Original Article

Pattern of Smartphone Exposure among Children <5 Years of Age Attending Out-patient Department of a Tertiary Care Hospital : A Cross-sectional Study

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Background : Smartphones are becoming widely popular and the number of users is significantly increased over the last decades. In the current era of COVID pandemic, even the school age children must resort to mobile media devices for online learning. But the risk of adverse outcome, both physical and psychological, is more in pre-school children with prolonged exposures as shown by different studies.

Materials and Methods : The study was conducted among parents/ caregivers of under-five children, attending Outpatient Department of a tertiary care hospital.

Result : A total of 387 parents/ caregivers attending the Paediatrics OPD with under 5 children were interviewed for the study over the 6 months period of the study. Among the study participants, 223 (57.6%) parents confirmed use of Smartphone in their children. 81 (36.3%) children are exposed to higher level of usage (>2 hour/Day). The questionnaire also revealed that, majority of parents/ caregivers (174, 78%) perceived no adverse effects from usage of Smartphones to young children.

Conclusion : Paediatricians have an important role in advising regarding the use to smartphones in childhood and it is important to bridge the knowledge gap among parents and caregivers, regarding the misuse of mobile devices by under 5 children.

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Key words **: Pre-schoolers, Smartphone exposure, Under-five children.**

Smartphones have become widely popular and the number of users is significantly increased over the last decades[1]. Mobile phones are indispensable part of today's societies. We cannot think of going about our day without the use of mobile phones. With the great boom in number of Smartphones use, children are invariably becoming exposed to Smartphone devices. Earlier and higher exposure to multimedia is known to have negative effects on children's physical and mental status[1]. Specially, children with electronic media use during early childhood for more than 2 hours per day has been linked to increase weight status and to behavioral problems[2]. Moreover, media usage may interfere with sleep quality through the increase of psychological arousal caused by stimulating content watched or through bright light exposure[3]. Bright light may impact sleep by delaying the circadian rhythm when exposure takes place in the evening and by causing an immediate activation itself[4,5]. In the current era of Global COVID pandemic, even the school age children must resort to mobile media devices for online learning. But the risk of adverse outcome, both physical and psychological, is more in pre-school children with prolonged exposures as shown by different studies[6-8]. Our present study thus, is an endeavor to investigate the pattern of mobile device use among under 5 children.

Editor's Comment :

- There is a facet to the problem as using mobile phones in very young children increases a longer lifetime exposure to Radiofrequency Electromagnetic Fields (RF-EMF) from Mobile Phones.
- Risk to young children from this RF-EMF is very necessary to be focused in future and broader studies.

Materials and Methods

The study was conducted in the Outpatient Department of the Pediatrics Ward of a Tertiary Care Hospital of Eastern India. First, a draft proposal was prepared and a proforma was developed for recording necessary information from the parents/ caregivers accompanying the children, along with, patient

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information brochure and consent form printed in local language. The study proposal was then submitted and presented to the Scientific Review Committee and was subsequently forwarded to the Institutional Ethics Committee. After getting the necessary approval, the pre-validated questionnaire was administered to parents/ care-givers who attended the Pediatrics OPD with under-five children. Data were collected from January, 2021 to June, 2021, for a period of 6 months. After data collection, data were compiled on the Microsoft Excel Software and data were analysed and tabulated.

Results

A total of 387 parents/ caregivers attending the Paediatrics OPD with under 5 children were interviewed for the study over the 6 months period of the study. Among the study participants, 223 (57.6%) parents informed use of Smartphone in their children. Among the Smartphone exposed groups, 129 (57.8%) were males and 94 (42.2%) were females. 23 (10.3%) users of Smartphone were infants (<1 year), 89 (40%) belonged to toddler age group (1-3 year). However, majority of the exposed children belonged to 111 (49.8%) , were from Pre-schooler age groups (3-5 years). All smartphone devices used by these children belonged to either of their parents.

Among the Smartphone user group, 81 (36.3%) children reported high daily usage (>2 hours) of Smartphones, whereas 142 (63.7%) cases reported low daily usage (<2 hours). Among the under -five children using mobile phones, 126 (56.5%) reported frequently using Smartphones to facilitate feeding the child. Moreover, 123 (55.2%) under-five children using Smartphone also used mobile phone at bedtime. Smartphone devices were also used to keep the children calm during daily chores in about 92 (41.3%) cases as reported by the parents/caregivers.

The contents showed to the children varied from watching videos 156 (70%), playing games 122 (54.7%) and watching mixed and varied contents 41 (18.3%), however, these were not mutually exclusive.

The questionnaire also revealed that, majority of parents/ caregivers (174, 78%) perceived no adverse effects from usage of Smartphones to young children, whereas 49 (22%) parents from the user group perceived some adverse effect from exposure of Smartphone devices among young users.

Discussion

Smartphones have become indispensable part of today's life. Moreover, in the current pandemic situation, education in the school aged children has become dependent on usage of Mobile media device as schools have mostly resorted to on-line education for fear of exposing vulnerable children to COVID infection. At this juncture, it has become difficult to protect pre-school children from developing negative effects on children's physical and mental status due to earlier and higher exposure of multimedia devices, particularly, Smartphones, due to their almost universal availability. However, the current magnitude and pattern of Smartphone exposure in under-five children, particularly, during the current COVID pandemic is not yet fully explored. The current study detects that 52.6% of the concerned under-five children are exposed to Smartphones by their parents/caregivers. It is also alarming that even infants are not spared of this practice of mobile device exposure as almost 10.3 % children are exposed to Smartphone, although the rate of exposure increases progressively, as the rate is 40% among the toddler age group and 49.8% among the pre-schooler age group. What is more concerning is that more than one-third of the user of Smartphone devices, use these devices for more than 2 hours in a day. Studies have shown more somatic symptoms, more attention problems, more aggressive symptoms and more withdrawal symptoms among the high exposure groups (ie, with exposure to mobile phones of >2 hours a day)[1].

The current study shows that, in the under-five children, Smartphone exposure occurs more often during feeding. Also, use of mobile phones was high during bedtime. This practice is however, counter-productive, as several studies have reported adverse health effects of using mobile phones during night-time[3-5]. Smartphone devices were also used to keep the children calm during daily chores in 41% cases as reported by the parents/caregivers. This practice has also been reported in other studies[9].

This study has also shown that, there is a huge knowledge gap among parents and caregivers regarding potential negative effects caused by early and prolonged Smartphone exposure in young children, as parents/caregivers perceived no adverse effects from usage of smartphones to young children in the majority of the cases (174, 78%). According to studies only 16% of Paediatricians ask families regarding their media device exposure[10] although, the risk of negative effects on children and to pre-school children seems to be very high.

Apart from all these adverse effects, there is another evil that needs to be addressed, while considering serious adverse effects of mobile phones. A nationwide cross-sectional study was conducted in Taiwan, to

collect information on children's use of mobile phones and the perceived health symptoms reported by their parents. Mobile Phone use was associated with a significantly increased Adjusted Odds Ratio (AOR) for headache and migraine and skin itches. Children who regularly used mobile phones were also considered to have a health status worse than it was 1 year ago. The study in conclusion, suggested a more cautious use of Mobile Phones in children, because, children are expected to experience a longer lifetime exposure to Radiofrequency Electromagnetic Fields (RF-EMF) from Mobile phones[11]. However, this was beyond the scope of this present study.

Conclusion

The current study has picked up the current pattern of exposure of Smartphones, to the vulnerable pre-schoolers, toddlers and even to the infant age groups. However, several large scale and possibly multicentre studies are required to appropriately understand the true magnitude of the problem and at the same time, it is also mandatory to try to bridge the knowledge gap among parents and care-givers, regarding the issue. Paediatricians have an important role in advising against the exposure to Smartphones in childhood. Moreover, there is another facet to the problem as using mobile phones in very young children also increases a longer lifetime exposure to Radiofrequency Electromagnetic Fields (RF-EMF) from Mobile Phones. Risk to young children from this RF-EMF is also a very necessary to be focused in future and broader studies.

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