



Review Article

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Impact of Mobile Phone Usage on Some Health Aspects of Children and Adolescents: Evidence Based Review Article

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Abstract

The Wi-Fi devices in mobile phones have a key role in exchanging information and data to show images, audios, videos, and to transfer applications from mobile emitting radio waves. These waves emitted by mobile devices are radio-frequency waves, where many kinds of researches in this field have shown that they negatively affect, especially when using the mobile phone for a long time during the day on the vision and the level of hearing in the young people, as well as the effect on the nervous system caused Headache and muscle aches, as well, it has also been derived from these researches and studies that these waves can cause more depression or psychological stress in children and young users of mobile phones. Moreover, it can cause damage to the brain cells and may have caused a brain tumor even though many studies have not proved it. Also, these studies, which were presented in this article, have concluded that the use of mobile phones, especially late at night, can negatively affect the quality of sleep.

Keywords: Mobile phone use, Review, Health Aspects, Brain Tumor, Children and Adolescents.

INTRODUCTION

In the last era of our time, the display of various types of mobile phones that contain Wi-Fi technology has increased, resulting in increased popularity among people, including children, to own such kinds of smart devices ^[1]. The Wi-Fi devices in mobile phones have a key role in exchanging information and data to show images, audios, videos, and to transfer applications from mobile emitting radio waves ^[1].

The human body absorbs part of these emitted waves, especially when the voice call is made, its health and biological effects can be classified as thermal and non-thermal. Where the heating caused by the use of mobile phones occurs mainly in the head and neck area which is really neutralized by the activity of the circulatory system in the brain area ^[2]. The cause is that the frequency of radiations emitted from the mobile are utilize in range from 3 kHz to 300 GHz ^[1]. Children are often using Wi-Fi services available in mobile devices, and they often more vulnerable to the impact of radio microwaves because their skulls are thin and contain high fluid, their nervous system still develop, the increased activity of cell division in their bodies, plus a weakness of their Immune response. However, scientific research has not demonstrated the extent to which these waves affect children's health in the long term ^[13]. Many medical explorations using magnetic resonance imaging (MRI) technology have proven that children aged between 5 and 8 years have a higher specific absorption rate than adults ^[4].

The urgency of using the mobile by adults near young children may increase their attraction to the experience of using it, as well as many adults allow them to hold it to play or fun, and this enhances the likelihood of the child continue using the mobile in the period of growth and development and until attaining the age of majority ^[5]. Because the children using mobile for longer time when they grow older ^[6]. It's found that the prevalence of use of mobile phones in children aged 15-19 years in North America is ranging from 42% to 52%, 2002 and < 90% in the UK and Nordic nations. While it was 79.1% in Swedish children aged 7-14 years, 2007 ^[6]. Some shocking facts have been announced from a report prepared by the Global system for mobile communication (GSM), in which the report showed that children who use mobile phones were too young (7-8) years in five countries including Japan, Indonesia, India, Chile, and Egypt ^[7]. Since 2006, WHO has focused on its need to conduct numerous research to illustrate the impact of the radio-frequency waves on children ^[6]. The review aims to identify the possible evident of impact of mobile phone use on some health aspects of children and adolescents.

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METHODS

An evidentiary subject review study to reveal the results of the newly published research about the impact of the mobile phone usage on some health aspects on children and adolescents, these health aspects were eye and ear health, nervous system, psychological effects, brain health and quality of sleep and all the chosen articles were published for the year 2014 till 2019. The evidences of the required articles were collected from different source databases including the Pub Med databases, Google Scholar website and Researchgate website and the these chosen articles were written in English.

The keywords specified in the search including (use of mobile phones, children and adolescents, eye effects, Ear problems, neurological and psychiatric effects, brain tumor, sleep quality, long term effect) after confirming the desired search topic and the year of the search by looking at the study setting, date of carrying out, year of publication depending on the sub-topics of the chosen article including (search methods and results).

All published articles that have been chosen in this subject review were read carefully to take the desired evidence. To identify and determine the possible or causal evidence of health aspects in relation to the use of mobile phone, the researcher has chosen the results based on statistical analysis and either taken from a constructed table or presented to other research results.

Evidence based Impacts of mobile phone

• Eye health

Repeated use of the mobile phone for long periods of time harms the visual system of the eye in different ways where it can cause eye tumor due to the high temperature of the eye due to exposure to electromagnetic radiation and close these radiation from the lens of the eye increases the probability of eye exposure to cataract disease later [8]. Bansal and Mahajan, 2018 found in a study of 450 Indian children under 15 years of age in the pediatric department at the teaching for tertiary care that more than one third of them (35.7%) were suffering from eye symptoms including eye strain and eye watering (8). In another recent study, which included 177 Saudi students studying at a middle school in the city of Riyadh, their ages ranged 12 to 116 years old, found that using the smartphone for more than 28 hours a week causes visual disturbance [9].

• Ear problem

Increase the temperature in the ear lobes by approximately 10 degrees Celsius may cause auditory disturbances when using the mobile for a period of 20 minutes continuously and for longer periods because the radiation emitted from the mobile may cause damage to the sensitive parts of the inner ear, as well as people who use phones including children for 2-3 hours a day and for a period of 3-5 years may be exposed to the occurrence of partial deafness and even may eventually exposed to ear tumor or permanent hearing [8].

• Neurological effects

Neurologically, the microwave radiation emitted from mobile phones through the Wi-Fi device is mostly affects the head region [10]. In a study carried out by Cerutti R, *et al* (2016) they revealed that exposure the adolescents to some harmful effects like headache attacks and other somatic problems as result to excessive use of mobile devices [11]. And exposure to headache was significantly associated with mobile phone use among Twainish children in another study published in 2015 [6]. Recently, Jo Fowler and Jan Noyes, found that the children aged 11-14 years in south west of England at risk of muscular skeletal problems due to mobile use [4].

• Psychiatric effects

In a recent study conducted in South Korea by Seong-Soo Cha and Bo-Kyung Seo revealed that the lethargy and depression were more in risk group (excessive mobile users) than the normal user group, and these findings were tendency to significant difference [12]. But in another study carried out on a group of Japanese young people aged 15-19 years, it revealed that the use of mobile phone for social networking services, and conversation with others for two hours or more is significantly linked to a high risk rate with depression [13]. Some studies indicate that there is a correlation between the use of mobile phones and stress, some of which negate this as it is difficult to interpret and summarize the relationship between them [14]. Some researchers have proven that mobile use causes increased stress and others have proven the opposite [14]. In a study conducted on a group of high school respondents, their mean age was 11.97 years [15]. The reason for this may be that Children may experience various biological and psychological changes during their lifetime for a daily period [15]. As for the correlation between exposure to anxiety and the use of mobile phones, two recent studies proved to have been set forth investigating by Elhai, *et al* and another by Nassehi, *et al* [14]. They proved that there is an important correlation between the occurrence of anxiety and the use of mobile phones.

• Brain Tumors

Over the past two decades, several medical studies have been carried out, the purpose of which was to assess the health risks arising from the use of mobile phones, where some researchers suggested that the use of mobile for long periods has a high risk of developing brain tumor and specifically the sides of the head but these investigations did not achieve an overall rise in the risk of cancer and the extent of its decline on the other side of the head [16]. Where it showed that the levels of glucose metabolism are high in the brain tissues when those tissues are exposed to the radiofrequency radiations emitted from mobile phones and for long periods of 50 minutes or more [16]. One multi-center study carried out by Sadetzki *et al*, on a sample of mobile phone users from children and teenagers aged between (7-19) years where that study revealed a statistically significant health risk of developing brain tumor in regular users (one call weekly and at least for six months). And there was no enough data for the long-term impact of mobile phones on the brain, and it's found that accumulative time from the first use of the mobile until the diagnosis of the tumor was only five years so it requires a lot of research to get more accurate results [17]. Mobile phone users from the children are more susceptible to brain tumors than adults and may be the reason for this is that children have smaller and lighter heads and their brain tissues of are high in conductivity. Thus all these factors help to ease the absorption of radiation into the brain [17].

• Sleep problems

Sleep is considered a need of the necessary human needs which constitute one-third of his/her daily life where sleep is a state of the reversible unconscious and in this case, the cells of the body and mind are renewed and work to repair and develop [18]. The results of several newly published studies apply to a group of young mobile phone users in Turkey [18] Japan [13] Iran [19] has shown that increasing the duration of mobile phone usage reduces the quality of sleep and affects it. Because of the lack of rational use of electronic media has negative effects on the quality of sleep in children and adolescents [18].

CONCLUSION

The results of previous studies have shown that prolonged exposure to electromagnetic radiation emitted by mobile devices may damage the visual system and sensitive parts of the ear, exposure to frequent

headaches, lethargy, and possibly They develop lethargy and depression and do not forget the risk of exposure to brain tumors.

REFERENCE

1. Suhag AK, Larik RS, Mangi GZ, Khan M, Abbasi SK, Madiha H. Impact of Excessive Mobile Phone Usage on Human. *J Comput Sci Syst Biol*, 2016; 9 (6): 173-177.
2. Dagli R, Hans R. Effect of mobile phone radiations on oral health. *J Int Oral Health* 2015; 7 (1): i-ii.
3. Ahonen M. Wireless Systems and Health Risks- Implications for Educational and Pedagogical Practices. Available at: https://beyondradiation.blogs.com/mblog/files/ahonen_abstract_online_educa_berlin.pdf. Accessed (15/06/2019).
4. Fowler J and Noyes J. A study of the health implications of mobile phone use in 8-14s1. *DYNA*, 2017; 84 (200): 228-233.
5. Lennart Hardell. Effects of Mobile Phones on Children's and Adolescents' Health: A Commentary, 2018; 89 (1): 137-140.
6. Chiu Ch-T , Chang Y-H, Chen Ch-Ch, Ko M-Ch and Yi Li Ch. Mobile phone use and health symptoms in children. *Journal of the Formosan Medical Association*, 2015; 114: 598-604.
7. Alobaid L, B Hessah, Alkhamis A, Alotaibi R, et al. Burgeoning Rise In Smartphone Usage among School Children In Saudi Arabia: Baseline Assessment of Recognition and Attention Skills Among Users and Non-Users Using CANTAB Tests. *Ulutas Med J*, 2018; 4(1): 4-11.
8. Mitra R, Pattanayak S. Mobile phone and tower radiation: a challenge to all living entities. *Explor Anim Med Res*, 2018; 8(1): 5-10.
9. Bansal S, Mahajan RC. Impact of mobile use amongst children in rural area of Marathwada region of Maharashtra. *Int J Contemp Pediatr*, 2018; 5(1):50-54.
10. Noaman AA. Exploring the Possibility of Headache Exposure among Mobile Phone Users Aged (18-25) Years. *Diyala Journal of Medicine*, 2018; 15 (2): 80-86.
11. Cerutti R, Presaghi F, Spensieri V, Valastro C, Guidetti V. The potential impact of internet and mobile use on headache and other somatic symptoms in adolescence: A population-based cross-sectional study. *Headache*. 2016; 56(7):1161-1170.
12. Cha S-S and Seo B-K. Smartphone use and smartphone addiction in middle school students in Korea: Prevalence, social networking service, and game use. *Health Psychology Open*, 2018: 1–15.
13. Tamura H, Nishida T, Tsuji A and Sakakibara H. Association between Excessive Use of Mobile Phone and Insomnia and Depression among Japanese Adolescents. *Int. J. Environ. Res. Public Health*, 2017; 14 (701): 1-11.
14. Vahedi Z, Saiphoo A. The association between smartphone use, stress, and anxiety: A meta-analytic review. *Stress and Health*, 2018: 1-12.
15. Jeong S-H, Kim HJ, Yum J-Y, Hwang Y. What Type of Content are Smartphone Users Addicted to?: SNS vs. Games. *Computer in Human Behavior*, 54: 10-17.
16. Meena JK, Verma A, Kohli Ch., and Ingle GK. Mobile phone use and possible cancer risk: Current perspectives in India. *Indian J Occup Environ Med*, 2016; 20(1): 5–9.
17. Yan Z. and Hardell L. Effects of Mobile Phones on Children's and Adolescents' Health: A Commentary. *Child Development*, 2018; 89 (1): 137–140.
18. Akçay D and Akçay BD. The Effect of Mobile Phone Usage on Sleep Quality in Adolescents. *The Journal of Neurobehavioral Sciences*, 2018; 5 (1): 13-17.
19. Amra B, Shahsavari A, Shayan-Moghadam R, Mirheli O, et al. The Association of Sleep and Late-night Cell Phone Use among Adolescents. *J Pediatr (Rio J)*, 2017; 93(6): 560-567.