

EDITORIAL

Cell Phone - Addiction May Lead to Misery

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The modern land line telephone is the result of work of many people Alexander Graham Bell was, however, the first to patent the telephone, as an "apparatus for transmitting vocal or other sounds telegraphically". However, in Germany Johann Philipp Reis as well as the Italian-American inventor and businessman Antonio Meucci has been recognized for his contributory work on the telephone. Now landline phones are the invention of the past and man has moved into the era of cell phones. The history of cell/mobile phones can be traced back to two-way radios permanently installed in vehicles such as taxicabs, police cruisers, railroad trains etc. in the western world. In December 1947, Bell Labs engineers Douglas H Ring and W Rae Young proposed hexagonal cell transmissions for mobile phones.¹ The technology did not exist then and the radio frequencies had not yet been allocated. Cellular technology was undeveloped until the 1960s, when Richard H. Frenkiel and Joel S Engle of Bell Labs developed the electronics. On 3rd April 1973 Motorola manager Martin Cooper placed a cellular phone call in front of reporters. This began the era of the hand held cellular mobile phone. The prototype hand held phone used by Dr. Cooper weighed 1.1 kg and measured 23 cm long, 13 cm deep and 4.45 cm wide. The prototype offered a talk time of just 30 minutes and took 10 hours to re-charge.² John F Mitchell of the same company successfully pushed Motorola to develop wireless communication products that would be small enough to use anywhere and participated in the design of the cellular phone.³

Thus in a nutshell, the facts are¹: In 1983, the first mobile phones went on sale in the US at almost \$4,000 each² over 250 million Nokia 1100 devices were sold, making it the best selling electrical gadget in history³, more people in the world have mobile phones than toilets⁴, so many facebook photos and videos are uploaded via mobile that it takes up 27% of upstream web traffic.⁵ The technology behind smartphones relies on up to 250,000 separate patents.⁶ The average person unlocks his or her smartphone 110 times each day.⁴ Cell phone has brought individuals too close to each other and has made the world a small global village. Cell phones have now become necessity of our lives so much so that many a times even without knowing we are committing misuse of this scientific invention, often named as cell phone addiction. For this a diagnostic

criteria has also been included in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5). At least 4 signs and symptoms are thought to comprise criteria for this addiction and the resultant so called addiction or overuse may cause significant harm in the individual's life. Criteria includes

- (1) A need to use the cell phone more and more often in order to achieve the same desired effect.
- (2) Persistent failed attempts to use cell phone less often.
- (3) Preoccupation with smartphone use.
- (4) Turns to cell phone when experiencing unwanted feelings such as anxiety or depression.
- (5) Excessive use characterized by loss of sense of time.
- (6) Has put a relationship or job at risk due to excessive cell phone use.
- (7) Tolerance that is need for newest cell phone, more applications, or increased use.
- (8) Withdrawal, when cell phone or network is unreachable such as anger, tension, depression, irritability, restlessness etc.⁵

Hazards of cell phones overuse/ addiction could be physical as well as psychological.

- (A) **Eye strain** occurs that often exhibits pain and discomfort associated with viewing a digital screen usually for over 2 hours. Burning, itching, blurring of vision, feeling of fatigue in eyes and headaches are some other features that are encountered.⁶
- (B) **Neck problems** also known as "text neck," can occur. It causes pain in neck resulting from looking down at cell phone or tablet for too long period of time.⁷
- (C) **Increased illnesses** can occur due to germs that adhere to the cell phone. It is said that 1 in 6 cell phones have fecal matter on it mainly E. coli bacteria. This can cause fever, vomiting, and diarrhea. It is found on many phones and they are also found to be contaminated with MRSA. There could be painful abscesses, life-threatening infections in bones, joints, surgical wounds, bloodstream, heart valves, and lungs.⁸
- (D) **Car accidents** can be the result of using cell phone while driving. Research has revealed that texting and driving can be very dangerous.⁹
- (E) **Infertility** both in males and females can be caused by overuse of cell phones as their radiations may decrease sperm count, sperm motility and viability. Laboratory and observational studies have found damage to sperm, impaired female fertility and damage to the unborn foetus from exposure to mobile phone radiation.¹⁰
- (F) **Sleep disturbances** are linked to cell phone addiction. Using cell phone before bed increases the likelihood of insomnia, bright light may decrease sleep quality, phone use could increase amount of time

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it takes to fall asleep, light emitted from the cell phone may activate the brain etc.¹¹

- (G) **Depression and Obsessive Compulsive Disorder** are also linked with cell phone overuse.
- (H) **Relationship problems** may occur as a result of neglect in favor of excessive cell phone and social media use.
- (I) **Anxiety** has been documented in college students who use their cell phones the most are more likely to feel anxious during downtime.¹²
- (J) **Cancer and other tumours** may undergo a doubling of the risk specially some brain tumours after 10 or more years of mobile phone use for about half an hour a day. Link is also present with the tumour of the parotid gland, a salivary gland in the region normally highly exposed to radiation during phone use. World Health Organization's International Agency for Research on Cancer (IARC) has classified that radiations emitted by cell phones are possibly carcinogenic to humans.
- (K) **Genotoxicity** can occur even after short periods of exposure to phone radiation, DNA strands can be broken and there are effects on gene expression.
- (L) **Other hazards** such as phone radiation can damage the blood-brain barrier, causing a leakage of albumin into the brain, significantly reduced levels of melatonin in humans even after about half an hour's mobile phone use per day, effects on heat shock proteins, oxidative stress, apoptosis etc.¹³

With all this background the take home message is:

- (1) Technology should be used but not misused as it can expose us to health hazards.
- (2) A line must be drawn by each one of us between necessities and luxuries of life while using technology and devices.
 For cell phone specifically
 Avoid use in children
 Avoid unnecessary use in youth and adults
 Avoid use while driving, studying and at bedtimes
 Use mobile phone only when line phones are not available.
 Set up time limitations for their use.
 Do remember that health once lost is not always

regained while a cell phone lost can be easily regained simply by buying.

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