

**THE WIDESPREAD INTERACT OF THE MODERN CELL PHONE DEVICES WITH THE CHILDREN AND THE SIDE EFFECTS ON HEALTH****Waseem Saad Nsaif***

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DOI: 10.5281/zenodo.186846**KEYWORDS:** electromagnetics signals, modern cell phones, side effects, children health.**ABSTRACT**

With the advent of the mobile phones and the wireless internet, which spread around the world, studies and interest in this subjects began, and their effect in the human body, but because of time constraints on this invention, until now there are no studies or research that specifically describes the damage to the cell phones signals waves and the internet signals waves in the human body, so that be required approximately thirty years of continuous research on a specific group of people are using these phones to determine damages, But there are information that who talking on the cell phones for up to four hours a day leads to a decrease in spermatozoa by 25% with effect on the function and movement and distortions of the spermatozoa, and these mobile phones are issued radiation may affect the DNA that affects testicle producing testosterone and sperms. A number of researchers in the Netherlands studied Wi-Fi wireless signals waves because of their responsibility for the deterioration of the trees, where many of the trees hit the cracking and zigzags so the research team studied signals Wi-Fi. But that a great using for these devices result many side effects to the children which they suffering at them currently and at the future. So it's very necessary to focus on these side effects in this research to determine them and try to avoid or treat them. Perhaps, the most prominent of these side effects are physically and psychologically, physically as: joints aching, the curvatures of the back, the back aching, nick aching, headaches, eyes pain and the vision problems. Psychologically as: the moping, the tension, the continuously nerve, the aggressively treating, the sharp mood, the early addiction and the autism. In this research will be focusing and analyzing the main causes which cause and inflect these horrible said effects of the using the tablet computers and the touch screens phones.

INTRODUCTION

Cell phones used electromagnetic radiation in the range microwave or microwave, as the other digital wireless systems, such as data communication networks that produce similar radiation. The international Agency for Research on Cancer has classified mobile phone radiation depending on the IARC scale to Category 2b (may cause cancer). [1] Which mean they may contain a risk of causing cancer, therefore it was necessary to further studies and research in the long term, to see the effect of frequent use of mobile phones, some of the advisory national authorities [2] recommended measures to reduce the vulnerability of their citizens as a preventive approach. Parts of a radiation wave emitted by mobile phone handset are absorbed by the human body. It is possible to reach energy summit for the waves of radiation emitted by the handset with a Global Positioning System (Global System for Mobile Communications) to 2 watts. The counterpart phone in the United States has a maximum transfer of energy up to 3.6 watts. The other digital mobile technologies such as communication technology encoded multi-access points (CDMA2000), and the digital advanced mobile phone service (D-AMPS) used the lowest producing energy, compared to less than a watt. The majority of energy produced from the mobile phone Adjust by the mobile phone measure and the regulatory agencies in each country. [3] In the most systems, examines the phone and the signal-generating stations the efficiency of reception and signal strength, and can be increase or decrease the energy level automatically, within a certain extent, to suit different situations, for example, inside and outside of buildings and vehicles. [4] these exciting services have a many side effects, which in this research will be highlighted, especially on children, [5] and illnesses that may be caused by the use of these devices, as well as the radiation produced by the devices have obvious damage, including dysfunction synthesizer of some cells in the body, plus it leads to redness of the skin, especially fatty. Also inhibit the hormone melatonin, which leads to weaken the ability to focus, [6] and the dust that accumulates on the screen that reflect the rays increase the body temperature, fatigue the eyes, headaches, and thermal rays also occur sometimes skin rash, as it affects the neck, shoulder, lumbar, hands and wrists. Children are already suffering health troubles which related with using these touchscreens devices, most notably the neck, back and limbs harms and those harms appear



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typically at the adults because of the use of touchscreens devices for long periods.[7] This is in addition to that a child using these touchscreen device for long hours every day affect negatively because the rays and waves that come out of this touchscreens have a strong effect on the eye and the cornea, as well as on the eyelids and it is result excessive pressure, which leads to the destruction of nerve fibers in the back of the eyes.[8] The use of children for touchscreens devices excessively may turn into an addiction, that consequent social and psychological destructions, [9]which robs the child from his childhood and prevent him from enjoying his life. The addiction deprives the child from the activities as an isometrics and social activities such as interview friends and play with them and the participation of the family members to their meetings around one table. Because he or she is connected with these devices and cannot get away from the touchscreens, and even more that the child sleep become irregular, and moves away from the hobbies. Here, clearly show the risks of child's addiction to sit in front touchscreens. The falls in the autism circle with a touchscreen device means the point where the child cannot separate himself from the touchscreen device, which is consider a risk alarm for him, where the child begin to reap the negative effect, where he or she suffer cases of agitation, aggression and isolation.[10] The child sitting in front of the touchscreen devise alone for a extensive period which making him isolated from family, and this child maybe watch a violent games and trying to imitate it automatically against his or her brothers or sisters or his friends at school, Also the radiation from the touchscreen devices lead to increased brain electricity, which may lead to bouts of convulsions and seizures at an early age for children.

THE ELECTROMAGNETIC WAVES INTERACTING WITH THE HUMAN BODY

Atom elements consist of a central core (nucleus), contain positively charged protons and neutral neutrons, and revolve around this core number of negative electrons shipment, called on the number of protons in the nucleus: atomic number, while called on the total number of protons + total neutrons: atomic weight, in the most nuclei of chemical elements is the number of protons in the nucleus is equal to the number of neutrons, in some nuclei of some elements, the number of neutrons is greater than the number of protons, these elements are called isotopes, some of these isotopes are fixed, fitted atomic does not change by the passage of time and the habit, and also have a low atomic number. [11] Some of these isotopes are unstable, often is high atomic numbers and called radioisotope, these isotopes will be produced atomic nuclei precision components, (Which mean issued the nuclear radiation), that called alpha-rays, beta rays, and gamma rays, with the passage of time these items to turn into other elements less weight, differ in their chemical and physical characteristics of the original item. There are two basic types of radiation are:

- Ionizing radiation, such as gamma rays and cosmic rays, X-rays and beta particles and alpha.
- Non-ionizing radiation, such as electromagnetic radiation which are radio and television waves and radar waves, heat waves with short wavelengths (microwave) waves and infrared and ultraviolet light and normal light.

PHYSICAL ILLNESSES

Illnesses of eyes and vision problems.

A scientific studies and research carried out by the doctors American Academy of eyes proven following results:

- a. The 60% - 74% of touchscreen users are suffering from symptoms of private eyes and complaints are raising ratio in children to 81%.
- b. The person who uses touchscreen for more than two to three hours a day connected to be vulnerable to the affected eyes.
- c. Increasing the degree of myopia in children by between 18.4% -20.1%.
- d. The effect of touchscreen use in the eyes and the appearance of the symptoms suffered by the touchscreen user vary from one person to another.
- e. The weight of the eyelids movement and a sense of fatigue and exhaustion
- f. A burning sensation and redness of the eyes
- g. Blurred look
- h. The inability to see things in focus
- i. Headaches



The causes of eyes affected and the symptoms of the use of the touchscreen:

- People who suffer from myopia or hyperopia or “Astigmatism” Show symptoms faster than others.
- People who are putting special reading glasses while using the touchscreen show symptoms because the touchscreen are usually at the top of the right situation for reading glasses mode. The distance between the eyes and touchscreen are larger than the distance between the touchscreen and the reading glasses.
- Sit in front of the touchscreen with the audit and concentrate for long period’s causes fatigue and strain the eyes muscles which responsible for the adaptation of the eyes that increase their strength and their ability to assemble the finer things near the eyes on the retina.
- Glare lighting touchscreen or other lighting in the place that reflected from the surface of the touchscreen on the eyes leads to blurred look and blurred vision.
- The small size of objects on the touchscreen and the lack of adequate lighting contrast between these things and the backlit touchscreen, making it difficult to see it and results the eyes fatigue and overwork the brain and cause headaches.

The eyelids close involuntarily, it helps regenerate tears layer that covers the eye from the outside, leading to moisturize the eye and prevent dry, [6] as well as the closure of the eyelids of the eye to take comfort allows instantaneous. But while using touchscreen results the extreme centralization and least shut eyelids autonomic rate, resulting to increased evaporation of tears and lack of renewal and lead to dry eye, which causes a burning sensation in the eye and redness.

Following the guidelines is essential for everyone who uses the touchscreen devices, whether for a long or short periods of time, in order to avoid the negative side effects resulting from the use of this device, which has become an integral part of our daily lives.[12] While sitting in front of the touchscreen device, the child leads more than 4,000 eye movement within one hour, this leads to damage to malfunction in the optical device,[5] it becomes difficult for him to focus on distant objects. So when a child is trying to re-focus look at distant objects, vision be blurred or distorted. The less a child's ability to blink his eyes while looking at the touchscreen, the lower the rate of this process leads to dry eyes and inflammation as well as redness.

Ailments of spine, neck and body joints.

Sitting in front of touchscreen devices for long periods leads to lower back pain that causing chronic back ailment. As for example the ailment of disc in the lower back or neck area, [6] because the user is busy working on the touchscreen and non-compliance always with the correct hearings in front of the touchscreen device. [13] The fingers of the hands, which are the main entrance of the information on the touchscreen, may be involved in some convulsions in the long term. The scientists showed that the human who sit for 17 hours straight in front of the touchscreen, that leads to the death of 420 million cells of brain cells, therefore, today's scientists are advised to take appropriate action to protect our lives from the devastating effects of electricity, and that is through staying away from electrical appliances as much as possible, for example, instead of sitting in front of touchscreen for long hours, can sit for intermittent periods. The brain much affected by electric and magnetic vibrations produced by electrical touchscreen devices, therefore, doctors are advised not to sit in front of the touchscreen for long periods. [14] Studies have recently shown that a lot of people visiting doctors orthopedic clinics due to a long stay in front of computer and with not healthy ways, therefore it is imperative to warn children from these negatives that may affect them, and the negatives are:

Short-term physical effects, such as stress the eye muscles, begin with pain in the eyes, anxiety and lack of concentration.

Long-term physical effects, which take longer for appearance, including the neck, muscles, joints and spine pain. For example, neck pain and lower back pain, weight gain due to the lack of movement, and other impact of the risks of radiation from the touchscreens which resulting from the electrical and electronic circuits magnetic fields.

To avoid neck pain, lower back need to be sitting on a chair suitable length and preferably is of stand for the head and the body and the head and spine straight. [15] Also to avoid joint pain, especially knee and hip sit intact path so that the joints are 90 degrees, as well as the joints of the wrist while using the touchscreen so that they are hand in a straight shape and be attached near the body and serve as an upper arm 90 degrees with the forearm.

**Ailments of obesity, overweight and sagging**

Sitting in front of touchscreens along while and the lack of movement, and eat and unhealthy fast foods, lead to obesity and saggy in children, which making their lives miserable because of the weakness of their movements and the able to live like their peers who are slim. Advised not to eat carbonated drinks, and fast foods, high calorie, also advised to take an alternative with less calories instead for example drinking water, vegetables and fruit. More importantly, is the attention to movement and by maintaining and not to sit in front of the touchscreen devices for long periods.

Natural activity within the human body

The human body radiates from the inside, by all of the air we breathe and the food and water that reaches his stomach, the air is the main source of natural radiation dose up to the inside of the human body, this radiation essential source is the radon a gas, which founded in the earth's atmosphere and generated by the automatic decomposition of the isotope uranium -238 that founded naturally in the rocks of the earth's crust. As well as both of the human food and the water which are main to those radioactive materials of the plant is the soil, which the plants absorb these materials with other natural materials. [16]Some of the dust that falls on the plant contain traces of the radioactive material, radioactive materials up to the inside of the human body by eating plants or the meat of animals that feed on plants, radioactive materials also come in with the water we drink where the water contains very few traces of them. So our bodies are slightly radioactive from the inside because of some radioactive elements, such as (the potassium -40) and (the carbon -14), Radioactive materials behave normally complex ways before they enter the human body.

Effect of nuclear radiation on the human body

Any a living creature when exposed to nuclear radiation an ionization of atoms occurs, the atoms that make up the human body molecules, which leads to the destruction of these tissues, then human life threatening danger. Severity resulting from this radiation depends on several factors, including the type and amount of energy produced them and the time of exposure, but these radiations are two types of biological effects. [17] Physical impact and often appear as a human infected with some dangerous diseases such as skin cancer, blood and infected eyes white water and the lack of ability to fertilization. The second effect of the radiation is genetic impact and show effects on successive generations. This is shown clearly on the Japanese after the dumping of nuclear bombs on Hiroshima and Nagasaki in September 1945, which led to the deaths of thousands of people and infected burns and deformities, their grandchildren injured by dangerous deadly diseases. So must be care taken not exposed the pregnant women X-ray as a way to diagnosis, so as not to infect the child with mental retardation. The maximum and in safe nuclear radiation that must not exceed the human being is (RIM 5) per day, the REM is the unit measuring of absorbed radiation, which is equivalent to one roentgen of x-rays. The human are exposed to a lot of sources of radiation in daily life.

Early effects of radiation on human

The early effects of radiation are those impacts that occur after several hours and even several weeks of acute exposure to large doses of radiation for a few hours or less. The early effects of radiation are those impacts that occur after several hours and even several weeks of acute exposure to large doses of radiation for a few hours or less. [18] These effects include nausea, fatigue, high fever, bloody changes including inertness or de-bone marrow, gastrointestinal effects such as peel off the lining of the gut cells, and the effect may be death within a month or two after acute exposure to radiation.

The late effects of radiation on the human are that human being tremendously from radiation from natural and industrial sources.

Radiation effect on human embryos

Radiation on human embryos effect depends on the growth stage, if the fertilized egg exposed during the first weeks to radiation will separate from the womb and the abortion occurs, if the age of the fetus was about three months, it is exposed to physical deformities, especially in the nervous system and the eyes, if the age of the fetus was about three months, it is exposed to physical deformities, especially in the nervous system and the eyes, but in the periods following the first three months, the fetus is exposed to a distortion of the hands and legs, embryos



affected even the slightest concentrations of radiation therefore not allowed to take the rays for pregnant women.[19]

PSYCHOLOGICAL ILLNESSES

Early addiction

The Internet addiction affects not only adults,[20] but children are also especially with the availability of new games and a big variety of applications of the touchscreen devices, this addictive reflects badly on a child's life more than the adults, also badly for the dates of his sleep, his study and become introverted and does not come out with his friends, or engage in any other hobbies but to sit on the network tirelessly. Internet addiction will inevitably lead to the break down the meanings of community especially since many parents are not having the reins about their children's Internet addiction, in addition to the chat rooms already become the only place where the adults or child can talk frankly without any fear and say what he could not say in front of other whether in politics or to talk about his life or anything else, and emptied all the suffering of the foil and the suppression of the problems via the Internet, the addicted drown in the Internet in a virtual world, that can lead in the end to completely separated from his realism. Adults do not censor them only themselves, and children must censor by their parents, the addicted of internet has to be aware when sitting each time on internet that he may lose a lot because of the isolation at those who around him whether on a personal level, social or practical.[21] Internet addiction is like drug addiction has ranks and levels, based on these levels of early addiction treatment can prepared by:

- a- Know the reasons: What make the increasing sail in the internet? , dose sees the Internet a way to escape from everyday problems?
- b- Put boundaries to sit in internet and manage time, we must determine where sailing in internet, how much of the time. (Can be used as an alarm clock to remind the end dedicated to sail) time.
- c- Organize social events, find alternatives commitment such as courses, exercise, and meet with friends.
- d- Self-confidence and establish direct social face-to-face relationships.

For the cases of incurable addiction must review the psychiatrists Clinics, basis on this most western country made a clinics and hospitals to treat Internet addiction because of the high risk of addiction on society. The chat rooms and browsing the Internet for the children of this generation become dose not resistible; it is already reached to the addictive point, especially in Arab countries, the rationalization of the use of network would less a lot of losses which may threaten the entire community. To combat addiction of touchscreen devices and the Internet among children, a German doctor Manfred Boytl, Clinic director of psychiatry and psychotherapy body in Mainz, Germany, offers advices: parents show concern for their children, stressing need to know what their children are doing on the Internet early, and help children regulate their internet browsers times, And regulate the times of electronic activities, activities as well the normal times activities. Boytl recommends parents observing the social relations of their children, and strengthened where necessary, by encouraging them to visit their friends or invite their friends to the house.

Autism

Fall in autism circle is the point where the child cannot separate himself from the touchscreen device that is the alarm bells for them, where they begin to reap suffer the negative effect cases such as agitation, aggression and isolation. The child sitting in front of the touchscreen device alone for a considerable period making him isolated from family. [22] The child may watch a violent games and trying to imitate repeatedly assaulting his brothers and his friends at school or at the street. Also, the radiation of touchscreen device leads to increased brain power, which may lead to bouts of convulsions and seizures at an early age for children. Autism is a disorder that usually appears in children before the third year of age. It affects the genesis and development of the child in three ways:

- ❖ Language, how to speak.
- ❖ Social skills, how to respond to others and communicate with them.
- ❖ Behavior, how to behave in certain situations.

There are different types of autism. The symptoms of autism vary from child to child.

For this reason, said the presence of autism spectrum disorders.

The autism or the symptoms of autism affects children of all races and nationalities. Currently, there are no cures for autism or autism symptoms. The child who patient with the autism lives the rest of his life with autism or



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autism symptoms. But the investigation of autism or autism symptoms early allowed benefiting from the many treatment options that can help a person to live with autism. [23] Some people who patient with autism or autism symptoms that adults can work and support themselves. But others have needed a lot of help, especially those who have damaged their mental processes or intelligence or who do not have the ability to speak or communicate.

The quality of life of an autistic child in his teens and attainable depends on:

- Early diagnosis of autism or autism symptoms.
- Severity of autism or autism symptoms.
- Personal treatment that the child received intensity.

Researches are still ongoing to help children who suffer from autism and their families to offer medical advice and conduct tests for children.

Tension, nervousness, attention Deficit and Hyperactivity

Attention deficit, hyperactivity disorder or hyperactivity / Movement disorder (ADHD) considered a chronic condition affecting millions of children and will accompany even in adulthood. Several of the problems that are attributed from the disorder of attention and focus:

- i. Lack of attention
- ii. Hyperactivity
- iii. Impulsive behavior

Children who develop this disorder suffer, in particular, from low self-assessment, problematic social relationships and low educational grades. Although the available cure for this disorder dose not able to treatment, but it may contribute to the treatment of the symptoms of the disorder.[24] The treatment often includes, psychological counseling and taking the appropriate pharmaceutical drugs, or it may be to the merger between both of them.

MOBILE PHONE SIGNALS WAVES AND INTERNET SIGNALS WAVES

Mobile phone signals waves

The cell phone is only a two-way radio (sender and receiver) works by low energy. The phone converts user voice and writing scripts to radio waves. When a user makes a connection to these waves sent out from the cell phone to the nearest base (tower) connections. When these waves reach the base, they are directed to the main telephone network, which in turn converts it to the nearest base (tower) in the recipient person contact area. [25] These bases used radio waves to reach the cell phone telephone network so that users can send and receive calls, SMS, multimedia and other mobile phone applications. Without those bases the cellular phones will not be able to work. Bases consist of three basic elements:

- Antennas to send and receive radio signals, these two types of antennas, one of them is in the form of rod, it is used to connect mobile phones to the base (tower), the length of these antennas between 0.5 and 2.5 meters. The other type in the form of dishes and works to connect Bases to each other.
- Building pads such as mast or high-rise building antennas are installed upon in order to be suspended in the air far away from any obstacle can make waves deviate from its progress in a straight line.
- Devices to supply the base and radio devices with electric power crisis to run and be kept in reserve tanks, connected bases (towers) to each other through the ground cables or by using wireless technology such as wind microwave dishes to create a vast network of bases.

Every base (tower) covers specific geographical area called a cell; the cell phone connects to the base (tower), which provides a stronger signal usually is the closest tower, when a person moves away from the base (tower), the signal becomes weak, then the cell phone automatically adjusts the strength of the signals received, which consumes additional energy from the phone's battery in order to maintain a minimum level of communication with the base (tower). When the user is out of the scope it automatically connects the new scope where he exists with the base. [26] To provide continuous coverage in the wide areas, to provide wireless Services for the largest number of users, must provide a larger number of bases (towers). The dangerous of the cellular phone bases are on the radio rays emitted and them ability (Energy rate per unit of time). There are three types of interaction that can occur between these rays and the cells in the human body:



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- ☒ Combination between the electric field radiations with cells.
- ☒ Combination between the magnetic field radiations with cells.
- ☒ Absorption of radiation energy by the cells as a result of this happen a high degree of heat cells.

Since the radiation energy is inversely proportional to the square traveled distance, whenever the human away from the base (tower) will be reduced the ray's energy that reach his body. So the engineering design of the base (tower) is necessary to ensure not exposure human to high level energy.

Internet signals waves

Wireless technologies in the IEEE 802.11 standard, a technical underpinning most wireless networks WLAN today, it uses radio waves to exchange information instead of wires and cables, also able to penetrate walls and barriers, high speed data transmission and reception Up to 54 Mbps. There are several standards for wireless networks defined by the Institute of cyber engineers, electricians IEEE, and the most famous 802.11a, acknowledged before the standard 802.11b. The latest standards today are 802.11ac, and these standards are compatible with each other often, but the extent and speeds are varying. [27] It is expected to Wi-Fi technology to evolve and change as the most of the other technological applications. It was invented and developed to serve the communications network within the local labor LAN, but without the use of wires, at the beginning the goal of them use was to Serve the laptop devices, but the rapid development of this technology it became serve the browsers of the global Internet, especially in cafes, restaurants, hotels, airports and banks. [28] It also has played an important role in audio technology across the network VoIP. And perform a great service now in sensitive places, as hospital corridors and security sites, so that the doctor access to certain applications to be able to serve patients, or the security man access to certain applications to identify undesirable persons from entering sensitive areas, and many other examples. It also added a lot to the mobile phone technology, and the possibility of its connection to the global Internet in case of presence within the Wi-Fi network scale. The modern task of it uses are transfer of images from digital cameras to the computer. After the research found that the Wi-Fi waves may lead to severe headaches, insomnia, fatigue, increased heart rate; it also leads to serious cases such as brain tumors and fertility problems and symptoms of autism and partial memory loss too. [29] The experts recommend trying to reduce the use of Wi-Fi as much as possible, and close the device while sleeping or dispensed with entirely, and replacing it with Internet cable as long as it is available to avoid damages as much as possible.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

We conclude from the foregoing that the mobile phone signals waves vary in form, content and the principle of work than the Internet Signals waves, but they are similar in their effects on humans, though to varying degrees, so the mobile phone signals waves affect in the human health, especially in the fertility, rates of pregnancy, childbirth and in the health of the fetus, as well as the Internet signals waves affect in the human health the same effect, but in varying degrees depending on the nature of each case from the other, in terms of the close proximity of the signals and the duration of exposure to them. The wasteful use of the phone has bad repercussions on health, starts trouble in the nervous system, heart, circulatory system, and infertility. For the mobile phone, it may be more dangerous, because it is a high frequency (850 million vibrations per second), the mobile phone design different from the other phones that the speaker has a wireless transmitter, which means that the radio waves enveloping the brain after exit from transmission center (headset), interfere with the natural electric fields of the membranes of the cells causing cancer. To avoid the danger, some companies warn their customers to away mobile phones from their bodies and not touch them during the phone calls. Excessive use of mobile phone may lead to the destruction of the sperms; the researches indicated that the low sperms speed strongly with these people who excessive use of mobile phone compared with those who use the mobile phone in moderation. The research has shown that these radiations have severe influence damage on DNA, which affects the cells of the testes which produce testosterone or on the tubes that produced sperms. A similar study conducted at 1997, where they expose the rat testicles to mobile waves (900 MHZ transferred to 8 Hz which is similar to mobile phone waves), the search concluded at the end that this leads to a decrease in the fertility of male mouse in the form of atrophy of the testes tubes. The waves of the mobile phone reduces the number of sperm in a mouse by statistically significant. As well as the waves of the Internet and Wi-Fi may lead to severe headaches, insomnia, fatigue and increased heart rate, it also leads to dangerous cases such as brain tumors and fertility problems. Noticed over this search, the excessive use of touchscreen devices by children may inevitably result a side effects, represented by



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physical or psychological illnesses, because of the approach of how these devices made and how their work, where the screen lighting directly effect on the eyes, which leading to the eyes illnesses and vision problems, and their radiation lead to problems and aching in the spine, neck, head and arthritis, and excessive use of touchscreen devices lead to obesity and sagging problems because the lack of movement with frequent eating, the excessive use of touchscreen devices use resulting also a psychological illnesses to children, Such as the autism, the early addiction, stress and hyperactivity, this is in addition to the electromagnetic radiations that produced by these devices, which expose the children health to the other problems at the nervous system.

RECOMMENDATIONS

- ❖ Avoid carry the device adjacent to the body, especially near the heart, where is this user sensitive mobile waves, but should carry the device in a handbag away from the body at least 50 cm.
- ❖ Reduce the duration of the call to the shortest possible time, where this device should not be used in chat or long calls, and we should not call more than one minute at the most, and shall not exceed the number of calls per day on the three calls, and the device is closed when it is not intended to send or receive calls and at bedtime.
- ❖ Distance between the antenna device and ear at least 2 cm during use (according to reports of the World Health Organization) reduces the density and intensity of exposure to electromagnetic waves by one-sixth, and a 20 cm by 1/64.
- ❖ Using the speaker of the device permanently, this greatly reduces the risk of exposure to these waves.
- ❖ patients with heart disease, high blood pressure, epilepsy, impaired immunity, psychiatrists and patients receiving chemotherapy have to avoid the use of mobile phone completely because the overlap of electromagnetic waves with treatment.
- ❖ Prohibits children under the age of puberty to open use of the mobile phone (World Health Organization, 1999) because children are more susceptible to health risks of electromagnetic waves in various stages of growth, as it applies to the elderly.
- ❖ Prohibits pregnant women frequent and long calls or put the mobile phone near the womb because the influence of electromagnetic waves on embryo cells in various stages of division and development, especially in the first three months of pregnancy.
- ❖ In a hospital have to closed the mobile phone because the waves effect on the medical devices such as hearing aids, heart pacemakers (must the mobile device away from the cardiac devices a distance of not less than 20 cm).
- ❖ Using the headset while driving if had to use a mobile phone so as not to hinder the use of hands driving a car.
- ❖ Closing the mobile phone when riding a plane because some devices in the plane are affected by the waves of the mobile phone as well as while in refueling stations.
- ❖ During the ringing of the mobile phone do not close it to the ear because it strongly affects the hearing.
- ❖ Do not dispose of the battery consumption of mobile phones in the litter box, but handed it over to the seller who, in turn collected and delivered to the production company where it is disposed of away from residential areas because they are polluting the element mercury that can be absorbed through the skin cells.
- ❖ There is a possibility to use the satellite to send the mobile phone waves instead of using base stations, in order to reduce the intensity of these waves and thus reduce the health risks.
- ❖ Prohibition of closed the public near the antenna on the roofs of buildings a distance less than 6 meters, the professional workers must wear a vests against the radiation signals waves.
- ❖ To prevent infecting the children from the physical and psychological illnesses which resulting as a side effects of the excessive use of the touchscreen devices, must be put a strong control on the use of these devices by the parents and family and not to leave the child with the touchscreen device without control, monitoring or restricting. It is can be only through allocate of sufficient time for the children, and care them and follow their interests and provide them with alternatives for using these devices, such as going for a walk or playing a funny mere games and spend a good time with them in fun. In addition to scaling the importance of these devices, and underestimated them constantly in front of children, And not to spend much time using these devices by adults, because the children always trying to imitate the adults. Also recommend that “Muslim” child ablutions after each use for these devices, because the survey with water to most parts of the body with ablution operation activates the body and reduces the



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effects of electromagnetic waves on the body and the lighting effects on the eyes, then stay away from touchscreen devices for good periods it reduces the side effects of these devices risks.

REFERENCES

1. Volkow, Nora D.; Tomasi, Dardo; Wang, Gene-Jack; Vaska, Paul; Fowler, Joanna S.; Telang, Frank; Alexoff, Dave; Logan, Jean et al. (2011). "Effects of Cell Phone Radiofrequency Signal Exposure on Brain Glucose Metabolism". *JAMA* 305 (8): 808–13
2. Foster, Kenneth R., Repacholi, Michael H. (2004). "Biological Effects of Radiofrequency Fields: Does Modulation Matter?" *Radiation Research* 162 (2): 219–25.
3. Blank, Martin, Goodman, Reba (2009). "Electromagnetic fields stress living cells". *Pathophysiology* 16 (2–3): 71–8.
4. Lahkola, Anna; Auvinen, Anssi, Raitanen, Jani; Schoemaker, Minouk J., Christensen, Helle C., Feychting, Maria, Johansen, Christoffer; Klæboe, Lars et al. (2007). "Mobile phone use and risk of glioma in 5 North European countries". *International Journal of Cancer* 120 (8): 1769–75.
5. N.Kozeis, Impact of computer use on children's vision, *Hippokratia*, 2009 Oct-Des, vol.13 (4):230-231.
6. Dr. Afaf Badie Jamil, et al, Impact of Computer on Human Health. *J. Of College Of Education For Women* vol. 25 (2) 2014.
7. Stupar M, Shearer H, Cote P, et al, Prevalence and factors associated with neck pain in office workers, proceeding of the world congress on neck pain, 2008 Jan 20-22, Los angeles, Toronto, canadian institute for the relief of pain and disability, 2008, p.154.
8. Murch G, How visible is your display, *electro-optical systems design*, March 1982, 43-49.
9. Healy, Jane, *Failure to connect*, New York, simon and Schuster, 1998.
10. Greenfield, Patricia M, Elisheva F, Gross, Robert E, Kraut, Kaveri subrahmanyam, The impact of home computer use on children's activities and development, the future of children, vol.10.2, (2000), 123-144.
11. Knoll, Glenn F (1999). *Radiation detection and measurement* (3rd ed.). New York: Wiley. ISBN 0-471-07338-5.
12. Peiyi, David Lipia Hoeing, Lan Bailey, Daived Rempel, *Proceedings of the human factors and ergonomics society annual meeting*, October, 2009, vol.53, no 18, 1447- 1451.
13. Hakala PT., Rimpela AH., Saarni LA., Salminen JJ., Frequent computer-related activities increase the risk of neck- shoulder and low back pain in adolescents, *Eur J public health*, 2006.
14. Cote P., Van der Vald G., Cassidy JD., et al, The burden and determinants of neck pain in workers: results of bone and join decade, 2000-2010 task force on neck pain and its associated disorders. *Spaine* 2008, 33(4s): S60- S74.
15. Choudhary S. Bakhtiar, Vijaya Rao, Suneetha S., Attitude alters the risk for development of RSI in software professionals, *Ind J. Occu and Env Med*, 2003, 7:1.
16. Tomson R, Tuulik V, Hinrikus H (2006). "Integration of differences in EEG analysis reveals changes in human EEG caused by microwave". *Conf Proc IEEE Eng Med Biol Soc (IEEE Service Center)* 1: 1597–600.
17. Dahl, Per F. (1997). *Flash of the Cathode Rays: A History of J J Thomson's Electron*. CRC Press. ISBN 0750304537.page.72.
18. Aalto, S, Haarala C, Brück A, Sipilä H, Hämäläinen H, Rinne JO (July 2006). "Mobile phone affects cerebral blood flow in humans". *J Cereb Blood Flow Metab (Nature Publishing Group)* 26 (7): 885–90.
19. J M Kiesecker and A R Blaustein. Synergism between UV-B radiation and a pathogen magnifies amphibian embryo mortality in nature. *PNAS*. J M Kiesecker. vol. 92 no. 24, 11049–11052.
20. Leo Sang-Min Whang, Sujin Lee, and Geunyoung Chang. Department of Psychology, Yonsei University, Seoul, Korea. " Internet Over-Users' Psychological Profiles: A Behavior Sampling Analysis on Internet Addiction", *CyberPsychology & Behavior*. July 2004, 6(2): 143-150.
21. Caldwell, C. D., & Cunningham, T. J. (2010). Internet addiction and students: Implications for school counselors. Retrieved from http://counselingoutfitters.com/vistas/vistas10/Article_61.pdf.
22. *Journal of Applied Research in Intellectual Disabilities*, Volume 18, Issue 4, pages 281-294, December 2005."The Changing Epidemiology of Autism".
23. *Journal of Intellectual Disability Research*, Volume 47, Issue 4-5, pages 231–237, May 2003. "Child behavior problems and partner mental health as correlates of stress in mothers and fathers of children with autism"



Global Journal of Engineering Science and Research Management

24. Prof. Nabil Kazem Abdul-Sahib, Dr. Omar Ali Azab. College of Engineering Khwarizmi, Baghdad University. "An extensive study about the impact of electromagnetic waves on the human health". Baghdad 2012
25. Route des Lucioles , Sophia Antipolis Cedex. Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); AT command set for User Equipment (UE) (3GPP TS 27.007 version 8.5.0 Release 8).
26. Anforderungen nach NISV: Mobilfunkanlagen" [Specifications of the Regulation on Non-Ionizing Radiation: Mobile Telephone Installations] (in German). Bundesamt für Umwelt [Swiss Federal Environment Ministry]. 2009-03-13. Retrieved 2010-01-20.
27. R.L.Freeman, Radio System Design for Telecommunications, John Wiley & Sons, Inc., 1997.
28. Wolter Lemstra, Vic Hayes, John Groenewegen (2010). The innovation journey of Wi-Fi: the road to global success. Cambridge University Press. p. 121. ISBN 978-0-521-19971-1. Retrieved October 6, 2011.
29. Hardell L, Carlberg M, Hansson Mild K (March 2009). "Epidemiological evidence for an association between use of wireless devices and tumor diseases". Pathophysiology 16 (2–3): 113–22.