

# Health Hazards Due to Increasing Use of Mobile Phones in Children: A Review

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## Abstract

The excessive use of mobile phones and other wireless devices is seeing a steep rise among the general population in the present world. People, unaware of the hazards these might pose, are marching towards a great health risk. This article would focus on health hazards in children, which are brought about by the harmful radiation emitted by mobile phones.

**Keywords:** Mobile Phones, Health, Harmful Effects, Radiofrequency.

## Introduction

In the present world, the most popular mode of communication is found to be mobile phones and tablets. These gadgets apart from being used for making calls are also being used for many other functions. They are used as texting devices, sensors, high definition cameras, internet surfing gadgets, gaming stations, GPS stations, calendars, calculators, source of internet connections for sending e-Mails among many other advanced functions. This is the reason why people tend to depend on this complicated device which serves the assignments of multiple devices. This leads the adults to use the mobile phones or such gadgets very frequently. Because of this increasing use among adults, the children too end up using them. They tend to imitate their parents and seem to act like them. They find it to be a very convenient and interesting mode of entertainment. Their age being at a very tender stage, they are yet to understand the harmful effects the use of mobile phones and tablets has on their

mental and physical health. This radio frequency fields to which today's population is exposed lead them to be affected by the harmful radiations emitted by the mobile phones and tablets and these are the electromagnetic rays ranging in between the microwave wavelength of 850-1800.<sup>1</sup>

**Effects of radiations emitted by mobile phones on health of children:** The effects of the radiation may take years to appear. Hence, they are less visible. Some of them are degenerative neurological diseases, like, Alzheimer's disease, dementia, depression syndromes (mostly at the age of 50-60 years). But, amongst the most harmful effects that are visible, are the tumors associated with the brain because it is the organ that is targeted easily.<sup>2</sup> Some of them are glioma and acoustic neuroma associated with that part of the brain that is most exposed to radiofrequency, i.e. the ipsilateral part.<sup>3</sup> These effects are more pronounced in children because of their smaller head size and lesser skull thickness. The brain keeps developing almost till the age of 20 years and this is the period when the brain is most sensitive to toxins and environmental radiations. Moreover, children have a longer life to be exposed to any health risks. So, they are more vulnerable to the radiation than the adults.<sup>2</sup> The American Academy of Pediatrics agrees, saying that "when used by children, the average RF energy deposition is two times higher in the brain and 10 times higher in the bone marrow of the skull, compared with mobile phone use by adults."<sup>4</sup> It has been reported that

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younger the children, the more is the harmful effect of radiations emitted from mobile phones in terms of brain tumors and cancers.<sup>5</sup> Some researchers have shown the link between pregnant mothers using mobile phones and the mental health of the children. Such children develop a tendency of hyperactivity, emotional disturbances and difficulty in mingling with other children.<sup>6</sup> A link also has been established between attention deficit hyperactivity disorder and the use of mobile phones. Children who excessively use mobile phones to make calls or entertainment or tend to spend a great amount of time with their mobile phones are seen to have developed this disorder.<sup>7</sup>

The international agency of research on cancer (IARC) at WHO in May 2011 conducted a study regarding the effect of mobile phones on children. They concluded that the radiofrequency in the range of 30 kHz – 300GHz might have the potential of a human carcinogen.<sup>8</sup> An ongoing study, MOBI-Kids by Sadetzki et al., 2014, has by far shown that regular users, who use mobile phones to make just 1 call per week have a very insignificant risk for developing brain tumors. They have also shown that the highest time lapse between the use of mobile phones for the first time and development of disease is 5 years.<sup>2</sup> In a report submitted by Russian National Committee on Non-Ionizing Radiation protection in 2008 to WHO, it was opined that the children who frequently use mobile phones would most commonly face mental and physical illness, like, memory disturbances, loss in concentrating abilities, increased levels of irritation, sleep disturbances, reduced stress management capabilities, increased risk of epileptic attacks, etc.

The radiofrequencies have their harmful effects on skin too. Skin cancers and contact dermatitis are some of the skin diseases associated with frequent usage of mobile phones and wireless devices. These diseases highly affects the way of life as they might cause pain and discomfort in a large percentage of the population.<sup>9</sup> A few of the less risky health problems that were found to be associated with phone calls were warmth behind and around the ears and burning sensation in the skin of the face. These symptoms were commonly found to be lasting till 2 hours after the phone call.<sup>10</sup>

#### **Highlights of few harmful effects in adolescent:**

Sleep disturbance is one of the major harmful effects of radiofrequency on adolescents. Sleep is mostly regulated by a neurohormone, Prostaglandin D2, whose

synthesis is in turn dependent on an enzyme,  $\beta$ -trace protein (lipocalin-type prostaglandin D synthase). The concentration of this enzyme is markedly reduced by the continual use of mobile phones and wireless devices. This causes sleep disturbances in adolescents.<sup>2</sup>

### **Conclusion**

With the increased use of mobile phones and electronic gadgets among the adults and children, the health risks associated with harmful radiations have taken its dominance in this world overtaken by technology. The children are the easy and the major targets of this storm of science. Both, physical and mental health mishaps are pronounced.

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