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Research Article

EARLY EXPOSURE AND ADAPTABILITY OF SMART PHONE DEVICES AMONG YOUNG CHILDREN AND PARENTAL PERCEPTION OF THEIR USAGE IN A SEMI URBAN, MIDDLE CLASS POPULATION IN INDIA

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A B S T R A C T

Background: To find out the extent of early exposure to smart phones among young children in a semi urban, middle class population and to ascertain the parental perception about their usage.

Methods : This pilot, cross sectional study was conducted at Dept of Pediatrics in a Zonal hospital in East India between June to September 2017. To assess the exposure of young children to smart phone devices and parental perception, we prepared a 17 point questionnaire adapted from the Zero to Eight Common Sense Media 2013 nationwide survey and analyzed the data.

Results: 32% of the parents introduced smart phones to their children when < 1 year old, 28.3 % (1-2 yr), 25 % (2-3yr), 12.5 % (3-4 yrs) and 1.3 % (4-5 yrs). Early introduction of smart phones to children is found to have associated with increased frequency of smart phone usage subsequently which was statistically significant ($p < 0.01$). 72.4% of children were observed to have a daily screen time of less than 30 minutes, 46.1 % of the parents gave smart phones to their children to keep them calm at home and in public places, 40.8% of parents gave to do household work. 51.3% of parents opined that smart phones are useful for children in early childhood when given under proper supervision and with limited screen time.

Conclusion : There is a urgent need to accelerate research and formulate guidelines for smart phones usage in young children to achieve "Digital Literacy" in developing countries like India.

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INTRODUCTION

In this era of digital revolution, smart phone devices have made a tremendous impact on the lifestyle of parents and children. In developing countries like India, smart phones with internet facilities is now accessible to the children belonging to all socioeconomic strata because of decreasing costs and subsidies by cellular service providers. As a result of this more and more number of young children are being exposed to these smart phone devices. A nationwide survey conducted by Common Sense Media reported an exponential increase in use of smart phone devices among children from 10% in 2011 to 38 % in 2013 among children specially less than 2 years old.[1] Although American Academy of Pediatrics guidelines strongly discourage the use of smart phone devices by children less than two years old, research and guidelines in developing countries like India is still lagging behind its adoption.

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The objective of this study was to find out the extent of exposure to smart phone devices among young children in a semi urban, middle class population and to ascertain the parental perception about smart phones usage.

METHODS

This was a pilot, cross sectional study conducted at Dept of Pediatrics in a zonal hospital in east India between June to August 2017. Study protocol was approved by the institutional research and ethics committee. The parents of all well or sick children between 6 months to 5 years attending the pediatric OPD participated in this questionnaire based study. To assess the exposure of young children to smart phone devices and parental perception, we prepared a 17 point questionnaire adapted from the zero to eight Common Sense Media 2013 nationwide survey.[1] Although this tool has been used in other studies too, data has not been published on its validity and reliability.[2] The questionnaire was translated into the local vernacular language to make it understandable for the study population.

Parents were explained that the participation in this questionnaire is by choice and it has no implications on the

treatment of their children and consultation by the doctor. Parents were also explained that they don't have to wait with a sick child and can answer the questionnaire either before or after consultation with the doctor. No previous participation was ensured among these parents. Children who were mentally or physically challenged were excluded from this study.

The demographics in the questionnaire included child's age in years (<1 yr, 1-2 yrs, 2-3 yrs, 3-4 yrs and 4-5 yrs), gender, parental age and education. To determine children's access to smart phones we asked parents about the source of smart phone at home (mother or father) , source of internet (wifi or mobile) and the age at which parents first introduced smart phones to their children. To measure the frequency of smart phone usage by children, parental response options were " once a week," "several times a week," "several times a day," "once in a day," or "not at all". To measure the screen time parental response options were "less than 30 minutes," "30 -60 minutes," or "more than 60 minutes." To analyse the circumstances under which parents let their children use smart phones, response options were "To do household work," "To keep the child calm," "To make him sleep," or as a fad. To assess the operational skills of children response options were "sometimes require assistance," operates of his own," or never require any assistance.

To ascertain the content watching by children with smart phone devices, response options were "listens music," "play video games," or "watches rhymes and videos". Parental perceptions about smart phones usage were also assessed by asking their opinion on the minimum age to give smart phones to a child (< 1 yr, 1-2yrs, 2-3 yrs, 3-4 yrs, 4-5 yrs or never) or minimum screen time (< 30 min, 30-60 min, > 60 min or None). To assess whether the age at which children can operate smart phones is getting younger response options were "Yes or No". To ascertain the parental opinion regarding utility of smart phone devices the response options were "Absolutely not," "Perhaps," or "useful when given under proper supervision and limited screen time".

RESULTS

Statistical analysis was done utilizing Microsoft office "Excel" with windows 8 operating system. All the descriptive parameters were analyzed and multiple correlation analysis was done using Pearson's coefficient with SPSS (Statistical package software for the social sciences) version 20 and a p value of < 0.05 was taken as significant.

Total 180 children between 06 months to 5 years participated in the study. 13 parents didn't return the survey and another 15 were excluded from the study because of previous participation leaving a final sample of 152. The study population was a semi urban, middle class community and the demographics has been depicted in Table 1.

Table 1 Demographics of Study population

1.Child Age (n= 152)	n (Frequency)	%
< 1 yr	23	15.1
1-2 yr	36	23.7
2-3 yr	35	23
3-4 yr	35	23
4-5 yr	23	15.1
2.Gender (n = 152)		
Male	89	58.6
Female	63	41.4
3.Parentral Education		
Less than 10th Class	8	5.3
10-12th class	36	23.7
Graduates	68	44.7
Post Graduates	40	26.3
4.Smart Phone Possession		
Father	150	98.7
Mother	137	90.1
5.Internet Source		
Mobile Internet	150	98.7
WiFi	2	1.3

The mean age of the children who participated in the study was 2.6 years (SD 1.2), mean fathers's age was 32.8 years (SD 3.9) and mean mother's age was 28.5 years (SD 3.4). Almost 98.7 % of the fathers and 90.1 % of mothers owned a smart phone device. Mobile internet (98.7 %) was a major source of internet as compared to wifi among parents.

Age of First Introduction of Smart Phone Device

32 % of the parents introduced smart phone device to their children < 1 year old, 28.3 % (1-2 yr), 25 % (2-3yr), 12.5 % (3-4 yrs) and 1.3 % (4-5 yrs). The age of first use of smart phone device as per age cohort has been depicted in Table 2. Early introduction of smart phones to children is found to have associated with increased frequency of smart phone usage subsequently which was statistically significant ($p < 0.01$). A positive correlation was observed between increasing parental education and early introduction of smart phones; however it was not statistically significant. Use of smart phones was not associated with child's gender.

Table 2 Age of first use of smart phone device by age cohort

Age at first Use	<1 yr (n = 23)	1-2 yr (n=36)	2-3 yr (n= 35)	3-4 yr (n= 35)	4-5 yr (n=23)
<1 yr	21	15	9	1	3
1-2 yr	1	17	19	6	0
2-3 yr	0	3	7	21	7
3-4 yr	1	0	0	7	11
4-5 yr	0	1	0	0	2

Frequency of Smart Phone Use

About 37.5 % of children used smart phone device on daily basis and 12.5 % of children never used it at all. Approximately 30.4% of children < 1 year of age used a mobile device on daily basis, the percentage increased to 48.5% in children between 2-3 years and static thereafter. There was a positive correlation between frequency of daily use of smart phone device with increasing age of the child but it was not statistically significant.

Screen Time

72.4 % of children were observed to have a daily screen time of less than 30 minutes and 22.4 % between 30 – 60 minutes and 5.3 % for more than 60 minutes. 86.1 % of children between 1-2 years and 76 % of children between 2-3 years had a daily screen time of < 30 minutes. In our study daily screen time didn't increase with age as depicted in Table 3. Although

a positive correlation was observed between parental education and screen time but it was statistically not significant.

Table 3 Daily screen time of smart phone device in children as per age cohort

Age Group	Screen time < 30 min	30-60 min	> 60min
< 1 yr (n=23)	20	2	1
1-2 yr (n= 36)	31	4	1
2-3 yr (n=35)	26	7	2
3-4 yr (n= 35)	21	12	2
4-5 yr (n= 23)	12	9	2

Circumstances in Which Parents Gave Smart Phone Devices To Their Children

46.1 % of the parents gave smart phones to their children to keep them calm at home and in public places, 40.8 % of parents gave it to do household work and 7.9 % to make the children sleep. The study also highlighted that 27.6 % of children navigated smart phones without any help and 37.5 % required assistance sometimes. As far as content watching is concerned, 63.1 % children watched rhymes and videos, 27 % played video games and 9.8 % listened music.

Parental Opinion

On asking about the minimum age at which smart phones should be introduced, 34.9 % opted for not to be introduced, 28.3 % opted for (at 4-5 yr), 27.6 % (at 3-4 yr), 5.3 % (at 2-3 yr), 3.3 % (at1-2 yr) and 0.7 % (at <1 yr). On asking about minimum daily screen time a child should be subjected to, 71.7 % opted for less than 30 minutes and 11.2 % opted for between 30- 60 minutes. 60.5 % of parents agreed that the age at which children can operate smart phones is getting younger. 51.3 % of parents opined that smart phones are useful for children in early childhood when given under proper supervision and with limited screen time, while 40.1 % of parents found it absolutely not useful.

DISCUSSION

This study highlights very early exposure and adaptability to smart phone devices by young children between 6 months to 5 years of age. Our study showed significant increase in access to smart phones in a semi urban middle class population in comparison to data available in 2013 nationwide surveys conducted in USA.[1,2] In developing countries like India who are in transit phase of " Digital Revolution", decreasing cost of smart phones and mobile internet facilities can be possible contributing factors. This is consolidated by the fact in our study that almost 50 % of children were operating smart phones by the age between 2-3 years.

As brought out in our study that 46 % of the parents introduced smart phones to their children to keep them calm at home and public places and about 41 % for doing their household work, emphasizing the fact that smart phones are being used as "Digital Pacifiers". The rising concept of "Nuclear Families" in present day scenario may be an important contributory factor in early introduction of smart phones by parents. As observed in our study that early introduction of smart phones is associated with increased frequency of their usage subsequently ($p < 0.01$), establishing the pervasive nature of these smart phone devices.

Another aspect which was brought out in our study was is a positive correlation between increasing parental education and early introduction of smart phones, which may be attributed to parent's desire to keep children occupied and modify their behavior in different situations. The extent to which these smart phone devices effect the cognitive, social and emotional development is not clearly defined as the research has not kept pace with their steep rate of adoption. Despite American academy of Pediatrics recommendations to discourage the use of smart phones by children under the age 2 years, developing nations like India don't have structured guidelines on smart phones usage in young children.[3]

Taking parental perception into view, our study brought out that 35% of parents were not in favor of subjecting their children to smart phones, 72 % agreed for daily screen time of less than 30 minutes and 51% were of the opinion that smart phones should be given to children under supervision and limited screen time. In a recent study, parents of young children expressed their irresoluteness about the effects of smart phone devices on their children and their ability to restrict their usage.[4] The pervasive nature of these smart phone devices has been proven enough which warrants urgent evaluation regarding their effect on psychosocial development of the children.[5,6]

In developing countries like India which are in stage of "Digital Transit", it is the need of the hour to accelerate research and make definitive guidelines for parents and children regarding usage of smart phone devices. This pilot study has several limitations. As our study population was a semi urban, middle class, the findings may not be generalizable. The questionnaire to parents was self administrated and subject to recall and social desirability bias. Our study showed early exposure and adaptability of children between 6 months to 5 years of age to smart phone devices and parental perceptions about their use in a semi urban, middle class population.

Although we have not addressed upon the impact of smart phones on children and their families but this study is a snapshot of how smart phones are being infused into daily life of young children. This study may act as a catalyst for accelerating research and formulate guidelines for smart phone devices usage in young children in developing countries like India. This will definitely help in integrating technology into family life and achieve "Digital Literacy".

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