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Smartphone Addiction, Sleep Quality and Procrastination Among College Students in Karnataka

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Abstract

Smartphone addiction and quality of sleep As technology becomes more available and utilized, research has been conducted to explore the effects of devices such as television, computers, and phones on sleep and sleep quality. Since smartphones are used for a variety of purposes and are always linked to the Internet, they can have a notable impact on the person's ability to fall asleep and have more difficulty staying asleep. The term smartphone addiction was introduced to describe the excessive and dysfunctional use of smartphones, evocative of behavioural addictions.The use of smartphones and accompanying apps has significantly improved communication, but it has also raised concerns about device dependence and overuse. Since smartphones are used for various purposes and are always connected to the Internet, they can significantly affect daily activities.

KEYWORDS : As smartphone addiction , Extracurricular activities during the day , College students spend over 8 h per day , In Karnataka, 93% of Students , Behavioral Addiction , health-promoting behaviors .

Introduction:

Smartphone addiction and quality of sleep As technology becomes more available and utilized, research has been conducted to explore the effects of devices such as television, computers, and phones on sleep and sleep quality. Since smartphones are used for a variety of purposes and are always linked to the Internet, they can have a notable impact on the person's ability to fall asleep and have more difficulty staying asleep. The term smartphone addiction was introduced to describe the excessive and dysfunctional use of smartphones, evocative of behavioural addictions.The use of smartphones and accompanying apps has significantly improved communication, but it has also raised concerns about device dependence and overuse. Since smartphones are used for various purposes and are always connected to the Internet, they can significantly affect daily activities. Excessive and problematic smartphone use is associated with poor sleep, fatigue, difficulty falling asleep, and shorter sleep duration. It has been demonstrated that the addictive use of smartphones is commonly accompanied by depression, anxiety, and stress. Additionally, the lack of sleep is strongly associated with academic underperformance. Therefore, maintaining healthy sleep patterns is essential for young people and improves their academic performance as well as physical and mental health.

As smartphone addiction : Becomes a growing challenge in numerous countries, preventive measures need to be implemented, as well as measures to help reduce the consequences of excessive smartphone use. smartphone addiction, sleep quality, With the ongoing advancements in mobile technology, people's modes of communication, learning, work, and entertainment have been significantly enriched, making smartphones an indispensable part of daily life. According to recent data, as of October 2023, China had 1.092 billion internet users, 99.9% of whom accessed the internet via smartphones. The number of online video users reached 1.067 billion, marking an increase of 36.13 million since December 2022, with the trend continuing to rise . College students, a primary demographic of smartphone users, are particularly prone to developing smartphone dependence. The "2024 China Resident Sleep Health White Paper" reveals that 56% of college students spend over 8 h per day on their phones . This excessive use is largely attributed to the transition from adolescence to adulthood and the lack of smartphone restrictions in college, following the stringent controls experienced during high school, which can foster excessive dependence. Furthermore, due to the demanding coursework and extracurricular activities during the day, college students are more likely to use their phones before bedtime as a means of finding personal space and emotional comfort. However, this practice often results in reduced sleep duration and exacerbates sleep dependency.

In Karnataka, 93% of students :have access to smartphones at home, with 76% able to use them, according to the Annual Status of Education Report 2024 ASER-Rural released on January 28. The survey revealed that 63% of students were permitted to bring smartphones to school. The report also highlighted that around 70% of students aged 14 to 16 were active on social media during the reference week. Among these, 52% knew how to block or report profiles, 49% could set their profiles to private, and 51% were able to change their passwords. For the first time in its nationwide household survey, ASER included a section on digital literacy, focusing on older students in the 14-16 age group. This section featured self-reported questions on access, ownership, and use of smartphones, as well as a one-on-one assessment of basic digital skills. The findings revealed that access to smartphones is close to universal among this age group, with almost 90% of both girls and boys reporting having a smartphone at home. More than 80% reported knowing how to use a smartphone. ASER is an annual citizen-led survey that provides reliable insights into children's schooling and learning outcomes across rural India. ASER 2024 assessed 6,49,491 students across 17,997 villages in 605 rural districts. In Karnataka, the survey covered 30 districts, 900 villages, 17,702 households, and 1,20,336 students aged 3 to 16 years.

College List Of Karnataka State

Institution	Location	Type	Founded
IIT Dharward	Dharward	Engineering	2015
Indian Institute of Management Bangalore	Bengaluru	Management	1973
National Institute of Technology Surathkal	Mangaluru	Engineering	1960
Indian Institute of Technology Dharwad	Dharwad	Engineering, Technology and Science	2016
National Institute of Mental Health and Neurosciences	Bengaluru	Medicine	1847
Indian Institute of Information Technology	Raichur	Information Technology	2019

Institutes of Eminence

Institution	Location	Type	Established
Indian Institute of Science IISc	Bengaluru	Research	1909
Manipal Academy of Higher Education MAHE	Manipal	Research	1953

Rank	College Name	NIRF Rank 2025	NIRF Rank 2024	Location	Affiliated University
2	Kristu Jayanti Deemed to be University	34	60	Bengaluru	Deemed to be University
3	M S Ramaiah College of Arts, Science, and Commerce	67	NIL		Bengaluru City University
4	St Aloysius Deemed to be University	73	58	Mangaluru	Deemed to be University
5	St. Joseph's College of Commerce	98	55	Bengaluru	Bengaluru City University
6	Mount Carmel College	NIL	68		Bengaluru City University
7	Jyoti Nivas College	NIL	72		
8	NMKRV College for Women	NIL	85		
9	MES College of Arts, Commerce and Science	NIL	90		
10	Maharani Lakshmi Ammanni College for Women	NIL	95		
11	Seshadripuram College	NIL	98		
12	BMS College for Women/ Bhusanayana Mukundadas Sreenivasaiah College for Women	NIL	100		

	University Name	University Type	NIRF Rank	Notable Affiliated Colleges
1	Indian Institute of Science IISc, Bengaluru	Institute of National Importance	1	N/A IISc is a standalone institution
2	Manipal Academy of Higher Education, Manipal,	Deemed University	4	Manipal Institute of Technology MIT, Manipal – NIRF Engineering Rank 56

3	JSS Academy of Higher Education and Research, Mysuru	Deemed University	24	JSS Medical College, Mysuru
4	Visvesvaraya Technological University VTU, Belagavi	State Public University	47	Numerous engineering colleges across Karnataka, including B.M.S. College of Engineering, Bengaluru
5	University of Mysore, Mysuru	State Public University	54	Maharaja's College, Mysuru; St. Philomena's College, Mysuru
6	Christ University, Bengluru,	Deemed University	60	Christ College, Bengaluru
7	NITTE University,Mangalore	Deemed University	66	KS Hegde Medical Academy,NMAMIT
8	National Institute of Technology Karnataka (NITK), Surathkal	Institute of National Importance	67	N/A NITK is a standalone institution
9	Yenepoya University, Mangaluru	Deemed University	95	Yenepoya Medical College, Mangaluru
10	Alliance University, Bengaluru	Private University	98	Alliance School of Business, Alliance College of Engineering and Design
11	Jain University, Bengaluru	Deemed University	100	Center for Management Studies, School of Engineering and Technology

University Central

Name	Location	Type	Established
Central University of Karnataka	Kalaburagi	General	2009

State

University	Location	Type	Founded
Bagalkot University	Bagalkot	General	2023
Bangalore University	Bengaluru	General	1964
Bengaluru City University	Bengaluru	General	2017
Bengaluru Dr. B. R. Ambedkar School of Economics University	Bengaluru	General	2018
Bengaluru North University	Bengaluru	General	2017
University of Agricultural Sciences, Bangalore	Bengaluru	Agriculture	1964

University	Location	Type	Founded
National Law School of India University	Bengaluru	Law	1986
Rajiv Gandhi University of Health Sciences	Bengaluru	Medicine	1996
Karnataka Samskrit University	Bengaluru	Samskrit Language	2010
Kuvempu University	Shivamogga	General	1987
University of Agricultural and Horticultural Sciences, Shivamogga	Shivamogga	Agriculture and Horticulture	2013
Davangere University	Davanagere	General	2009
Gulbarga University	Kalaburgi	General	1980
Kannada University	Hampi	Cultural	1992
Karnatak University	Dharwad	General	1949
Karnataka Folklore University	Shiggavi	Folklore	2011
University of Agricultural Sciences, Dharwad	Dharwad	Agriculture	1986
Karnataka State Law University	Hubballi	Law	2009
Karnataka State Dr. Gangubhai Hangal Music and Performing Arts University	Mysuru	Music	2009
Karnataka State Open University	Mysuru	Open University	1996
Karnataka State Rural Development and Panchayat Raj University	Gadag	Rural Development	2016
Karnataka State Women's University	Vijayapura	Women's University	2003
Karnataka Veterinary, Animal and Fisheries Sciences University	Bidar	Veterinary Sciences	2005
Kodagu University	Kushalnagar	General	2014
Mangalore University	Mangaluru	General	1980
Mandya University	Mandya	General	2019
Rani Channamma University	Belagavi	General	2010
Tumkur University	Tumkuru	General	2004
University of Agricultural Sciences, Raichur	Raichur	Agriculture	2009
Raichur University	Raichur	General	2021
University of Horticultural Sciences, Bagalkot	Bagalkot	Horticulture	2010
University of Mysore	Mysuru	General	1916

University	Location	Type	Founded
Vijayanagara Sri Krishnadevaraya University	Ballari	General	2010
Visvesvaraya Technological University	Belagavi	Technical	1999
Bidar University	Bidar	General	2023

Private

University	Location	Founded
Adichunchanagiri University	Mandya	2018
Alliance University	Bengaluru	2010
Azim Premji University	Bengaluru	2010
Amity University Bengaluru	Bengaluru	2023
CMR University	Bengaluru	2013
Dayananda Sagar University	Bengaluru	2014
Garden City University	Bengaluru	1992
Institute of Trans-Disciplinary Health Sciences and Technology	Bengaluru	2013
Khaja Bandanawaz University	Kalburgi	2018
KLE Technological University	Hubballi	2015
M S Ramaiah University of Applied Sciences	Bengaluru	2013
PES University	Bengaluru	2013
Presidency University	Bengaluru	2013
Rai Technology University	Bengaluru	2013
REVA University	Bengaluru	2013
RV University	Bengaluru	2021
St. Joseph's University	Bengaluru	1882
Sharnbasva University	Kalaburagi	2017
Srinivas University	Mangaluru	2015

Deemed to be University

University	Location	Type	Founded	University status
BLDE University	Vijayapura	Medicine	1986	2008

Christ Deemed to be University	Bengaluru	General	1969	2008
International Institute of Information Technology	Bengaluru	Technology	1999	2005
Jagadguru Sri Shivarathreeshwara University	Mysuru	Medicine	1973	2008
Jain Deemed to be University	Bengaluru	General	1990	2008
Jawaharlal Nehru Centre for Advanced Scientific Research	Bengaluru	Research	1989	2002
Kristu Jayanti Deemed to be University	Bengaluru	General	1999	2025
K.L.E. Academy of Higher Education and Research	Belagavi	Medicine	1963	2006
Manipal Academy of Higher Education	Manipal	General	1953	1993
NITTE University	Mangaluru	Medicine	1979	2008
St Aloysius Deemed to be University	Mangaluru	General	1880	2024
Sri Devraj Urs Academy of Higher Education and Research	Kolara	Medicine	1986	2007
Sri Siddhartha Academy of Higher Education	Tumakuru	General	1979	2008
Swami Vivekananda Yoga Anusandhana Samsthana	Bengaluru	Yoga	2002	2002
Yenepoya University	Mangaluru	Medicine	1991	2008

Open University

University	Location	Type	Founded	University status
Indira Gandhi National Open University IGNOU	Delhi ,Main Office Bengaluru (have a regional Office in state of Karnataka)	Open National	1985	1985
Karnataka State Open University KSOU	Mysuru	Open State	1996	1996
Kuvempu University Distance Education	Shivamogga	Dual Mode General + Distance	1987	1987

Smartphone dependence is increasingly recognized as a behavioral addiction :characterized by cravings, avoidance, and a reduction in health-promoting behaviors. Excessive smartphone use can lead to dependency, with studies showing that some college students struggle with controlling their usage. This addiction is significantly correlated with negative emotions such as depression and poor sleep quality, indicating that increased smartphone dependence can elevate psychological health risks and reduce sleep quality.exacerbating the accumulation of negative emotions. For example, dependence reduces social support capabilities, leading to less interpersonal communication and increased negative emotions.Conversely, reducing smartphone use and increasing physical activity can effectively improve mental health and sleep quality. Thus, smartphone dependence can negatively impact sleep quality by reducing health-promoting behaviors and/or increasing negative emotions. The relationship between smartphone dependence and sleep quality in college students appears to be dynamic. Research indicates a complex bidirectional predictive relationship between smartphone dependence and sleep quality, influenced by various factors, and a similar bidirectional relationship exists between sleep quality and negative emotions like depression.This suggests the need for longitudinal studies to further explore the relationship between smartphone addiction and sleep quality beyond cross-sectional findings.

Moreover, the light and electromagnetic fields emitted by smartphones can alter brain activity, stimulating emotional and cognitive functions and heightening arousal, which further contributes to sleep disorders . Additionally, smartphone dependence can diminish health-promoting behaviors, Since 2008, the use of smartphones has been stea.

The world's population were smartphone users : Due to the fact that a lot of individuals own more than one mobile device, the quantity of smartphone accounts is greater than the number of people who use them. As of now, there are over 6 billion smartphone subscriptions, and this figure is forecasted to rise to 7.7 billion by 2027. Numerous users are oblivious to the amount of time they spend on their phones every hour, which adds up to a significant amount at the end of the day. The data on smartphone usage indicates that the average person uses their phone for almost 3 hours every day and checks their de vices 63 times a day. With the advent of smartphones and their apps, the manner of communication has been transformed, however, it has also caused worries about the overuse and addiction to devices. Not only their extensive use is causing concern, but also the potential undesirable outcomes associated with problematic usage. That is why researchers are stressing the significance of examining this behavior, especially among young people. "Smartphone addiction".

With face-to-face social relationships and other life activities : Academic Procrastination is one of the common behaviors we find among students. According to Milgram N, 1998 Academic procrastination is characterized by insufficient behavior making decision in one or more areas such as delaying academic tasks or duties up to the last minute. It is also defined as any academic duties assignment that is delayed or avoided which results in discrepancy between intention and actual behavior to the extent that the procrastinator having difficulty in programming life task and complete them on time. Binder, 2000 Lay 1986. While Smart phone Addiction is considered as a serious matter among students. Smartphone addiction is also classified under behavioural addiction. Behzad R, 2021. Smartphone addiction definition comes under four main components obsessive phone use like repetitive behaviors for checking messages or updates, withdrawal or feeling of agitation or suffering without the phone, and functional impairment or interference .

Smartphone addiction has been linked to various sleep disorders : The widespread use of smartphones has raised concerns about potential negative impacts on various aspects of well-being,

including sleep quality. College students are particularly vulnerable to excessive smartphone use due to the demands of academic life social connectivity, and entertainment. The increased availability and affordability of smartphones have led to a pervasive reliance on these devices, often extending into late hours. Numerous studies have highlighted the potential disruptions caused by smartphone usage before bedtime. The blue light emitted by screens suppresses melatonin production, ahormone crucial for regulating sleep-wake cycles. Additionally, engaging in stimulating activities on smartphones, such as social media browsing or gaming, can contribute to heightened arousal and difficulty falling asleep. Smartphone addiction has been linked to various sleep disorders, including insomnia and sleep deprivation. Prolonged exposure to screens, coupled with the constant connectivity facilitated by smartphones, may lead to irregular sleep patterns, reduced sleep duration, and fragmented sleep, ultimately affecting the overall quality of rest. Given the academic pressures faced by college students, understanding the relationship between smartphone addiction and sleep quality becomes imperative in addressing potential hindrances to optimal learning outcomes. The psychological aspects of smartphone addiction cannot be overlooked. Constant notifications, social comparison, and the pressure to stay digitally connected may contribute to increased stress and anxiety levels, further exacerbating sleep-related issues among college students. Smartphones have become an inseparable part of modern life, with college students being among the most frequent users, depending on them for communication, information, and entertainment. However, this heavy reliance raises concerns about its impact on sleep quality. The present study is significant as it explores how smartphone addiction influences sleep, offering insights that can guide interventions to enhance overall well-being. By highlighting the importance of sleep hygiene in the context of technology use, the study can also contribute to the development of institutional and societal policies aimed at promoting healthier digital habits. Furthermore, understanding these implications enables individuals to take proactive measures in regulating screen time, fostering a balanced approach to technology use and personal health Parasuraman, Sam.

- Smartphone dependence is increasingly recognized as a behavioral addiction, characterized by cravings, avoidance, and a reduction in health-promoting behaviors .
- Excessive smartphone use can lead to dependency, with studies showing that some college students struggle with controlling their usage. This addiction is significantly correlated with negative emotions such as depression and poor sleep quality
- indicating that increased smartphone dependence can elevate psychological health risks and reduce sleep quality. Moreover, the light and electromagnetic fields emitted by smartphones can alter brain activity, stimulating emotional and cognitive functions and heightening arousal, which further contributes to sleep disorders
- Additionally, smartphone dependence can diminish health-promoting behaviors, exacerbating the accumulation of negative emotions. For example, dependence reduces social support capabilities, leading to less interpersonal communication and increased negative emotions
- Conversely, reducing smartphone use and increasing physical activity can effectively improve mental health and sleep quality
- Thus, smartphone dependence can negatively impact sleep quality by reducing health-promoting behaviors and/or increasing negative emotions. The relationship between smartphone dependence and sleep quality in college students appears to be dynamic. Research indicates a complex bidirectional predictive relationship between smartphone dependence and sleep quality, influenced

by various factors, and a similar bidirectional relationship exists between sleep quality and negative emotions like depression

- This suggests the need for longitudinal studies to further explore the relationship between smartphone addiction and sleep quality beyond cross-sectional findings.
- Negative emotions such as anxiety, depression, and stress are key indicators of mental health among college students. Studies have shown a bidirectional relationship between smartphone dependence and negative emotions, where each can positively predict the other, and both contribute to poor sleep quality and exacerbated sleep disorders
- College students often experience accumulated negative emotions due to lifestyle changes, academic pressures, and career challenges
- The unrestricted leisure time in college, particularly for those without strong hobbies, can lead to excessive smartphone use, which further isolates them socially, reduces health-promoting behaviors like outdoor activities, and decreases sleep quality due to prolonged screen time and heightened brain activity before bed
- Given the reciprocal relationship between smartphone dependence and negative emotions, addressing negative emotions has been found to be effective in mitigating smartphone use issues and improving sleep disorders
- Therefore, there may be a more complex relationship between negative emotions, smartphone dependence, and sleep quality that warrants further exploration.
- Health-promoting behaviors refer to the lifestyle choices individuals make to enhance their health, wellbeing, and self-actualization. These behaviors are “multidimensional, spontaneous, and continuous” daily activities, including nutrition and exercise
- Its shows a significant negative predictive relationship between health-promoting behaviors and negative emotions among college students, where engaging in these behaviors can alleviate negative emotions, while accumulated negative emotions can reduce the level of health-promoting behaviors
- Additionally, health-promoting behaviors are crucial for sleep quality, as unhealthy lifestyle choices can adversely affect sleep. Most studies have focused on harmful behaviors like sedentary activity, drinking, and smoking
- with fewer exploring the impact of smartphone dependence on health-promoting behaviors and their influence on sleep quality from a holistic perspective
- This connection highlights the potential of health-promoting behaviors to mitigate smartphone dependence and improve overall wellbeing, suggesting a link between these factors.

Limitations of the study : Although this study, through the chain mediation effects of negative emotions and health-promoting behaviors, in conjunction with previous research, identified the direct impact of smartphone dependence on sleep quality, as well as its indirect effects via these mediators, several limitations remain.

a. The study’s cross-sectional design only allows for speculative conclusions about the bidirectional relationships between smartphone dependence, negative emotions, and health-promoting behaviors based on existing literature.
b. This area warrants further exploration. Finally, the study only considered negative emotions and health-promoting behaviors as mediators of the relationship between smartphone dependence and sleep quality. Given the complexity and diversity of college life,

c. Future research should explore additional factors and develop more comprehensive models to better understand this relationship.

d. Future research should investigate how different demographic factors influence these mediation pathways to provide a more comprehensive understanding.

e. Future research should address this by conducting longitudinal studies with larger sample sizes, using cross-lagged or longitudinal mediation models to establish causal relationships. Second, while demographic factors were considered as covariates, they were not examined as predictors of the mediation effects.

f. The dual nature of smartphones, as both beneficial and harmful, was not fully explored.

g. While the study focused on the detrimental effects of smartphone dependence on negative emotions, health-promoting behaviors, and sleep quality, it overlooked potential positive impacts, such as AI-assisted interventions for mental health and sleep.

Summary of the study:

The aim of the research is to study was find the relationship between smartphone addiction and sleep quality and psychological wellbeing and also to understand the difference between genders for the score. The research question was, whether sleep quality and psychological wellbeing have any relation with smartphone addiction? The study measures Smartphone addiction, sleep quality and psychological wellbeing among young adults. A total 250 samples were collected 125 males and 125 females from different districts of Karnataka. The hypotheses were There is a significant difference between gender and smartphone addiction.There is a significant relationship between smartphone addiction and sleep quality among young adults. There is a significant relationship between smartphone addiction and psychological well-being among young adults, There is significant impact smartphone addiction on sleep quality and psychological well among young adult. The consent from each participant was taken. The data collected was scored according to manual and was analyzed using Statistical Package for the Social Science SPSS. Firstly, the normality was checked and identified the data was normally distributed and used the parametric test . Pearson correlation, Independent T test and linear regression test.

Conclusion:

The findings indicated that bedtime procrastination and fear of missing out are mediators mediating the relationship between mobile phone dependency with sleep quality. Bedtime procrastination and fear of missing out should be considered as potential intervention targets for reducing mobile phone dependency and improving sleep quality in college students. Smartphone overuse has been linked to numerous psychiatric issues, delayed time of sleep onset, and interrupted sleep, which may affect sleep quality. The quantity and quality of sleep may impact an individual's physical development, emotional stability, and cognitive function. As a result, maintaining healthy sleep patterns is essential for young people and improves their academic performance as well as physical and mental health. Young adults should be educated about good sleep practices like regular bedtimes and wake-up times, as well as staying away from screen-related media in the bedroom. Early in-tervention for students with problematic smartphone use smartphone use and depression.

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