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Technology on Sleeping Patterns of Youths

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Abstract
The increasing use of technology among youths has raised concerns about its impact on sleep patterns. This qualitative study explores how screen time affects sleep through in-depth interviews with young participants. Respondents shared that excessive use of technology, particularly before bedtime, made it harder to fall asleep and reduced the overall quality of their sleep. Engaging with social media, video games, or watching videos late at night heightened mental stimulation, making it difficult to relax and prepare for sleep. Additionally, prolonged screen time led to shorter sleep duration, leaving many feeling tired upon waking. These findings highlight the negative effects of excessive technology use on sleep, particularly when used close to bedtime. The study emphasizes the importance of creating strategies to reduce screen time before sleep, helping youths develop healthier sleep habits that are essential for their well-being and daily functioning. Promoting these habits is crucial for improving both mental and physical health.
Keywords: Health, Pattern, Technology, Sleeping, Youth

Introduction
In today's digital age, technology has become an integral part of daily life, transforming how people live and interact worldwide, especially among youth. While technological advancements bring significant benefits like instant access to information, social connections, and entertainment, they also pose challenges, particularly in disrupting sleep patterns. Sleep is traditionally defined as an unconscious state characterized by a supine posture, immobility, closed eyes, and an increased arousal threshold (Singh, Yadav, & Jain, 2019).
Technology has greatly altered daily living for people globally, including in Nepal. On a global scale, technological advancements, such as the rise of the internet, smartphones, and social media platforms, have reshaped industries, economies, and social engagements (Sharma &

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Kim, 2016). The proliferation of these technologies has created an interconnected world, where information is available instantly. This change has democratized education, broadening access to learning resources. For youth, this means new opportunities to access knowledge, collaborate virtually, and share their opinions on global platforms.

In Nepal, the adoption of technology is steadily growing, notably in internet connectivity and mobile phone usage (Pathak, 2024). Digital platforms have empowered Nepali youth, providing access to tools for education, entrepreneurship, and activism. E-learning initiatives and online courses have become more widespread, especially in remote areas where traditional education options are limited. Additionally, social media platforms give young people the ability to speak out on social issues, raising awareness and fostering community engagement.

However, the widespread integration of technology has taken a toll on sleep patterns, affecting youth both globally and in Nepal. The constant exposure to smartphones, tablets, and computers means that young people are using these devices well into the night, disturbing their natural sleep rhythms. The blue light emitted from screens inhibits the production of melatonin, a hormone responsible for regulating sleep, making it more challenging to fall asleep and resulting in shorter durations of rest (Silvani, Werder, & Perret, 2022). Worldwide, this disruption has contributed to a rise in sleep disorders such as insomnia and daytime fatigue in adolescents. In Nepal, where access to technology has expanded rapidly in recent years, similar trends are emerging. Many young people in Nepal, like their global peers, frequently use their smartphones late at night, disrupting sleep (Oli, 2023). Students, in particular, use technology for studying until late hours, making it harder to fall asleep on time. Social media also pressures them to remain connected through the night (Parajuli, Mahat, & Lingden, 2022). In urban areas, where technology use is more prevalent, sleep disturbances are more common than in rural areas, where traditional sleep habits still dominate. Despite the undeniable advantages of technology, managing its usage is essential to ensure young people maintain sufficient sleep for their overall well-being.

Singh, Singh, & Ansari (2021) conducted a study on undergraduate medical students in Nepal, using a descriptive method to explore internet addiction, sleep quality, and depression. Their findings revealed a high incidence of internet addiction among students, which correlated with poor sleep quality and symptoms of depression. The study highlighted the influence of variables such as age, tobacco use, academic year, and academic performance on these issues. These results underscore the profound impact of technology on students' lives in Nepal. Similarly, Gautam et al. (2021) studied sleep quality and its association with adolescent health. They noted that insufficient sleep, typically less than 7 hours per night, is linked to depression. Adolescents generally require 8-10 hours of sleep, with this need gradually reducing as they enter young adulthood. The research highlighted several factors that influence sleep quality, including ethnicity, religion, living situation, academic field, satisfaction with academic performance, tobacco use, peer relationships, daily internet use, and using the internet before bed.

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The blue light emitted from devices such as smartphones and computers interferes with sleep-inducing hormones, making it harder for youth to fall asleep. Additionally, the prevalence of social media intensifies the problem, with many feeling compelled to stay online late at night, resulting in reduced sleep duration. Gaming and watching online videos keep many young people up well into the night, further disturbing their sleep cycles. The constant notifications from devices often prompt them to respond at odd hours, creating irregular sleep patterns and affecting their body's natural rhythm, leading to late nights and late mornings.

As mobile and internet usage continues to increase globally, their integration into daily life has become unavoidable. The growing dependence on these technologies has led to a rise in addiction, especially among youth. While limited studies have been conducted in Nepal on this issue, this particular study focuses on undergraduate students, a key demographic aged 18–24, who are especially vulnerable to problematic internet use due to their developmental stage and the pervasive expectation to be online. Understanding how technology impacts sleep patterns in youth is critical for developing strategies to promote healthier sleep habits worldwide.

Research Objectives

- To assess the sleeping patterns over the last 4 months.
- To explore sleeping habit during the day.
- To discover the use of electronic device at bedtime.

Literature Review

Today's teenagers are increasingly acquainted with advanced technologies like the internet, Facebook, Instagram, Viber, WhatsApp, and more, leading to longer screen time and reduced sleep hours. Given the focus of this study on the intersection of technology and sleep patterns, the research questions and objectives are tailored accordingly. Thomée, Eklöf, Gustafsson, Nilsson, and Hagberg (2007) highlight the negative effects of technology on the mental health of today's youth, particularly noting how insufficient sleep can contribute to various physical and mental health issues. Many teenagers, due to late-night smartphone use, often sleep during the day, disrupting their natural sleep cycle and contributing to poor sleep quality.

In a study by Zimmerman (2018), it was suggested that media and gadget use could lead to sleep deprivation among teenagers. The consumption of media, especially before bed, often delays sleep onset due to light exposure that inhibits melatonin production, while also displacing the time needed for physical activity that promotes restful sleep.

There is a clear relationship between technology usage and sleep disturbances. Young people who excessively use smartphones are not only depriving themselves of enough sleep, but they also experience fragmented sleep during their screen time. Poor sleep, whether due to insufficient or low-quality rest, brings several consequences, both immediate and long-term. Researchers have noted that sleep deprivation can negatively affect attention, alertness, concentration, reasoning, and problem-solving abilities, which can ultimately hinder academic performance, work productivity, and overall cognitive health. Persistent sleep deprivation can result in mood swings, irritability, higher stress levels, and emotional instability, leading to an increased risk of anxiety and depression over time.

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Adequate sleep is also crucial for maintaining a healthy immune system. Lack of sleep diminishes the body's ability to recover from illness, increasing susceptibility to colds and the flu. Furthermore, it disrupts hormone regulation, heightening hunger and cravings for unhealthy foods, potentially leading to weight gain and obesity. Long-term sleep deficiency is linked to higher risks of hypertension, irregular heartbeats, and cardiovascular problems, which can worsen pre-existing heart conditions. Sleep also plays an essential role in motor skills, coordination, and reaction time. Without enough rest, sleep deprivation can impair these functions, raising the risk of accidents, especially in tasks requiring quick reflexes. Memory, both short- and long-term, is negatively impacted by insufficient sleep, as it is essential for memory consolidation. Thus, lack of adequate sleep can significantly affect personal relationships, workplace performance, and overall well-being.

Several studies, including meta-analyses, have explored the link between social media addiction (SMA) and mental health. Research on SMA has shifted over the years from primarily investigating depression (1983–2016) to exploring anxiety disorders (2020–2022), considering factors like cognitive distortions, insomnia, loneliness, self-esteem, social support, and alexithymia (Karakose, Yildirim, Tülübaş, & Kardaş, 2023; Mahat, 2023). These mental and physical health issues are particularly prevalent in young people who use mobile phones late at night. The lack of sleep among youths leads to a range of psychological and physical problems, affecting both short- and long-term health. Sleep deprivation in youth can result in depression, migraines, dizziness, and lack of motivation, with many using technology to stay awake when they cannot fall asleep.

Today's young generation primarily uses technology for educational purposes, yet this use has evolved into an addiction. The habit of watching movies late at night and playing video games into the early hours is an example of how technology is negatively affecting sleep patterns. As a result, teens often experience fatigue, falling asleep during meetings or while traveling, which impairs their ability to engage in daily activities, including school participation. Additionally, this ongoing lack of sleep exacerbates both emotional and physical problems, leaving youths tired and disengaged.

Research Gap

Despite having numerous studies on the impact of technology on sleeping patterns, there remains a significant research gap. This study aims its research on the youths or students of Shanker Dev Campus as no any research have been conducted among the students of Shanker Dev Campus. To fill this gap, this qualitative research paper is conducted and interviewed to identify the impacts of technology on sleeping patterns of the youths.

Research Methodology

The qualitative research method is used which allows for an in-depth exploration of the participants perception and experiences regarding their use of technology and its effects on their sleep (Rai, et al., 2024). The population for this study consists of entire youths of BBM Faculty of Shanker Dev Campus who use technology frequently. A purposive sampling technique was used to select 17 students (Acharya, et al., 2024). These students were identified

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based on willingness to participate in the study. Data were collected through the interviews with the participants. The interviews were conducted with the consent of the respondents, ensuring that they were fully aware of the study's purpose and their role in it. Each interview was recorded using a mobile phone, which had security password to maintain the confidentiality and security of the data. The data collected from the interviews were analysed using thematic analysis. This involved coding the data to identify the common themes and patterns about how technology affects the participant's sleep. Several ethical considerations were taken into account during this study. Informed consent was obtained from all the participants and confidentiality was maintained by securing the recorded data with a password (Mahat & Aithal, 2022).

Results

Sleeping patterns over the 4 months.

The analysis of the sleeping patterns of second-semester BBM students at Shanker Dev Campus reveals several key insights. Most students fall asleep within a relatively short period, with the majority (7 students, including Mr. Neupane) reporting that they fall asleep within 5 to 15 minutes. A smaller group (3 students, including Mr. Shrestha and Ms. Basnet) usually takes 15-30 minutes, while only two students fall asleep within the first 5 minutes. A few students (4 in total) take longer than 30 minutes to fall asleep.

Regarding sleep duration, the most common sleep duration is between 7 to 8 hours, with 9 students reporting this amount, including Mr. Neupane and Ms. Gautam. Several respondents report sleeping for 6 to 7 hours, such as Ms. D. Shrestha and Mr. Baruwal, while some, like Ms. A. Pandey and Mr. Shrestha, sleep for 5 to 6 hours. Only one respondent, Ms. B. Shrestha, reports sleeping for 5 hours.

As for bedtime, most students typically go to bed between 11 PM and 12 AM, with one respondent going to bed as early as 9 PM. A few respondents report going to bed later, between 12 AM and 1 AM.

When rating their sleep quality over the past four months, most students rate their sleep as either very good or fairly good. Respondents such as Mr. Neupane, Ms. Basnet, Mr. Thapa, and others report falling asleep quickly due to tiredness and rate their sleep as very good. Ms. Acharya, Ms. R. Thapa, Mr. Byanjankar, and Ms. Gajurel rate their sleep as fairly good, citing quick sleep onset. However, some respondents, including Ms. Shrestha and Ms. Arya, rate their sleep as fairly bad due to academic stress from assignments, seminar papers, and excessive mobile phone use. Four respondents—Ms. Jaiswal, Mr. Shrestha, Ms. D. Shrestha, and Ms. Gautam—rate their sleep as very bad, primarily due to stress related to exams and assignments, as well as external factors like weather.

In conclusion, the majority of respondents experience fairly good sleep quality, typically falling asleep within 5 to 15 minutes and sleeping for 6 to 8 hours. Bedtime is generally around 10 PM to 12 AM. While most students rate their sleep quality as very good or fairly good, a smaller group experiences poor sleep quality due to academic pressures. Reducing the stress associated

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with assignments and exams could significantly improve sleep quality for those struggling with sleep disturbances.

Sleeping habits during the day.

The sleeping habits of the respondents during the day reveal varying patterns and tendencies across different situations. A majority of the respondents, including Mr. Neupane, Mr. Shrestha, Mr. Thapa, Ms. D. Shrestha, Ms. B. Pandey, Ms. A. Pandey, and Ms. Arya, reported that they never doze off or fall asleep while sitting and reading. However, a smaller group, including Ms. Giral, Ms. Acharya, and Mr. Baruwal, mentioned having a slight chance of falling asleep in such situations, while others such as Ms. L. Shrestha, Ms. Gautam, Ms. Basnet, and Mr. Byanjankar reported a moderate chance of dozing off. Interestingly, two respondents, Ms. Thapa and Ms. Gajurel, said they have a high chance of falling asleep while sitting and reading, and Ms. Jaiswal indicated that she rarely falls asleep in this context.

When watching TV, many respondents, including Ms. Jaiswal, Mr. Byanjankar, Mr. Baruwal, Mr. Shrestha, Mr. Thapa, Ms. Giral, and Ms. Basnet, never fall asleep, while others such as Mr. Neupane, Ms. D. Shrestha, Ms. B. Shrestha, Ms. Thapa, and Ms. Arya report a slight chance of falling asleep. In contrast, a few respondents, such as Ms. L. Shrestha, Ms. Acharya, and Ms. Gajurel, said they have a moderate chance, and Ms. A. Pandey, Ms. Gautam, and Ms. Gajurel mentioned having a high chance of falling asleep while watching TV.

In terms of falling asleep in public places or while sitting inactive, the respondents had varying experiences. Ms. Jaiswal mentioned that she tends to fall asleep in a public place when it is warm, while Ms. Gajurel, Ms. A. Pandey, and Ms. Gautam expressed having a high chance of falling asleep when inactive in a public space. Others, such as Ms. Giral and Ms. L. Shrestha, reported a moderate chance of falling asleep in such settings, while a majority of respondents, including Mr. Byanjankar and Ms. Basnet, claimed they never doze off in public when inactive.

When it comes to being a passenger in a car, some respondents reported a high chance of falling asleep, particularly Ms. Jaiswal, Ms. Gajurel, Ms. B. Pandey, Mr. Shrestha, and others. On the other hand, some respondents, such as Ms. D. Shrestha and Mr. Shrestha, mentioned having only a slight or moderate chance, while several, including Ms. A. Pandey and Mr. Neupane, never fall asleep during car journeys.

Regarding lying down to rest in the afternoon, some respondents, including Ms. Jaiswal, Mr. Byanjankar, Ms. Gajurel, and Mr. Thapa, said they do not fall asleep in this situation. However, others, such as Ms. L. Shrestha, Ms. A. Pandey, and Mr. Baruwal, expressed a high chance of falling asleep during this time, and a few respondents like Ms. D. Shrestha and Ms. Gautam reported a slight or moderate chance.

Furthermore, when it comes to sitting and talking to someone, a majority of respondents stated they never doze off, but a small group, including Ms. Acharya and Ms. Giral, reported a moderate chance of falling asleep while conversing with someone. In terms of sitting quietly after lunch, respondents had mixed responses. Some like Ms. Jaiswal, Mr. Neupane, Mr. Shrestha, and Mr. Baruwal never fell asleep, while others like Ms. Gajurel, Ms. A. Pandey, and

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Ms. Gautam stated they had a high chance of falling asleep after lunch. Additionally, Ms. Gautam reported falling asleep before lunch.

Finally, the responses about falling asleep in a car when stopped in traffic show differing patterns. Some, like Mr. Baruwal and Ms. Thapa, never fall asleep in such a scenario, while others like Ms. Neupane, Ms. Acharya, and Ms. L. Shrestha expressed a slight tendency. On the other hand, some respondents, including Ms. Jaiswal, and Ms. Gajurel, only fall asleep after being in the car for more than an hour, whereas several, including Mr. Byanjankar, Ms. D. Shrestha, and Ms. B. Pandey, reported a high chance of falling asleep even during short stops in traffic.

In conclusion, the respondents exhibit diverse daytime sleeping habits, with some prone to falling asleep during activities such as sitting, reading, watching TV, or being a passenger in a car, while others remain alert. These varied habits suggest individual differences in sleepiness and tiredness throughout the day. Implementing strategies for better sleep management could help those who frequently experience daytime sleepiness, potentially improving overall daytime alertness and productivity.

Use of electronic device at bedtime.

The use of electronic devices at bedtime appears to be a common practice among many respondents, with smartphones being the most frequently used device. According to the responses, several individuals (Mr. Shrestha, Ms. Baruwal, Ms. L. Shrestha, Ms. D. Shrestha, Ms. Gautam, Ms. B. Pandey, Ms. Thapa, Ms. Acharya, Mr. Byanjankar, Ms. Jaiswal, Ms. Gajurel, Ms. Giral, Ms. A. Pandey, Ms. Arya) reported using their smartphones almost every night when they are in bed. In contrast, a few respondents, such as Mr. Thapa and Ms. Basnet, mentioned using their smartphones only a few nights a month in bed.Music players were also commonly used by several respondents, with individuals like Mr. Shrestha, Ms. Thapa, Ms. Jaiswal, Ms. Gautam, and Ms. A. Pandey using them almost every night when they go to bed. On the other hand, Ms. Byanjankar, Ms. Giral, Mr. Neupane, Mr. Baruwal, Ms. L. Shrestha, and Ms. Thapa reported using music players rarely, and Ms. Acharya used a music player a few nights a month. Interestingly, Ms. Basnet and Ms. Gajurel stated they never use a music player in bed.

When it comes to using a computer or laptop, respondents had varying habits. Most individuals, such as Mr. Thapa, Mr. Neupane, Mr. Baruwal, Ms. B. Pandey, Ms. Acharya, Ms. Jaiswal, Ms. D. Shrestha, Ms. A. Pandey, Ms. Gajurel, and Mr. Byanjankar, stated they never use a laptop/computer in bed. A few individuals, like Ms. Thapa and Ms. Gautam, use their laptop/computer rarely in bed, while others, like Ms. L. Shrestha and Mr. Shrestha, use them a few nights a week. Ms. Giral and Ms. Basnet are the only respondents who use a laptop/computer every night in bed.

In terms of watching TV, most respondents (Ms. Gautam, Mr. Baruwal, Ms. Giral, Mr. Shrestha, Ms. Jaiswal, Ms. D. Shrestha, Ms. A. Pandey, Ms. Gajurel, Ms. Basnet, Ms. Acharya, Ms. Thapa, and Ms. B. Pandey) stated that they never watch TV in bed. However, a few

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individuals, like Ms. L. Shrestha, Mr. Neupane, Mr. Thapa, and Mr. Byanjankar, reported rarely watching TV in bed.

Regarding radio use, almost all respondents reported never using or listening to the radio when they would normally be sleeping, except for Ms. Basnet, who uses the radio a few nights a month in bed.

In summary, the respondents' use of electronic devices at bedtime varies considerably. Smartphones are the most commonly used devices, followed by music players, with less frequent use of laptops, TVs, and radio in bed. The prevalent habit of using smartphones and music players at night may potentially disrupt sleep patterns, which could contribute to poorer sleep quality. It is clear that using these devices before bedtime can be a contributing factor in sleep disturbances.

Conclusion

The research indicated that the use of smartphones, tablets, especially before bedtime have led to difficulty falling asleep and staying asleep. While the rare use of computers, TV, radios show less impact on the sleeping patterns. This study suggests that youth need to be helped in developing good sleep habits. Therefore, it is strongly suggested that parents and youths to adopt and follow healthy guidelines to facilitate and develop some structure and means of protecting their health in the realms of electronics device with the change of generation of technology.

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Annexes

SECTION 1: Thinking about sleeping patterns over the 4 months.

1. How long does it take you to fall asleep?
2. How many hours of sleep do you normally get (excluding naps)?
3. On a typical 'working' day, what time would do you go to bed?
4. During the past month, how would you rate your sleep quality overall?

SECTION 2: About your Sleeping habits during the day.

5. How likely are you to doze off or fall asleep sitting and reading?
6. How likely are you to doze off or fall asleep watching TV?
7. How likely are you to doze off or fall asleep sitting, inactive in a public place (e.g., a theatre or a meeting)?
8. How likely are you to doze off or fall asleep as a passenger in a car for an hour without a break?
9. How likely are you to doze off or fall asleep lying down to rest in the afternoon when circumstances permit?
10. How likely are you to doze off or fall asleep sitting and talking to someone?
11. How likely are you to doze off or fall asleep sitting quietly after a lunch?
12. How likely are you to doze off or fall asleep in a car, while stopped for a few minutes in the traffic?

SECTION 3: About your electronic device use at bedtime…

13. How often do you use the smartphone or tablet in bed when you would normally be sleeping?
14. How often do you use the music player in bed when you would normally be sleeping?
15. How often do you use the computer/laptop in bed when you would normally be sleeping?
16. How often do you use the TV in bed when you would normally be sleeping?
17. How often do you use the radio in bed when you would normally be sleeping?