities shared by the adolescents in their facebook account

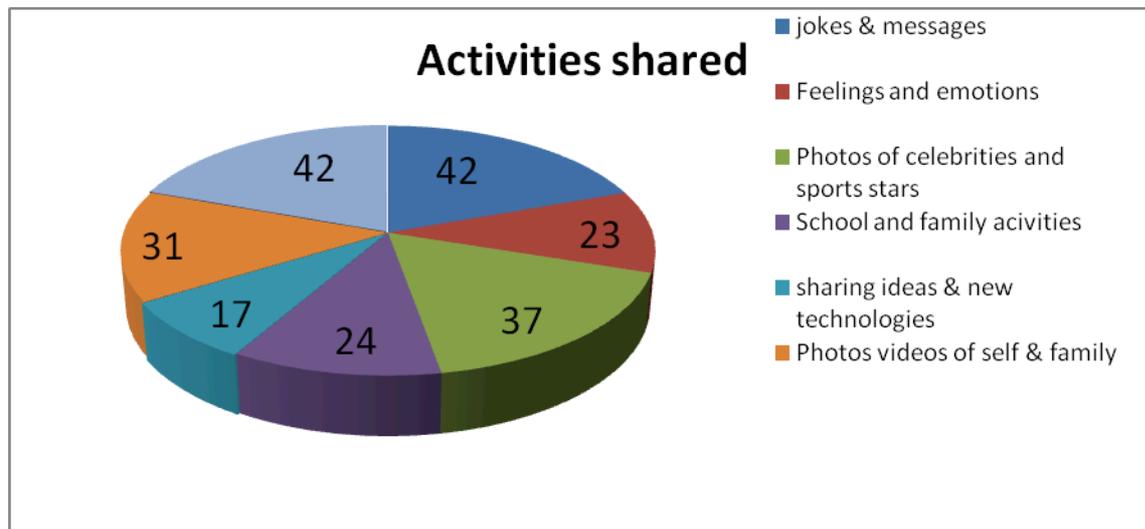


Table 3. Pattern of psychological distress relating to presence of online sexual content

| Variable | Came across sexual content | Percentage | Felt distressed | Percentage |
|----------|----------------------------|------------|-----------------|------------|
| Facebook | 65 | 32.5% | 41 | 20.5% |

Table 3 shows the reporting 65 (32.5%) of adolescents coming across sexual content in online and 41 (20.5%) of them experiencing

psychological distress relating to presence of online sexual content.

Table 4. Pattern of Psychiatric distress (General health aspects) among adolescents

| Psychological distress Score | Frequency | Percent |
|------------------------------|-----------|---------|
| Distress absent | 17 | 8.5% |
| Distress Present | 183 | 91.5% |

Table 4 shows the pattern of Psychiatric distress (General health aspects) among adolescents. 183 (91.5%) of the adolescents

reported psychiatric distress and 17 (8.5%) of them only not reported any sort of psychiatric distress.

Table 5. Difficulties reported by the students because of excessive technology usage

| Areas of difficulty | Number | Percentage | Total percentage |
|---------------------|------------|------------|------------------|
| Academics | 13-15years | 75(37.5%) | 132 (66%) |
| | 16-17years | 57(28.5%) | |
| Sports | 13-15years | 60(30%) | 129(64.5%) |
| | 16-17years | 69(34.5%) | |
| Friends | 13-15years | 75(37.5%) | 138(74%) |
| | 16-17years | 63(31.5%) | |

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| | | | |
|-------------------|------------|-----------|------------|
| Relatives/ family | 13-15years | 65(32.5%) | 122(61%) |
| | 16-17years | 57(28.5%) | |
| Social gatherings | 13-15years | 65(32.5%) | 110(55%) |
| | 16-17years | 45(22.5%) | |
| Any other | 13-15years | 45(22.5%) | 95(47.5) |
| | 16-17years | 50(22.5%) | |
| Total (overall) | 13-15years | 57(28.5%) | 147(73.5%) |
| | 16-17years | 90(45%) | |

Table 5 showing the Difficulties reported by the adolescents because of excessive technology usage pattern of technology usage. 147 (73.5%) of the adolescents reported dysfunction in one or other activities . 132 (66%) of them reported difficulty in academics, 129 (64.5%) of them had difficulty in participating sports, 138 (74%) of them had

difficulty in meeting friends, 122 (61%) of them reported difficulty to spend time with family/ relatives, 110 (55%) of the adolescents reported difficulties to attend social gatherings, and 95 (47.5%) of them reported difficulty in other miscellaneous activities of their life.

Table 6. Frequency of adolescents who expressed need to decrease technology usage

| Technology device | Total | Percent |
|-------------------|-------|---------|
| Internet use | 39 | 19.5% |
| Cell phone | 41 | 20.5% |
| Gaming | 5 | 2.5% |
| Facebook | 44 | 22% |

Table 6. A total of 19.5 % of them expressed their willingness to change the pattern of using internet and time spend on it, 20.5% reported need for minimizing the usage of cell/ mobile

phone. 2.5% reported need to change their video gaming pattern and 22% expressed the need to change/ stop the pattern of facebook usage.

Table 7. Comparison of the means of the 2 age groups 13-15years and 16-17years

| Variables | 13-15years | | 16-17years | | t value | p value |
|----------------|------------|---------|------------|----------|----------------|---------|
| | Mean | SD | Mean | SD | | |
| GHQ total | 6.3000 | 2.80872 | 4.5000 | 2.12964 | 5.107** | <0.001 |
| Video games | 6.3000 | 3.52624 | 4.6800 | 4.43330 | 2.860** | .005 |
| Mobile phone | 4.9500 | 3.54588 | 5.9100 | 4.19016 | -1.749 | .082 |
| Internet | 4.2000 | 3.54766 | 4.6300 | 4.59612 | -.741 | .460 |
| Facebook total | 20.3000 | 6.84681 | 17.2600 | 10.58360 | 2.412* | .017 |

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| | | | | | | |
|----------------------|--------|---------|--------|---------|-----------------|--------|
| Emotional difficulty | 2.9000 | 2.43916 | 3.4100 | 2.73065 | -1.393 | .165 |
| Conduct problems | 2.8500 | 1.43108 | 2.0000 | 1.85320 | 3.630** | <0.001 |
| Hyperactivity Scale | 3.8500 | 1.80557 | 3.7600 | 1.77024 | .356 | .722 |
| Peer problem | 5.4500 | 1.66591 | 5.8300 | 1.62714 | -1.632 | .104 |
| Prosocial behavior | 7.1500 | 1.88763 | 8.6900 | 1.36844 | -6.605** | <0.001 |

*p<0.05

**p<0.02

Table 7 reveals the comparison of 2 age groups 13-15years and 16-17years adolescent's mean scores on study variable. The t-table reveals the significant difference between mean scores of age groups 13-15years and 16-17years in psychiatric distress,

video gaming, facebook usage pattern, conduct problems and prosocial behavior. There was no significant difference between Mobile usage, watching television, Internet usage, Emotional difficulty, hyperactivity and peer problem between the 2 age group.

Table 8. Comparison of male and female scores on study variable

| Variables | Male | | Female | | t value | p value |
|----------------------|---------|---------|---------|----------|-----------------|---------|
| | Mean | SD | Mean | SD | | |
| GHQ total | 5.5300 | 2.50436 | 5.2700 | 2.78472 | .694 | .488 |
| Video games | 4.8600 | 4.12193 | 6.1200 | 3.95244 | -2.206* | .029 |
| Mobile phone | 5.4800 | 4.03640 | 5.3800 | 3.78135 | .181 | .857 |
| Television | 4.5700 | 3.58238 | 5.3300 | 4.51273 | -1.319 | .189 |
| Internet | 3.6100 | 3.96677 | 5.2200 | 4.09380 | -2.824** | .005 |
| Facebook total | 19.5700 | 7.60018 | 17.9900 | 10.22425 | 1.240 | .216 |
| Emotional difficulty | 3.7800 | 2.72133 | 2.5300 | 2.31139 | 3.501** | .001 |
| Conduct problems | 2.9600 | 1.86905 | 1.8900 | 1.33254 | 4.661** | .000 |
| Hyperactivity Scale | 4.3000 | 1.64225 | 3.3100 | 1.79052 | 4.075** | .000 |
| Peer problem | 5.9700 | 1.54040 | 5.3100 | 1.70380 | 2.873** | .005 |
| Prosocial behavior | 7.7800 | 1.86721 | 8.0600 | 1.76280 | -1.090 | .277 |

*p<0.05`

**p<0.02

Table 8 reveals the comparison of male and female scores on study variable. The t-table reveals the significant difference between mean score of male and female in video gaming, Internet usage, Emotional difficulty, conduct problems, hyperactivity, peer

problems, and prosocial behavior. Whereas there were no significant difference were found in the means of psychiatric distress, mobile phone usage, television usage, facebook usage and prosocial behavior between the group of male and female.

Table 9. Relation of Technology addiction with strength and difficulty questionnaire and other psycho-social difficulty among adolescents

| Variables | Video games | Mobile phone | Internet | Facebook total |
|----------------------|----------------|--------------|----------------|----------------|
| Emotional difficulty | -.183** | .143* | -.216** | -.215** |
| Conduct problems | .049 | .092 | -.145* | .102 |

| | | | | |
|---------------------|-------|--------|---------|---------|
| Hyperactivity Scale | -.005 | -.082 | -.232** | -.372** |
| Peer problem | .167* | .372** | .322** | -.153* |
| Prosocial behavior | -.006 | .286** | .228** | .165* |

Table 9. The correlation table reveals the relation between Technology addiction with strength and difficulty questionnaire and other psycho-social difficulty among adolescents.

There was significant relation was found among sub components of strength and difficulty questionnaire and other psycho-social difficulty with technology addiction.

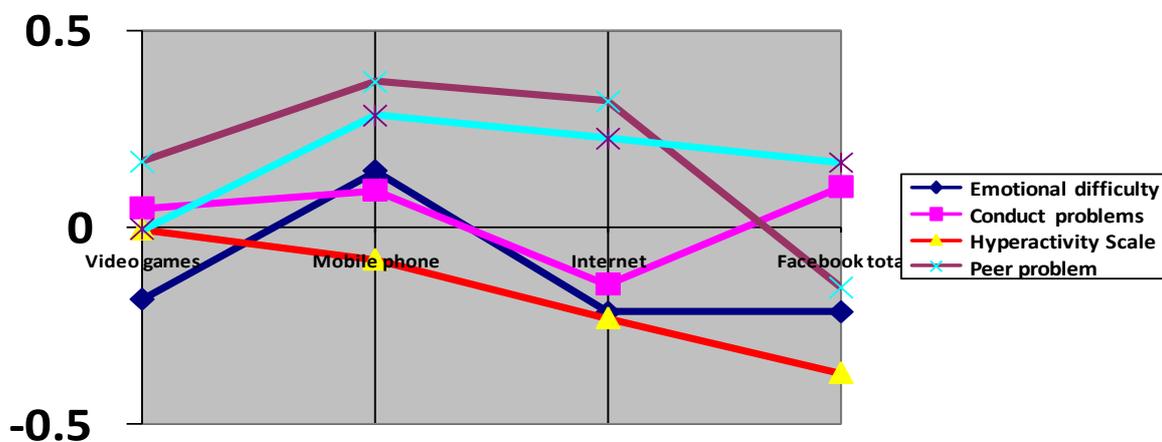


Figure 1.

Discussion

The study document the presence of addictive use of video game, internet and mobile phone. The significant difference in video game, facebook usage, conduct problem and pro social behaviors among 13-15 & 16 -17 age group(tableVII) male and female differs in relation to video game internet, emotional difficulty, conduct problems, hyperactivity and peer problems (table VIII). Face book usages was more in the 13-15 years age group (Table-2). 32.5% came across online sexual content on social networking sites and 20.5% felt distressed about it (Table-III). 91.5 % of the sample reported psychological distress.<15 group differ from the 16 & above in term of psychiatric distress, video game, facebook ,conduct problem and had negative correlation for prosocial behaviors (Table IX). Emotional difficulty had correlation with usage of internet and facebook and negative correlation

for mobile phone. Conduct problems had negative correlation with internet and positive with psychiatric distress. Hyperactivity had positive correlation with psychiatric distress, internet and negative with facebook. Peer problem had positive correlation with videogame, mobile phone, internet and negative with facebook. Prosocial behaviors had negative correlation with psychiatric distress and positive with mobile phone use, internet and facebook (Table-VIII). 19 to 22% express the need to change the usages pattern of internet, cell phone and face book(Table-6).50 % and above experienced difficulties in academic (disturbance in attention, losing grade and less motivated to do academic work, sport(decrease involvement in sport/outdoor activities), friends (decreased interaction with friends), relative/family (spending less time with family/preference for online activities) and social gathering(Table-V). It was corroborated by other studies. Adolescent

reported attention problems which led to decline in academic function [24].

A total of 200 high school students were assessed online activities using a written survey. Most adolescents reported being a member on at least one online social-networking website. 81% were using MySpace.com. They were spending on an average of 72 minutes per day on social-networking websites [25]. Fifty four percent of the students reported posting their picture on public websites, 30% reported keeping a blog, and 32% reported participating in online groups. Significantly more boys (80%) reported playing digital games, or "gaming" than girls 29% [26]. Adolescent gamers were significantly more likely to be male (93%) than female (7%) among 500 online game players. The younger the gamer was, the longer they tended to spend playing each week [27]. Those who played online games spent significant amounts of time playing the games; however, the majority of adolescents did not report spending large amount of time playing digital games. 25% of the respondents (n = 1,501, ages 10-17) reported receiving unwanted exposure to sexual materials while online, and 19% received a sexual solicitation online [28].

Children of highly educated parents were more likely to have access to modern information technology than children from lower socioeconomic status to learn about and use technology [29]. More than 500 million users were active participants in the Facebook community alone and studies suggest that between 55% and 82% of teenagers and young adults use SNSs on a regular basis [30]. Usage of SNSs has also been found to differ with regards to age group. 50 teenagers (aged 13-19 years) and the same number of older MySpace users (aged over 60 years) revealed that teenagers' friends' networks were larger and that their friends were more similar to themselves with regards to age [31].

Older users' networks were smaller and more dispersed age-wise. Additionally, teenagers made more use of MySpace web 2.0 features (i.e., sharing video and music, and blogging) relative to older people. Males appear more likely to be addicted to SNS games (such as

Farm ville) relative to females [32]. Facebook users had lower grades and spent less time studying than students who did not use this SNS [33, 34]. 233 teenage students (64% females) were surveyed. High-level usage was defined as using SNSs at least four times per day. Addictive tendencies with regards to SNS use were significantly predicted by self identity and belongingness. Therefore, those who identified themselves as SNS users and those who looked for a sense of belongingness on SNSs appeared to be at risk for developing an addiction to SNSs. 3.7% of 3,105 adolescents were addicted to the Internet. The use of online gaming and social applications (online social networking sites and Twitter) increased the risk for Internet addiction, in Netherlands using self-report questionnaire including the Compulsive Internet Use Scale [34]. The study has limitations in term of small sample size. It has implications comparison of different socio-economic status would help in understanding the impact of socio-economic status on pattern of technology usage among different age groups. A longitudinal follow up of the sample would help in understanding developmental trajectory of the pattern of technology usage and its impact on psychosocial factors; developing a intervention program for management of technology addiction and related psycho-social and psychiatric distress among different age group sample, and also for working on parent's perception on technology usage pattern and related distress with promoting healthy pattern of technology usage can be planned.

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