Page 1389 - 1394 **DOI:** *https://doij.org/10.10000/IJLMH.116873*

INTERNATIONAL JOURNAL OF LAW MANAGEMENT & HUMANITIES

[ISSN 2581-5369]

Volume 7 | Issue 1

2024

Impact of Technology on Sleep quality

PARIDHI RAUT[1]

ABSTRACT

The increased incorporation of technology into our day to day lives has raised new worries and concerns about its influence on sleep quality. This abstract presents a synthesis of research findings on the relationship between technology and sleep quality, The study includes analysis of actual research on how the different types of technology like television, laptops and smartphones affect sleep habits of people. The study also explores the psychological factors such as the altered circadian cycles, elevated alertness, and cognitive stimulation that underlie these benefits.

Moreover, the abstract also examines the individual characteristics and differences such as age and coping mechanisms that affect the connection between technology usage and sleep quality. The study emphasizes the significance of addressing technology related sleep problems and also aims to provide direction for future treatments and therapies aimed at fostering healthy sleep habits in the digital era.

Keywords: *Sleep quality, Technology, problems, solutions.*

I. INTRODUCTION

Electronic devices such as cell phones, laptops, and tablets have become an integral part of today's day to day life. Even now a days we take help of technology in the most basic task of our daily lives, right from waking up to going to sleep. People wake up using alarms in mobile phone, this is the first contact of technology of the day, during the day the technology is used for doing various tasks such as office Works, Cab bookings, ordering food or might simply be scrolling social media after the hectic daily schedule ends. While these technological advancements undoubtedly have numerous benefits and conveniences, they have also raised concerns about their potential impact on aspects of well being and health. One of such major area of concern is the influence of technology on sleep quality.

Sleep is essential to every process in the body. It affects our physical and mental functioning the next day, our ability to fight diseases, and also develop immunity and our metabolism and chronic diseases. Sleep is truly interdisciplinary because it touches every aspect of health. Sleep is an altered state of consciousness where we have a limited interaction with our surroundings and a relatively quiet and still (depending on the stage of sleep), contrary to quite physical state,

[1] Author is a student at Government Law College, Mumbai, India.

 [ISSN 2581-5369]

the brain is very active during sleep carrying out many important functions.[2] Studies have shown that two or more hours of screen time in the evening can seriously disturb the melatonin surge needed to fall asleep.[3] Mental health and sleep go hand-in-hand. Good sleep is very important for maintaining our baseline mental health as one sleep deprivation can have a significant negative impact on mood the following day. Prolonged exposure to poor quality of sleep has been associated with depression and other health issues. Bidirectional relationships also exist, which means that sleep is frequently impacted by anxiety and depression which in turn affect our ability to cope up with anxiety and sadness and so on.[4]

This study additionally looks at specific differences and moderating factors that can affect the relationship between technology use and sleep. Factors such as age, personality traits, and coping mechanisms will be explored to understand their interaction with technology and sleep.

II. TECHNOLOGY USE AND SLEEP PATTERNS

Studies have indicated that Screen Time before bed can increase the amount of time it takes to fall asleep, affect attentiveness the following day and reduce the sleep quality in the long term. Nightly exposure to light in the evening may increase the lyrics of certain sleep disorders and cancer.

Technology can affect your sleep on various levels

From the smartphone alarm in the morning that wakes you up to the late-night social media scrolling on our computers or digital devices have embedded in our daily routines. Nowadays people treat devices like an extension to themselves, always within their reach.

Science has some answers about how using our devices before bed impact our sleep

1. Screen limits blue light which is known to suppress a melatonin production which is a hormone that is crucial for regulating sleep.[5]
2. Screen time before bed can also affect your mood as the use of social media has been linked to depression, anxiety, and poor sleep quality.[6]

[2] Erica Jansen, 'why is sleep so important to your health', School of public health, University of Michigan, *The Persuit* (March 2,2020).Available at, https://sph.umich.edu/pursuit/2020posts/why-sleep-is-so-important-to-your-health.html#:~:text=Sleep%20is%20essential%20to%20every,touches%20every%20aspect%20of%20health.
[3] Calm, 'screen time before bed'. Available at: https://www.calm.com/blog/screen-time-before-bed
[4] Erica Jansen, 'why is sleep so important to your health', School of public health, University of Michigan, *The Persuit* (March 2,2020). Available at: https://sph.umich.edu/pursuit/2020posts/why-sleep-is-so-important-to-your-health.html
[5] "Blue light from light-emitting diodes elicits a dose-dependent suppression of melatonin in humans *"Journal of applied Psychology.* Available at: https://journals.physiology.org/doi/full/10.1152/japplphysiol.01413.2009?utm_medium=organic&utm_source=blog&utm_campaign=screen-time-before-bed (last visited- Feb 6, 2024)
[6] Heather Woods, H. Scott, 'Social media use in adolescence is associated with poor sleep quality, anxiety,

3. While scrolling through the news or laughing at Memes, your brain is stimulated instead of relaxing and resting, your brain is busy processing all the information and making the transition to sleep is more difficult.
4. Certain types of content may have a stronger impact on sleep. For example, studies are found at exciting or violent video games, increase heart rate, make it harder, fall asleep and decrease the sleep quality.[7]
5. Excessive Screen Time before bed may disturb your body's natural sleep rhythm also known as your circadian rhythm. It is a body's way of telling you when to wake up or to sleep, making you sleepy at night and alert during the day.[8] But when we mix screens with blue light in this process, this can lead to insomnia.[9]
6. Technological algorithms are designed to know what will catch your attention next. So that "last 5 minutes" becomes 10 minutes, pushing your bedtime late. When you engage in this action regularly, you risk building up sleep debts which over time have physical and mental impact.[10]

III. ANALYSIS OF SLEEP PATTERNS OF DIFFERENT AGES[11]

Technological use and sleep patterns share a complex relationship that varies significantly throughout the age groups. Increased screen usage before bed has negative impacts on children (0 to 12 years old) including shortened sleep duration, poor quality sleep and Night exposure to stimulating content further disturbs sleep. While blue light emitters from devices can delay sleep onset by suppressing melatonin production. However, for some kids through soothing stories and apps, sleep and relaxation can be promoted and healthy sleep habits can be promoted.

Teenagers or adolescents (13 to 18 years old) face similar difficulties. Using screens before going to bed has been scientifically linked to shorter and lower quality sips sleep cycles. Using

depression and low self-esteem'. Available at: https://pubmed.ncbi.nlm.nih.gov/27294324/(last visited- Feb 6, 2024)

[7] Sara P. and Giuseppe C. "Exposure to video games: effects on sleep and on post-sleep cognitive abilities. A systematic review of experimental evidences". Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6361300/ (last visited- Feb 6, 2024)

[8] "Everything to know about Circadian rhythm", *Healthline*: Available at: https://www.healthline.com/health/healthy-sleep/circadian-rhythm

[9] "Bedtime Use of Technology and Associated Sleep Problems in Children", Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5669315/ (last visited- Feb 6, 2024)

[10] "Sleep debt: can you actually catch up on sleep?", Available at: https://www.calm.com/blog/sleep-debt?utm_medium=organic&utm_source=blog&utm_campaign=screen-time-before-bed (last visited- Feb 5, 2024)

[11] "Sleep Disorders in Different Age Groups: Navigating the Night from Infancy to Elderhood", Available at: https://pulmonaryandsleephealth.com/sleep-disorders-in-different-age-groups-navigating-the-night-from-infancy-to-elderhood/(last visited- Feb 6, 2024)

social media and sending text late at night could lead to worry, making it harder to fall asleep. Lack of sleep has detrimental effects on mood, academic performance, performance, and cognitive function. Nonetheless, technology offers avenues for relaxation through guided meditations and educational opportunities via apps and podcasts.

Late night technological use, especially for business or entertainment, sleep patterns and increases stress in adults (19 to 64 years old) in addition to the stress and anxiety from work as social media binge watching, TV shows and engaging in video games can cause sleep deprivation. However, sleep monitors and relaxation applications can raise awareness of sleep and promote better sleeping habits and an environment that promotes sleep is also additionally created by white noise devices and soothing music apps.

Utilization of technology and age-related sleep alterations frequently overlap for seniors (65 years of age and above). Stress, anxiety and irritation might arise from not being able to use apps or devices as well as from side effects of medication and medical conditions. Fortunately, access to care can be enhanced by remote meetings with sleep specialists and assistive technology such as smart home gadgets that can help regulate the sleep environment.

Individual differences in need of sleep and blue light sensitivity must be taken into consideration. Social economic factors also influence access to technology and healthy sleep habits. It is essential to set healthy boundaries around technology use, particularly before bed and after waking up across all age groups.

In general, technology can affect sleep both in positive and negative ways. Maintaining a healthy sleep routine and mindful technological use are crucial for ensuring optimal sleep across the lifespan. Comprehending the intricateness of technologies, impact sleep and bringing techniques into effect that minimize the drawbacks while maximizing advantages are important for enhancing general health and life satisfaction.

IV. WAY FORWARD

Using electronic devices such as mobiles, laptops at night can interfere with the quantity and quality of sleep. To deal with this it is better to keep the electronic devices out of the bedroom or if that is not possible at least keep it at a distance where it is not easily reachable.

1) Managing screen time- This can be done through using apps that monitor screen time. One of the ways to manage screen time is using traditional devices such as alarm clock or traditional watch instead of using mobile. This will help individuals avoid and monitor the screen time.

 [ISSN 2581-5369]

2) Establish digital boundaries- It is very necessary to set up boundaries for technological use, such as setting up designated "screen-free" times before bed. Most preferably before 30-45 minutes before going to bed, this can help minimize exposure to blue lights and help to reduce disruption to circadian rhythms.

3) Managing blue light exposure- Investing in blue light -blocking glasses or screen filters for devices can help in reducing the impact of blue light exposure on sleep by filtering out the disruptive wavelengths.

4) Set boundaries with work- Many people feel that since they might need to reply to anything essential immediately, they must sleep with their phone near their hand. Unfortunately, they might have disruption of sleep at night due to this "always available" mindset. By establishing a boundary, they can stop worrying about missed calls, emails, etc. and complete their sleep peacefully.[12]

5) Promoting healthy sleep habits- Negative effects of technology can be reduced by adopting healthy sleep practices including setting up comfortable sleep environment, following a regular sleep schedule, and creating a peaceful nighttime ritual.

V. CONCLUSION

In Conclusion, this study has provided a comprehensive analysis of the relationship between technology usage and sleep quality. Several key findings include,

1) It has become more evident that the regular use of technology in daily life has a huge impact of sleep pattern and quality of sleep. Devices such as smartphones, computers, and televisions have been shown to disrupt circadian rhythms, increase arousal levels, and stimulate cognitive processes, all of which can interfere with the initiation and maintenance of sleep.

2) Individual differences and moderating factors play a important role in shaping the impact of technology on sleep. Age, personality traits, and coping strategies are just a few examples of factors that can influence how individuals respond to technology use and its effects on sleep.

In addition, there is a strong need for greater research in the area of Sleep psychology and technology. In Conclusion, researchers and professionals can endeavor to promote healthy sleep

[12] Dr. Carl Rosenberg, "How technology use decreases sleep quality". Available at: https://www.sleephealthsolutionsohio.com/blog/how-technology-use-decreases-sleep-quality/

 [ISSN 2581-5369]

patterns in digital age, ultimately leading to greater overall health and well-being.

*****

 [ISSN 2581-5369]