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Impact Of Excessive Use Of Mobile Phone On Quality Sleep: A Review

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Abstract

Proper sleep is especially important part of life Lack of sleep is becoming an important health issue worldwide.It is a physiological state of unawareness which is regulated homeostatically. Almost one-third of our lives are spent while sleeping. Sleep plays an important role in cognitive and physical functions, cellular toxin removal, disease prevention and restoration of both mind and body. The objective of this study was to find out the association between mobile use and physiological parameters of poor sleep quality. It also aimed to find out the prevalence of mobile-related sleep risk factors (MRSRF) and their effects on sleep in mobile users.

Key Words: Sleep, Mobile Use, Homeostatically ,Physical function

Introduction

Sleep is a physiological state of unawareness which is regulated homeostatically.[1] Almost one-third of our lives are spent while sleeping.[2] Sleep plays an important role in cognitive and physical functions, cellular toxin removal, disease prevention and restoration of both mind and body.[3]A major decline in the sleep hours and its strong correlation with obesity, diabetes, and other chronic debilitating diseases have been documented in the past 20–30 years .[4]During sleep, there is a decrease in muscle activity, and interactions with the surrounding environment. While sleep differs from wakefulness in terms of the ability to react to stimuli, it still involves active brain patterns, making it more reactive than a coma or disorders of consciousness.[5] During sleep, most of the body's systems are in an anabolic state, helping to restore the immune, nervous, skeletal, and muscular systems;[6] These are vital processes that maintain mood, memory, and cognitive function, and play a large role in the function of the endocrine and immune systems. The internal circadian clock promotes sleep daily at night. The diverse purposes and mechanisms of sleep are the subject of substantial ongoing research. Sleep is a highly conserved behavior across animal evolution.

Proper sleep is especially important for children and adolescents. Lack of sleep in adolescents is becoming an important health issue worldwide. Many factors can affect sleep hygiene, but the role of mobile use in causing sleep problems in adolescence has gained huge attention in the past few years. A recent review by Sohn et al reported that one in every four children and young people are suffering from Problematic cell phone use (PSU), which is linked to depression, anxiety and poor sleep quality.[7]Current metaanalysis by Carter et al showed that bedtime use of media devices was positively associated with poor sleep quality and excessive daytime sleepiness.[8]

The usage of mobile phones in India has increased exponentially. Concerns about exposure to radiation both from phones and telecommunication infrastructure have led to an upsurge of studies examining the potential ill effects.[9]The plausible effect of excessive mobile phone usage on sleep pattern and quality is also important due to it societal implications.[10] Concerns about the thermal effect of Mobile phone usage has become indispensible, especially among the youngsters. This has brought about psychological dependency towards mobile phones leading to addiction in them.[11] Excessive use of mobile phones is known to be associated with head ache, ear ache, warmth sensationsand also perceived concentration difficulties.There are also various studies which have showed that the majority of mobile uses suffer from sleep deprivation and increased stress affecting their cognitive and learning abilities.[12] The mobile phone dependent students also become academically stressed out.

Mobile use at bedtime (after the lights have been turned off), can cause poor sleep quality (PSQ) by various mechanisms.[13] Due to technology revolution, most of the mobile phone users now have smartphones which enable them to access internet and social networks, watching videos, online chatting and playing games.[14] This results in exposure to stimulating content, mobile phone overuse and phone addiction thus contributing to hyper arousal in pre bedtime period and poor sleep quality.[15]

A major factor which can contribute to PSQ is the blue light emitted by screens of mobile phones.15 This blue light can decrease the production of melatonin, the hormone which controls the sleep/wake cycle or circadian rhythm. Reduction in melatonin makes it difficult to fall and stay asleep.[16] Some studies have found that exposure to blue light increases brain alertness and can stimulate cognitive functions, which in turn can lead to PSQ.[17]

Moreover the mobile phones receive and transmit the signals through radiofrequency electromagnetic fields (RF-EMFs).[18] It is well documented that RF-EMFs can pass through the skull, and reach the brain. Therefore, this technology may pose dangers for human health, of particular interest are its effects on sleep parameters and sleep electroencephalogram (EEG). Some studies have reported that RF-EMFs exposure can result in changes in EEG during rapid eye movement (REM) sleep, non-REM sleep, and sleep latency.[19] All these findings further strengthen the role of mobile in causing PSQ.

Impact of Mobile phone usage

1) It will take you longer to fall asleep

Study participants who were using an E-reader before bed (a blue light-emitting screen similar to a tablet or smartphone) took on average of 10 minutes longer to fall asleep versus those who were reading a normal print book. Try reading a real book at night instead of doing anything on your phone or watching TV or Netflix, and you'll see how much sleepier you feel and how much more quickly you fall asleep.

2) It will mess with and delay your circadian clock rhythm

It seems almost every week we get more data which illustrates the paramount importance of a healthy, well-synched circadian rhythm. So many (almost all?) of your body functions hinge on this. Your metabolism, your mood, your appetite for sweet or junky foods (and in turn your weight), your risk of developing diabetes and possibly even cancer, the list goes on and on. Artificial light at night, especially the blue type from phones and screens, confuses your brain and messes up this clock.

3) It will suppress your melatonin secretion when you need it most

The hormone melatonin plays a key role in maintaining a proper circadian rhythm and promoting deep, restorative sleep. It may also play a role in protecting the health of your brain as you age. Even low levels of light, such as a dim bedside lamp, can decrease the production of melatonin (for this reason, you should never sleep with a "nightlight" on and use good blackout curtains). The light emitted from phone screens, shining directly in your eyes, suppresses the production of this crucial hormone in the evening. If you must look at a screen, turn it way down and use any program available (such as "night shift" on an iPhone) that will decrease the component of blue light.

4) It will decrease your REM sleep

REM sleep is a stage of sleep that is critical for restoration of your mind and body. REM sleep solidifies memories and is tied to your creative and problem-solving skills. If you don't get enough of it, it can leave you feeling groggy and having difficulty concentrating the next day.

5) It will make a person more alert when you want to wind down

Lying in bed, reading your phone is relaxing, right? Dead wrong. The research shows that it actually wakes you up, making you feel more alert, less sleepy, and more likely to delay even trying to go to sleep. You know that delicious feeling you get when you're reading a book in bed, and your eyes start to droop, and then you reach over and turn out the light to got to sleep? Looking at a screen at night will cause the reverse. You'll get more awake, stay up later, and kick yourself for doing it the next morning when you wake up exhausted.

6) You will feel more tired and less alert when you wake up

According to the Harvard study, reading a screen before sleeping will cause you to feel more sleepy and groggy when you wake up in the morning. Those who read from a screen before bed reported taking hours longer to fully "wake up" the next day, compared to those who read a printed book instead.

Conclusion:

Using the mobile for at least 30 minutes (without blue light filter) after the lights have been turned off" results in poor sleep quality, daytime sleepiness, sleep disturbances and increased sleep latency.

"Keeping the mobile near the pillow while sleeping" positively correlates with daytime sleepiness, sleep disturbances and increased sleep latency.

Mobile-related sleep risk factors (MRSRF), ie, "using mobile before sleeping after the lights have been turned off, not using blue light filter, not using airplane mode, putting the mobile near the pillow while sleeping" were highly prevalent amongst the mobile users.

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