

# Mobile phone addiction in adolescents of 10-16 years: Experiences at a Delhi based tertiary care Ayurveda hospital

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## Abstract

**Background:** Cell phones have become necessity in all age groups in current scenario. The rate of its use is continuously increasing and is affecting the most energetic group of population i.e. adolescents. India has the highest mobile phone users in the world after Korea. In India among 143 million social media users, 12% are school children. Data related to the use of cell phone in adolescents is still meager and need to be explored in India.

**Aim:** To see the pattern of mobile phone use among adolescents attending a Delhi based tertiary care Ayurveda hospital.

**Materials and methods:** A questionnaire was developed having four domains with 23 questions. An Observational study was conducted in Delhi including 300 adolescents aged between 10-16yrs, irrespective of their sex. Participant's demographic information with financial status of the family and academic performances was questioned with their parents. The data like duration of use per day, content of usage and habits were recorded from the participants through face-to-face interview to fill up the questionnaire.

**Results:** Out of 300 participants, 48.66% were boys, 80.33% participants belong from mid adolescent (14-16yr) age group. About 33% showed behavioral addiction, 5% showed ringxiety, while headache (28%), vision problems (33%), disturbed sleep (6%) were also noticed in the surveyed adolescents. Mobile phones affected the academic performances of 52%.

**Conclusion:** Academic performance of 52% of the surveyed was affected, which should be a need of serious concern. Poor academic performances and excessive use of phones seems to have a vicious connection. have gradually developed as a vicious cycle.

**Keywords:** Cell phone, Addiction, Adolescents.

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## Introduction

With the advancing technology, smart phone has become a trend among all the old, adult and youngsters and even the children are also not spared from it.<sup>1</sup> It became part of our routine life and a measure of our living standards.<sup>2</sup> Today, student population around the world cut off from school is increasingly connecting to the outside world through screens. It is time to recognize the internet as a

critical tool for children's access to learning, play, entertainment and social interaction. In short, they might have a lot to gain from spending time in the digital space. Digital innovation is expected to have many positive outcomes in the future of education. However, there is concern that increased screen time, together with a significant reduction of the time spent outdoors, might further accelerate various other health related issues. To avoid such new health related issues, there is a need to have restrictions upon such use.

Along with tendency of making people feel connected through calls and messages, the device provides a kind of companionship to forget the loneliness through varied number of applications.<sup>3</sup> Recently the remote consultation utilizing telemedicine tools was also made possible using the smartphones. It's a welcome step during the tough time brought by present pandemic due to various imposed restrictions, besides some limitations related to detailed clinical examination, it has provided a way out for patients suffering from chronic ailments to seek required health care.

Cell phones, which emit and receive radiofrequency electromagnetic radiations, have become ubiquitous with estimated 6.9 billion subscriptions globally.<sup>4</sup> India is not behind in the race of getting connected and is evident by 1,168.31 million subscriptions, out of which 56.48% belongs to urban region and rest 43.52% is confined to rural region.<sup>5</sup> In India among the 143 million social media users, 12% are school children.<sup>6</sup> Adolescents being more outgoing and easy graspers, are more vulnerable to extensive use of devices. Increased use from 68.0% in 2007 to 90.1% in 2011 (by children and adolescents) has been reported in Korea.<sup>7</sup> Korea is reported as top most country with youngest mobile phone users (as young as 12 years) among Asian countries with 87.7% as compared to other nations like China (27.7%) and India (11.6%).<sup>7</sup>

The rate is continuously increasing and somewhere is affecting the most energetic group of the population i.e. adolescents. Many surveys have been conducted among university and college students regarding excessive use of mobile phones. Data concerning school students is still meager and need to be explored in India. This need is evoked by the fact that, children as young as 13 years have been treated for addiction to mobile phones and this depicts the extent of influence of technology amongst children.<sup>8,9</sup>

Mobile phone being a tool for communications and countering the boredom has been associated with consequences like dependency, problematic use and addiction.<sup>10,11</sup> 'Addiction' is inability to restrict oneself from

overusing or consuming devices, objects and substances, besides being aware of the hazardous effects. Ayurveda classifies *Prajnaparadha* (mistake of intellect), *Kala-parinama* (change produced over time) and *Asatmendriarthasamyoga* (disproportionate contact of sensory organs to sensory objects)<sup>12</sup> as root cause of all mental and physical ailments<sup>13</sup> and these three can be put into the frame of word called addiction in modern era. As a result of *Prajnaparadha*, person involves in *Ashubha karma* (inauspicious deeds) that leads to changed behavioral patterns and *Hina* (insufficient), *Ati* (excessive) and *Mithya* (inappropriate) *yoga* of *Gyanendriya* (sensory organs) and *Karmaendriya* (motor organs) leads to various physical and mental ailments which could be co-related to the sufferings caused by the excessive use of smartphones for longer hours.

Though published information on cell phone addiction in adults is available; much data regarding the same in adolescents has not been reported yet. Thus, the survey was planned to see the patterns of mobile phone use among adolescents in Delhi based tertiary care Ayurveda hospital.

## Materials and Methods

### Development of Questionnaires

In May 2019, a questionnaire was developed with 23 questions, divided into four domains (related to Demography, Health, Academics and General). Each domain was incorporated with certain questions to gather information regarding duration, purpose and time of using smart phones, social and psychological behavior, educational and health perspectives etc.

This questionnaire was reviewed by technical professionals for content validation. After receiving inputs, the questionnaire was refined and used in the survey.

### Testing of the Questionnaire

Children of age group between 10-16 years visiting tertiary care Ayurveda hospital, New Delhi for their health purpose or along with their parents/family members were involved

in the survey. Children using phones other than smartphone were excluded. The participants were made to understand each and every question in their local language (Hindi) for their better responses through face-to-face interaction. Information related to financial status and academic performances were asked from their parents and rest of the information was gathered from the children.

Duration of use, content of usage and habits were cross-checked with parents for more accuracy. The data thus generated was evaluated in terms of percentage to know the impact on the health and other aspects of daily life of the involved.

## Results

Out of total sample of 300 participants, 146 (48.66%) were boys and 154 (51.33%) were girls. The age of participants were divided into early and mid-adolescences.<sup>14</sup> 59 (19.66%) were early adolescences (i.e. 10-13yrs) and 241 (80.33%) in mid adolescence (i.e. 14-16yrs). Both parents of 11% participants are employed. The income of family per annum is presented with three categories i.e. 59% up to 3lakhs, 30% in 3-6lakhs and 11% in 6lakhs and more. (Table-1)

44% of the participants were found to start using phones at the age of 14-16yrs. Majority (68%) of the adolescents were using phone of their parents for gaming (31%) and surfing (31%). Though maximum were using for 1-2hours (45%), a few (9%) were using them for more than 5hours. Rate of using during evening hours (3-7pm) was high (49%) than morning hours (8%). Most of the participants (48%) don't check their phone for 1-2 hours because of being non-owners. Being unaware, 56% of adolescents don't activate night/sleep mode whereas only 7% of them activates it always. 34% of adolescents spent their leisure time with family and 25% with friends; while 30% use gadgets like TV and mobile. Ringxiety is observed by 5%, sometimes by 24%, rarely by 23% of users whereas 49% of respondents are spared from it. 42% of respondents don't feel Nomophobia whereas 13% become anxious while 25% get angered when the phone is out of their reach.

34% of the participants were partially aware, 35% were aware to maximum extent and 10% have sufficient knowledge of health issues related to excessive use of mobile phones while 22% were unaware. 28% complained of headache, 33% from eye problems and 6% with disturbed sleep on the other hand 33% respondents had no such issues. 60% of the adolescents studies in private schools. Academic performance of 52% the total respondents was affected while 48% were remained unaffected. 35% depends occasionally upon phone for routine work. Phones are used for various academic purposes like circulation of syllabus/ homework (12%), searching information (35%) and education activities (41%). 87% of the participants denied the use of phones during school while 9% carried it to school and use it for playing games in groups with friends within school.

## Discussion

In present study, girls (51.33%) were more than the boys (48.66%). Earlier researchers believe that there is no positive association in between gender and cell phone usage.<sup>15</sup> However, a few Indian researchers suggest that phone usage was higher among males than the females.<sup>16,17</sup> This trend is different in Korean population.<sup>7</sup> Evidence also suggests that males use their phone in a practical and instrumental way while females use their phone in a sociability way.<sup>18</sup> However, the association between mobile phone usage and the gender is still not conclusive. In the current survey, both boys and girls were found using mobile almost equally.

Although the study conducted only on early and mid-adolescent age groups but the starting age of using mobile phones was more in range of 14-16yr i.e. 44%. Studies also shows that students of age 11-14 years never switched off their cell phones and it increases as the age advances and this phenomenon is present more when first phone is obtained at an age younger than 13years.<sup>18</sup>

13% of the total respondents have been using mobile of their own, 68% of their parent's, 15% of their sibling's and 4% of other's (relatives). Ownership of mobile phones

was found to be low in this study, may be due to lower socio-economic status (53%) and the lower age group, which is against to one of the reported independent predictor of technology addiction i.e. possession of a personal mobile phone.<sup>19</sup> The other study shows that ownership of mobile phones increases the technology addiction twice.<sup>20</sup>

Purpose of using mobile phones is one of the important denominators for addiction. Visiting the community sites may be one of the reasons for the excessive use of mobile phones by the adolescents.<sup>20</sup> Present study shows that 31% of participants have been using their mobile phones for surfing, 30% for gaming, 18% for chatting and 19% for listening songs, talking, watching videos etc. It is not in line with the study, where social networking outnumbered the other purposes.<sup>21</sup> Additionally, one boy was reported with history of breaking two mobile phones, as his parents restricted him from playing PUBG (online multiplayer battle game) for more than 3hrs.

Usage of mobile phones for 2-3 hrs or more/day determines the addiction level of a person.<sup>22</sup> Present study also shows that 45% of respondents spent time on mobile phones for 1-2 hrs, 31% for <1hr, 15% of respondents were given time for 3-4hrs and 9% for 5hr and more (Graph-1). 24% of the respondents are spending more than 2 hours on smart phone alone which is even more than total recommended screen time for children belonging to this age group (10-16yrs).<sup>23</sup> In the present scenario of pandemic, there has been observed an additional average increase of 2 hours in recommended screen time as a result of various reasons like online educational strategies, work from home, entertainment and to remain socially connected in era of physical distancing.<sup>24</sup> The situation is unavoidable, but the government should take some necessary steps to advocate the use in controlled manner in order to avoid the negative affect of the continuous use of technology for longer hours. This survey also observed that one third of the respondents (12%), who own a mobile phone spent more time on it than the non-owners.

49% of participants are using their phones at evening time,

while 35% are spending night hours. Studies among medical students in central India who were using smart phones and/or laptops for 1-2 hours before bedtime reported disturbed sleep. Studies reported that restricted use of mobiles and laptops before sleep, results in good health and peaceful mind.<sup>25</sup>

While using mobile during late evening/night; it was advised to keep/use the device in night mode. 56% of children never activates the sleep mode or night mode, 23% rarely activate this. It indicates that most of the students had no idea about night/ sleep mode facility. May be due to lack of awareness they had never enable this mode. This may lead to stress on eyes, further on general health.<sup>26</sup>

Most of the adolescents (59%) from lower/middle socio-economic groups were found to spend leisure time with the family members or friends. 36% of students spend <1hr in outdoor activities while 37% spends 1-2 hrs. One criterion for cell phone addiction is increasing cell phone use and preoccupation with phone.<sup>27</sup> In the present study respondents are more likely to be connected with family and friends which spare them from being indulged with mobile phones. On the contrary Adolescents from higher socioeconomic groups have been reported with higher level of dependency on mobile as result of isolation from the family and feeling of loneliness.<sup>28</sup>

Ringxiety was observed in 51% of adolescents. This is a phenomenon of perception of one's mobile phone is vibrating or ringing when it is actually not.<sup>29</sup>

When a person don't receive any messages/ calls in a day, they became anxious and craving which shows behavioral/ technology addiction towards mobile phones.<sup>30,31</sup> No such signs were found in the current survey. 67% participants stay calm or keep themselves busy in other activities and about 62% adolescents showed relaxed behavior when phone is out of site. Around 33% students are showing behavioral addiction, which is not in lines with previously reported psychomotor anxiety or agitation caused by fear of missing call/ text.<sup>32,33</sup> A randomized study conducted

previously showed both positive and negative aspects of psychological behavior related to excessive mobile phone usage.<sup>34</sup>

34% of the participants were partially aware, 35% were aware to maximum extent and 10% have sufficient knowledge of health issues related to excessive use of mobile phones while 22% were unaware.

Few previous studies reported smart phone addiction is associated with psychopathologies, unprotected sexual activities, fatigue, headache, dizziness, sleep disturbances etc.<sup>35</sup> In present study, 33% of students were facing eye problems (eye ache, watering eyes, redness in eyes etc), 28% students facing headache and only 6% of student face disturbed sleep. A few students complained of earache, tinnitus. Besides excessive use; possible reasons are night use and having no knowledge regarding night/sleep mode.

72% of students never wake up at night, 15% students wake up at night due to message alerts. The surfed content and curiosity to see updates made 13% students to wake up at night. These observations are in line with the previously reported surveys.<sup>36,37</sup>

Participants from the private schools outnumbered government schools. 87% respondents don't carry mobile phones inside class rooms. 8% students keep their phones in silent mode and 4% students keep in switched off mode during class hours and only 1% keeps their phones in normal mode. The data of present study is in line with previous studies<sup>19</sup> and is contrary to study which reported mobile phones are carried to classrooms by the students and are used in between the lecture leading to problems while focusing and resulting in poor academic performances.<sup>38</sup> In leisure time, during school hours only 16% respondents use phone for playing games/ group chatting and whereas 84 % don't use cell phone in school premises might be due to restriction imposed by school authority.

The parents of 48% participants reported that the use of mobile phones never hampered the academic performances

of their child; rather some of them quoted the enhancement of academic performance, as 41% of respondents used their phones for educational activities, 35% for searching information and 12% for doing homework. Whereas negligible number (19%) of respondent's academic performance was occasionally hampered due to increased duration of mobile usage. Poor academic performance and excessive use of phones has gradually developed as a vicious cycle, which is not in line with previously conducted studies.<sup>30,40</sup>

As compared to adults, teenagers were found more likely to be dependent on mobile phones.<sup>41,42</sup> Whereas 15% (often), 18% (always), 32% (never), 35% (occasionally) of adolescents found to be depending upon the mobile phones for routine information.

## **Conclusion**

The study was conducted at a tertiary care Ayurveda hospital based at New Delhi to see the patterns of mobile phone addiction among the adolescents. About 80.33% participants were found to be in mid adolescent age group, among whom 33% showed behavioral addiction to the mobiles. About 28% complained of headache, while 33% vision problems. Academic performances of 52% of the surveyed were affected. Poor academic performance and excessive use of phones has gradually developed as a vicious cycle. As the study is limited to a local centre, the observations cannot be universalized. Impact of mobile addiction can be seen covering larger samples of other socio-economic populations too. Seeing the increased impact of excessive use of smartphones, government should intervene and adopt the appropriate measures to prevent the harmful effects. For minimizing the harms of overuse of technology, some practical methods can be adopted by the adolescents. These methods could be the observation of no technology hour/ day or week in the office and the family; promoting alternative means of communication with minimal technology; finding methods to engage the adolescents in meaningful activities in order to keep them away from electronic gadgets etc. This should be understood that such practices can be meaningful only

if are practiced simultaneously by all family members or office colleagues. Restricting a few, while allowing a few others may not help anyone.

Ayurveda can play a vital role through its principles like *nidanaparivarjana* (avoiding the causative factors) to achieve the same. Suitable treatment modalities like *shirodhara*, *yogik kriyas*, *kriya kalpa*, (therapeutic procedures) and *rasayana chikitsa* (rejuvenating therapy) can be adopted under the supervision of qualified physicians for preventing the population from adverse effects of excessive use of technology.

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**Table-1: Demographic data**

Sl no	Characteristics		Number	%
1	Gender	Boys	146	48.66
		Girls	154	51.33
2	Parental working status	One parent working	267	89
		Both parents working	33	11
3	Age	10-13yrs	Boys (34)	19.66
			Girls (25)	
		14-16yrs	Boys (112)	80.33
			Girls (129)	
4	Financial status (per annum)	Up to 3lakhs	177	59
		3-6lakhs	90	30
		6lakhs & more	33	11
5	Area	Urban	100	33.33
		Rural	200	66.66

**Graph-1: Time spent on cell phones**

