A STUDY OF ASSOCIATION BETWEEN NOMOPHOBIA, LONELINESS AND SLEEP DEPRIVATION AMONG YOUNG ADULTS

A

DISSERTATION

SUBMITTED TO THE MIER COLLEGE OF EDUCATION (AUTONOMOUS)

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

BACHELOR OF ARTS (HONOURS WITH RESEARCH)

IN

PSYCHOLOGY

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MIER COLLEGE OF EDUCATION (Autonomous)

JAMMU – 180001

2026

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submitted in partial fulfillment of the requirements for the award of the Degree of Bachelor of Arts (Honours with Research) in Psychology, to MIER College of Education (Autonomous), is an authentic record of my own research work carried out under the supervision of [Supervisor's Name & Designation].

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c) All sources of information used in this study have been duly acknowledged.

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ACKNOWLEDGEMENT

I have had so many rich experiences and opportunities that I personally believe will forever shape and influence my professional life while fostering personal growth and development. It would not have been possible to successfully complete my project work without the contribution and collaboration of some important personalities.

First and foremost, praises and thanks to The God, The Almighty, for His showers of blessings throughout my research work to complete the research successfully. I would like to sincerely thank Adit Gupta, Principal of MIER College of Education, for providing a supportive academic environment and constant encouragement during the completion of this project. I also extend my sincere gratitude to Renu Gupta, Chairperson of the institution, for her inspiration, motivation, and valuable support which greatly contributed to my academic journey.
I would like to thank the MIER college of education, Head School of social sciences, for her unprecedented help and scholarly skills that she imbibed in me and whose guidance was a remarkable force that enabled me to successfully complete the mini project.

Special thanks and appreciation to my supervisor Dr. Priya Choudhary to whom I am grateful for her ongoing mentorship and never-ending supply of fascinating tasks. Her guidance and advice carried me through all the stages of writing my project. I fully acknowledge her enormous contribution in this work. I would also like to express my sincere thanks to Sunil Bhatt, Librarian, for providing access to important academic resources and extending valuable assistance whenever required during the research process.And finally, to my beloved and incredible family, for being my constant source of strength. Your encouragement and belief in me have helped me overcome challenges and achieve success.

ANSHI MAHAJAN

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LIST OF ABBREVIATIONS

ADHD	Attention-Deficit/Hyperactivity Disorder
BDI	Beck's Depression Inventory
BMC	BioMed Central (journal publisher)
BRFSS	Behavioral Risk Factor Surveillance System
CBT	Cognitive Behavioural Therapy
DASS	Depression Anxiety Stress Scales
DASS-21	Depression Anxiety Stress Scales – 21-item version
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, 5th Edition
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4th Edition
DSM-V	Diagnostic and Statistical Manual of Mental Disorders, 5th Edition
FoMO	Fear of Missing Out
GPA	Grade Point Average
ICD-10	International Classification of Diseases, 10th Revision
ICD-11	International Classification of Diseases, 11th Revision
MRI	Magnetic Resonance Imaging
NMP-Q	Nomophobia Questionnaire
NP	Nomophobia (variable notation)
PSQI	Pittsburgh Sleep Quality Index
RCT	Randomized Controlled Trial
REM	Rapid Eye Movement (sleep stage)
SCT	Social Cognitive Theory
SD	Sleep Deprivation (variable notation) / Standard Deviation
SQS	Sleep Quality Scale
SPSS	Statistical Package for the Social Sciences
UCLA	University of California Los Angeles (Loneliness Scale)
UGT	Uses and Gratifications Theory
ULCI	Upper Level Confidence Interval
WHO	World Health Organization

ABSTRACT

The present study aimed to examine the association between nomophobia, loneliness, and sleep deprivation among young adults. With the increasing reliance on smartphones in the digital era, psychological concerns such as fear of disconnection (nomophobia), social isolation, and sleep disturbances have become prominent among youth. The study adopted a quantitative research approach with a correlational research design. A sample of 160 working young adults aged between 20 and 40 years was selected using purposive sampling from various occupational sectors in Jammu district. Standardized instruments were used, including the Nomophobia Questionnaire (NMP-Q), UCLA Loneliness Scale, and Sleep Quality Scale (SQS) to assess the respective variables.

Descriptive statistics, Pearson's correlation, regression analysis and mediation analysis were employed for data analysis. The findings revealed a significant relationship between nomophobia, loneliness and sleep deprivation. Nomophobia was found to positively correlate with loneliness and sleep deprivation, indicating that higher smartphone dependency is associated with increased feelings of social isolation and poorer sleep quality. Loneliness also showed a significant positive relationship with sleep deprivation and was found to partially mediate the relationship between nomophobia and sleep deprivation.

The study highlights the psychological impact of excessive smartphone use and emphasizes the need for awareness and interventions targeting healthy technology usage, improved social connectedness, and better sleep hygiene among young adults. These findings contribute to the growing body of literature on digital behavior and mental health and have implications for developing preventive strategies and psychological well-being programs.

CHAPTER I

INTRODUCTION

1.1 YOUNG ADULTS

Young adulthood is that period of human life duration which is exactly amidst adolescence and complete adulthood and which is confined to late adolescence and early adulthood (Arnett, 2000). Young adults are the individuals who choose to attend college or universities for their studies, do not have children, are not financially independent and many physical, social, psychological changes take place at this stage of life. In a psychological sense, young adults are expected to play new roles in the society, make adjustments, make plans to attain one's goals, understanding one's own emotion and psychologically embracing one's own self.

During this stage, individuals gradually transition from adolescence to full independence, taking on roles related to higher education, employment, and personal identity formation (Elhai et al., 2017). This period is marked by exploration and experimentation, as young adults forge their careers, establish social relationships, and navigate new responsibilities. The decisions made during these formative years have lasting implications for their future health, well-being and social integration (Nguyen et al., 2023).Basically, it is the stage of "settling down." Arnett (2000) explained "emerging adulthood is the distinct period between 18 and 25 years of age where adolescents become more independent and explore various life possibilities." Young adulthood undergoes indifferent and uncertain continuous changes (Ludwig, 2010). Some psychologists consider that twenty plus have to encounter "identity exploration, instability, self-focus, and feeling in-between" (Marantz Henig, 2010).

Research across diverse contexts indicates that young adults are among the most affected by technology-related anxiety and sleep issues. Continuous engagement with mobile devices, especially during nighttime, interferes with sleep quality and circadian rhythms, leading to fatigue, poor academic performance, and reduced well-being. Studies further suggest that young adults experiencing higher levels of nomophobia often display increased social withdrawal and loneliness, as virtual connections replace

genuine interpersonal interactions (Nguyen et al., 2023; Bayram & Yilmaz, 2024).This excessive digital engagement may contribute to emotional dysregulation, diminished concentration, and heightened dependency on technology for emotional comfort. Despite the opportunities for growth, young adults are also vulnerable to various mental health challenges, including anxiety, depression, sleep disturbances, and behavioral addictions. The proliferation of digital technology, especially smartphones and social media, has amplified these vulnerabilities, with increased screen time and virtual interactions potentially contributing to emotional dysregulation, loneliness, and sleep problems (Jahrami et al., 2021; Notara et al., 2021). Recent studies reveal that the onset of problematic digital behaviors, such as nomophobia, is prevalent among this population, driven by their dependence on digital connectivity for social validation, information, and entertainment (Maghaireh et al., 2025). It was suggested that this span is "roleless role" the reason for this is young adults have to perform multiple tasks but are not controlled by any kind of "role requirements" (Arnett, 2000).

1.2 NOMOPHOBIA

Nomophobia is described as behavioral addiction towards our smart phones and the anxiety it causes because of its unavailability or inaccessibility. It has multi-dimensional traits which may range from psychological, social and physiological symptoms which are because of our dependency on mobile phones (Ansari et al., 2019). The contemporary period is characterised by ICT (Information Communication Technology) and artificial intelligence. Gadgets based on technology have become essential for everyday living activities and professional growth. Almost all of the information and actions are now included on a single screen. In today’s fast-paced society, most people carry a smartphone in their pockets. Most individuals can barely picture their everyday lives without their mobile phones. Smartphones are seen to be essential since they perform a wide range of functions. The younger generation is growing increasingly reliant on mobile phones and sees them as a need for communicating with others. People have been hooked to cell phones due to their over-dependence and strong desire .Recent smartphone research studies have found that excessive smartphone use causes emotional, behavioural, physical, and mental health concerns.(Rodriguez-Garcia, Moreno-Guerrero, & Lopez-Belmonte, 2020)

Nomophobia is an emerging psychological condition characterized by the fear or anxiety of being disconnected from one's mobile phone or unable to use it. This phenomenon has become increasingly prevalent with the rapid integration of smartphones into daily life, especially among young adults who rely heavily on digital communication for social interaction, information, and entertainment (Notara et al., 2021; Nayana, 2025). Studies indicate that nomophobia affects a significant proportion of young populations worldwide, with prevalence rates ranging from 15.2% to as high as 99.9% in some groups, reflecting its status as a global public health concern (Maghaireh et al., 2025; Al-Mamun et al., 2025). Psychologically, nomophobia is associated with increased levels of anxiety, stress, and loneliness, as individuals experience distress when separated from their devices or unable to access digital connectivity. This dependence often disrupts emotional regulation and contributes to mental health issues such as depression and social anxiety (Notara et al., 2021; Nguyen et al., 2023). The compulsive use of smartphones linked to nomophobia has also been shown to negatively impact sleep quality and emotional well-being, as excessive screen time and smartphone anxiety contribute to sleep disturbances and difficulties in managing emotions effectively (Jahrami et al., 2021; Nayana, 2025).

Mobile phones or smartphones help us to keep connected with people, also providing us with a sense of security. However, women and younger adults are more susceptible to nomophobia: a digital disease (Leon-Mejia, Gutierrez-Ortega, Serrano-Pintado, & Gonzalez Cabrera, 2021). Nomophobia is a modern-day fear caused by people’s contact with new technologies by which males are more affected than females (Yildirim & Correia, 2015), those who live in metropolitan and urban areas and use their phones for more than 5 hours each day are more addicted to mobile phones and have more nomophobia than others (Kumar, Kumari, Bharti, & Sharma, 2021).

The theoretical frameworks of Uses and Gratifications Theory (UGT) and Compensatory Internet Use Theory (CIUT) help elucidate how nomophobia develops through psychological mechanisms. UGT suggests that users actively seek media to satisfy cognitive, emotional, and social needs, while CIUT emphasizes that problematic use can arise from attempts to cope with emotional distress and psychosocial challenges, making smartphone dependence a maladaptive strategy to manage anxiety and loneliness (Elhai et al., 2019; Nayana, 2025). Individuals experiencing nomophobia

are afraid of not being able to communicate and connect with others, not being able to access information whenever they want, and giving up the opportunities provided by the smartphone (Yildirim & Correia, 2015; Ali et al., 2017). Individuals with nomophobia often exhibit symptoms such as heightened anxiety, irritability, or panic when their phone is unavailable due to loss, battery depletion, or lack of network coverage. They may frequently check their devices, even in inappropriate situations like meetings or while driving, and experience difficulty concentrating on tasks without their phones nearby. Overreliance on mobile phones can also result in disrupted sleep patterns, poor social interactions, and increased stress levels, as people feel the constant need to stay connected (Elhai et al., 2017).

Nomophobia has not been officially recognized as a mental disorder by the World Health Organization, but experts are warning against becoming too reliant on cell phones. The popularity of smartphones has skyrocketed in recent years. According to Statistics, there are now 6.37 billion smartphone users worldwide. This represents 80.7% of the global population, up from 3.67 billion in 2016.Addiction to mobile phones has been linked to issues with self-esteem and interpersonal connections. Personal insecurity is the leading source of nomophobia, as many young people grow reliant on others and see mobile phones as a way to be present in their social circle. Individuals with this illness often suffer from perfectionism, which leads them to strive for flawless performances.

As a byproduct of human interaction with electronic communication devices, nomophobia is characterized by a preoccupation with electronic devices to the point where its sufferers experience physical and psychological withdrawal symptoms when they are separated from them. Those who suffer from nomophobia report feelings of extreme anxiety, pressure, irritation, anger, and uneasiness when they are unable to access their devices. Being physically dependent on others isolates a species from its environment. Nomophobia may also contribute to social anxiety by making sufferers feel disconnected from and uninvolved in their communities. Anxiety disorders such as panic disorder and agoraphobia, which clearly define the level of anxiety more rapidly or frequently than usual, can be exacerbated by a fear of cell phones, as they make the person less open and restrict the person from using the phone, which makes him irresistible to be in that environment.

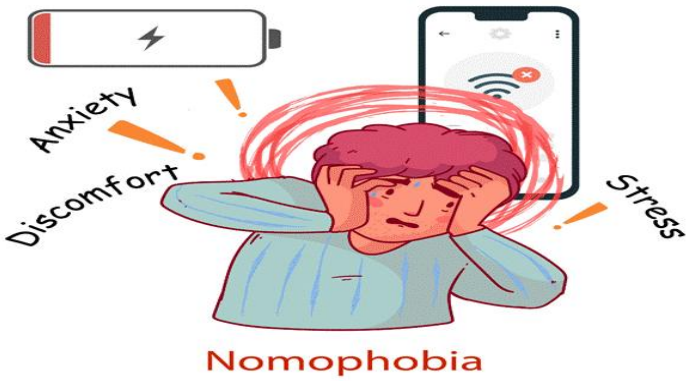


Figure:1.1 *Symptoms of nomophobia*

Source: *By author*

1.2.1 Treatment of Nomophobia

The treatment approaches for nomophobia are still limited, as the concept is relatively new. However, research indicates that psychological interventions such as cognitive-behavioral therapy (CBT), emotion-focused therapy, and mindfulness-based therapy are effective in reducing nomophobia symptoms. Psychoeducation regarding the causes, symptoms, and consequences of nomophobia has also been found to help individuals manage their condition.

More recent interventions include structured therapy programs specifically designed for nomophobia. These programs typically focus on enhancing self-esteem, addressing cognitive distortions and automatic negative thoughts related to mobile phone unavailability, and reducing emotional dependence on smartphones. Clients are trained in coping strategies, emotional regulation, communication skills, and methods to overcome social isolation. Findings suggest that such interventions are effective in reducing the severity of nomophobia by improving psychological well-being, decreasing emotional attachment to mobile phones, and strengthening interpersonal relationships.

1.2.2 THEORETICAL BACKGROUND RELATED TO NOMOPHOBIA

The theoretical understanding of **nomophobia (the fear of being without a mobile phone)** is rooted in established psychological and media-use frameworks that explain emotional dependence, anxiety, and maladaptive behavioral patterns associated with smartphone use. These theories collectively highlight how smartphones have evolved from mere communication tools into psychologically significant objects that influence cognition, emotion, and social behavior.

Attachment Theory provides a strong explanatory framework for nomophobia by extending the concept of emotional bonding from human relationships to human–technology interactions. Originally developed by John Bowlby, this theory emphasizes the human need for emotional security and proximity to attachment figures. In the context of nomophobia, smartphones function as **surrogate attachment figures**, offering reassurance, connection, and emotional regulation. Individuals—particularly those with insecure or anxious attachment styles—may rely heavily on their phones as a constant source of comfort and validation. The device acts as a "safe haven" during stress and a "secure base" from which individuals interact with the world. When access to the phone is restricted due to battery loss, network issues, or physical separation, individuals experience **separation distress**, manifesting as anxiety, irritability, or panic. This reaction mirrors the emotional responses seen in interpersonal attachment disruptions, thereby explaining why loneliness and emotional insecurity are strongly associated with higher levels of nomophobia.

Uses and Gratifications Theory (UGT) explains nomophobia from a motivational and need-based perspective. According to this theory, individuals actively select media platforms that fulfill specific psychological and social needs such as information seeking, social interaction, entertainment, convenience, and escapism. Smartphones uniquely integrate multiple gratification sources into a single device, making them highly efficient and indispensable. Nomophobia arises when individuals fear that these essential needs will remain unmet in the absence of their phones. The anxiety experienced is not merely about the device itself, but about losing access to information, social connectivity, productivity, and instant problem-solving. Over time, repeated reliance on smartphones for immediate gratification strengthens psychological dependence, increasing discomfort and distress during periods of disconnection.

Social Cognitive Theory (SCT), proposed by Albert Bandura, emphasizes that behavior is learned through observation, reinforcement, and social context. From this perspective, nomophobic behaviors develop through **observational learning**, where individuals imitate the constant phone use modeled by peers, family members, and broader society. The normalization of continuous smartphone engagement reinforces the belief that being constantly available and responsive is socially expected. Positive reinforcements—such as receiving messages, notifications, likes, or social validation—strengthen habitual checking behaviors. Through **reciprocal determinism**, personal cognitive factors (such as beliefs about connectivity), environmental influences (peer pressure and digital culture), and behavior (frequent phone use) interact continuously. This cycle promotes dependency and intensifies anxiety when access to the phone is disrupted, contributing to nomophobia.

1.3 LONELINESS

Loneliness is a universal human experience characterized by a subjective negative feeling arising from inadequate social relationships. Loneliness is not only a social issue but a complex psychological construct with profound implications. It is associated with decreased quality of life, increased cardiovascular disease risk, and potential mental health challenges (Singh et al., 2014). Factors contributing to loneliness include aging, family structure, marital status, and psychological attributes. Researchers emphasize the need for comprehensive, multipronged interventions to address this critical psychosocial problem (Hossain et al., 2020.).The prevalence of loneliness and its association with adverse health outcomes has become increasingly salient to the general public and among health professionals. Loneliness has been described as an epidemic (Jeste et al., 2020) The scope of loneliness research has expanded beyond traditional social and clinical contexts to include workplace environments. Workplace loneliness emerged as a distinct research area from 2006, gaining significant momentum by 2016, with studies demonstrating that this phenomenon affects people and economies globally (Firoz et al.,2020)

Loneliness constitutes a subjective perception of deficient social connections, distinct from isolation, with global prevalence of 18-38% and escalating as a public health epidemic post-COVID, linked to 26-32% higher mortality akin to smoking. Workplace loneliness, surging since 2016, impairs productivity and economies via remote work

and technostress, affecting 20-38% of employees.Loneliness elevates cardiovascular risks, dementia, and depression, with meta-analyses showing 14-32% mortality hikes and workplace correlations to burnout (r=0.39) and turnover. In India, elderly rates hit 37.6% from widowhood and urbanization, while youth face social media-driven spikes. Economic tolls stem from absenteeism and innovation losses in lonely workforces.(McCarthy et al. ,2025).



Figure:1.2 *Types of Loneliness*

Source: *By author*

1.3.1 THEORIES RELATED TO LONELINESS

Loneliness is a complex psychological experience that has been explained through multiple theoretical perspectives, each emphasizing different cognitive, emotional, behavioral, and evolutionary processes. These theories collectively highlight that loneliness is not merely the absence of social contact but a subjective and multifaceted phenomenon.

The **Cognitive Discrepancy Model** by Anne Peplau and Daniel Perlman in 1981 conceptualizes loneliness as a result of a perceived mismatch between an individual's desired social relationships and their actual social experiences. According to this model,

loneliness is determined more by personal expectations and perceptions than by the objective number of social contacts. An individual may have many social connections yet still feel lonely if these relationships lack emotional closeness, trust, or satisfaction. Conversely, a person with fewer relationships may not experience loneliness if their social needs are adequately fulfilled. This model emphasizes the role of cognitive appraisal, suggesting that modifying unrealistic expectations or improving relationship quality can reduce loneliness.

The **Social Needs Theory**, proposed by Weiss in 1973 and grounded in Attachment Theory, explains loneliness as the outcome of unmet social and emotional needs. Weiss distinguished between emotional loneliness, arising from the absence of close attachment figures, and social loneliness, resulting from a lack of a broader social network. The theory identifies several core social needs, including attachment, intimacy, social integration, reassurance of worth, guidance, and nurturance. When these needs are insufficiently met, individuals experience feelings of emptiness, abandonment, and isolation. This perspective highlights the importance of both intimate relationships and meaningful social roles in preventing loneliness.

The **Evolutionary Theory of Loneliness (ETL)** views loneliness as an adaptive biological signal rather than a pathological state. From this perspective, loneliness functions similarly to physical pain, serving as a warning system that alerts individuals to social disconnection, which historically threatened survival. Loneliness motivates individuals to restore social bonds and seek inclusion, cooperation, and protection within groups. However, chronic loneliness may lead to heightened self-preservation behaviors, increased sensitivity to social threats, and withdrawal, which paradoxically worsen social isolation. This theory underscores the evolutionary roots of loneliness and its role in shaping social behavior.

The **Behavioral Approach** explains loneliness in terms of maladaptive social behaviors that interfere with relationship formation and maintenance. Lonely individuals may develop interaction patterns characterized by shyness, social withdrawal, hostility, or distrust, often as a result of past rejection or negative social experiences. These behaviors can discourage others from initiating or sustaining relationships, thereby reinforcing loneliness. Over time, this creates a self-fulfilling cycle in which expectations of rejection lead to behaviors that increase social distance,

further deepening feelings of isolation.

The **Social Cognition and Attentional Bias Perspective** focuses on the cognitive processes that maintain loneliness. According to this view, lonely individuals develop biased ways of interpreting social information, including hypervigilance to signs of rejection or exclusion. They may expect negative social outcomes, misinterpret ambiguous social cues as hostile, and recall negative interactions more readily than positive ones. These cognitive distortions increase anxiety in social situations and reduce openness to connection, thereby maintaining or intensifying loneliness. This theory highlights the role of maladaptive thought patterns in sustaining loneliness over time.

Beyond individual-level explanations, **Socio-Ecological and Cultural Perspectives** examine how broader societal factors contribute to loneliness. Rapid urbanization, increased geographical mobility, breakdown of traditional community structures, and the rise of digital communication have altered the nature of social relationships. While technology enables constant connectivity, it may also reduce face-to-face interaction and deepen feelings of emotional isolation. Cultural values emphasizing individualism over collectivism may further weaken social bonds, increasing vulnerability to loneliness. These models emphasize that loneliness is influenced not only by personal factors but also by social and cultural environments.Finally, research into the Biological Basis of Loneliness reveals that the neural mechanisms underlying loneliness overlap with those involved in physical pain and stress processing. Brain regions such as the anterior cingulate cortex and insula are activated during experiences of social rejection and isolation, suggesting that loneliness is a deeply rooted, biologically significant experience. Chronic loneliness has been associated with dysregulation of stress hormones, impaired immune functioning, and increased risk of physical and mental health problems. This perspective reinforces the idea that loneliness is a fundamental human experience with profound psychological and physiological consequences.

1.3.2 *Prevalence of loneliness among different groups*

Group	**Prevalence**	**Drivers**
Global Adults	18-38%	Aging, remote work
Elderly (India)	18-37.6%	Spousal loss, finances
Workplace	20-38%	Technostress, hierarchy
Youth (Post-COVID)	20-30%	Lockdowns, media

1.4 SLEEP DEPRIVATION

Sleep is an indispensable physiological process essential for optimal health, wellbeing, and cognitive functioning (Giridharan et al., 2024). It is emphasized that sleep plays an important role in maintaining health and wellbeing, a relationship that is becoming increasingly recognized for adolescents and young adults. (Bruce et al., 2017). Despite its fundamental importance, sleep deprivation has emerged as a growing global concern, particularly among young adult populations. Its reported that more than one-third of young adults are sleep deprived (Griggs et al., 2022). Sleep disorders are increasingly being reported among this demographic, with recent surveys indicating the magnitude of this problem. The persistence of sleep problems is particularly concerning (Dave et al., 2024). Sleep deprivation is a critical health concern affecting a significant proportion of young adults, with profound implications for cognitive, psychological, and physiological functioning.

It is reported that more than one-third of young adults experience sleep deprivation, which negatively impacts neurobehavioral functions including cognitive performance, emotional regulation, and daytime alertness.(Griggs et al., 2022).

Sleep is a fundamental biological necessity that plays a critical role in maintaining physical health, cognitive function, and emotional well-being across the lifespan. Despite its importance, sleep deprivation has emerged as a pervasive public health concern, particularly among young adults who face unique developmental, academic, and social pressures during this transitional life stage. Young adults, typically defined as individuals between 18 and 30 years of age, represent a population at heightened risk for chronic sleep insufficiency, with research indicating that more than 70% of college students obtain less than the recommended 7-9 hours of sleep per night (Hershner & Chervin, 2014; Rubin et al., 2023). This alarming prevalence of inadequate sleep among young adults has far-reaching implications for their academic performance, mental health, neurobehavioral function, and long-term health outcomes.

The consequences of sleep deprivation extend beyond simple fatigue and daytime sleepiness. Research demonstrates that sleep plays an essential role in memory consolidation, learning, and cognitive performance, with sleep-deprived individuals exhibiting performance deficits comparable to those with a blood alcohol concentration of 0.05% after 17 hours of wakefulness (Okano et al., 2019). Among college students, sleep deprivation has been directly linked to decreased academic achievement, with studies showing that inadequate nightly sleep predicts lower grade point averages and reduced probability of college graduation (Meltzer et al., 2021). Furthermore, the relationship between sleep duration and academic performance appears to be cumulative, with consistent sleep patterns over weeks and months proving more influential than single-night sleep duration before examinations (Okano et al., 2019).The mental health implications of sleep deprivation among young adults are particularly concerning. Adolescents and young adults are at elevated risk for developing mental health disorders, with insufficient sleep serving as both a cause and consequence of psychological distress (De Somma et al., 2023). Research has established a U-shaped relationship between sleep duration and mental health outcomes, with young adults sleeping less than 8 hours experiencing the highest risk for mental illness, while those obtaining 8-9 hours demonstrate the lowest risk

(Kallestad et al., 2024). Sleep deprivation has been associated with increased rates of depression, anxiety, emotional dysregulation, and even suicidal ideation among young adults, with studies indicating that approximately 60-70% of American teens live with borderline to severe sleep debt (Carskadon, 2015). The bidirectional nature of this relationship suggests that addressing sleep problems may serve as a critical intervention point for preventing and mitigating mental health disorders in this vulnerable population.

Young adults appear particularly vulnerable to chronic sleep restriction compared to older adults, experiencing more pronounced impairments in sustained attention and subjective sleepiness when subjected to prolonged periods of insufficient sleep (Lo et al., 2018). Even mild to moderate partial sleep deprivation, involving just 1-2 hours less sleep for several nights, has been associated with increased impulsivity, decreased positive affect, and compromised performance on cognitive tasks (Kaur & Kaur, 2020).

Multiple factors contribute to the high prevalence of sleep deprivation among young adults. Biological changes during adolescence and young adulthood, including delayed circadian rhythms and shifts in melatonin secretion, create a natural predisposition toward later sleep onset times (De Somma et al., 2023). However, these biological factors are compounded by environmental and lifestyle influences, including academic demands, employment obligations, social pressures, and the pervasive use of electronic devices before bedtime (Bruce et al., 2017). Additionally, many young adults lack awareness of proper sleep hygiene practices and underestimate the importance of consistent sleep schedules for their overall health and academic success (Hershner & Chervin, 2014.The consequences are extensive: significant declines in cognitive performance, including attention, memory, and decision-making (Martins et al., 2021) . Its further highlighted that sleep disorders increase risks of depression, anxiety, diabetes, obesity, and cardiovascular issues (Dave et al., 2024).

Adequate sleep is fundamental to physical health, cognitive performance, and emotional stability. Sleep quality refers to how well an individual sleeps, focusing not only on the duration of sleep but also on how restorative, uninterrupted, and satisfying the sleep experience is. Unlike sleep quantity, which is measured in hours, sleep quality is a more complex and subjective measure that includes factors such as ease of falling asleep, staying asleep throughout the night, the depth of sleep, and feeling refreshed

upon waking **(**Hirshkowitz et al., 2015; Nayana, 2025).As research continues to elucidate the complex relationships between sleep, learning, mental health, and nomophobia addressing sleep deprivation among young adults must become a priority for educators, clinicians, policymakers, and the young adults themselves.

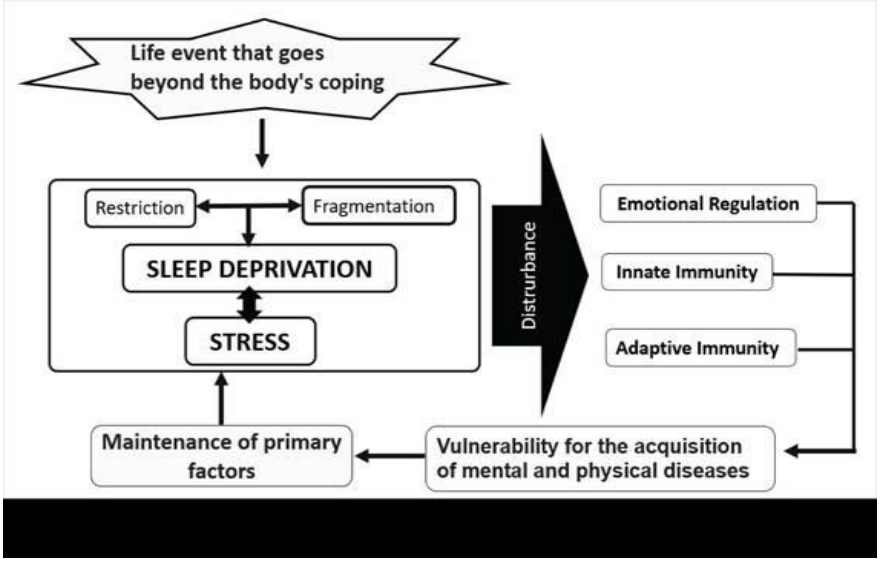


Figure:1.3 *Sleep deprivation*

Source: *By author*

1.4.1 THEORETICAL BACKGROUND

Sleep theories elucidate the purpose and regulation of sleep, while models of sleep deprivation explain its cognitive, neural, and behavioral impairments. The two-process model of sleep regulation, proposed by Borbély (1982), integrates Process S (sleep homeostasis, a pressure building with wakefulness via adenosine accumulation in the basal forebrain, dissipated during slow-wave sleep) and Process C (circadian rhythm driven by the suprachiasmatic nucleus, peaking alertness in the morning/evening via melatonin suppression), predicting performance declines when either process misaligns, as validated in psychomotor vigilance tests showing exponential lapses after 17-19 hours awake equivalent to 0.05% BAC

The **Frontal Lobe Hypothesis** in 1996 proposes that sleep deprivation primarily impairs the functioning of the prefrontal cortex, a brain region responsible for higher-order cognitive processes such as executive control, decision-making, planning, attention regulation, emotional control, and impulse inhibition. The prefrontal cortex is

particularly vulnerable to sleep loss because it requires sustained metabolic energy and is highly sensitive to disruptions in sleep–wake cycles. When individuals are sleep deprived, they exhibit reduced alertness, poor judgment, diminished working memory, increased impulsivity, and difficulty in maintaining goal-directed behavior. As a result, tasks requiring complex reasoning, self-monitoring, and flexible thinking are disproportionately affected. This theory explains why sleep-deprived individuals may perform adequately on simple or routine tasks but struggle significantly with activities that demand sustained attention, self-regulation, and higher cognitive control.

The **Hippocampal Dysfunction Hypothesis** emphasizes the critical role of sleep in learning and memory processes, particularly those mediated by the hippocampus. The hippocampus is essential for the encoding, consolidation, and retrieval of declarative memories, including facts and personal experiences. Sleep—especially slow-wave sleep and REM sleep—facilitates the transfer of newly acquired information from short-term hippocampal storage to long-term cortical memory networks. Sleep deprivation disrupts this process, leading to impaired memory formation and reduced learning efficiency. Individuals who are sleep deprived show difficulties in acquiring new information, recalling previously learned material, and integrating new knowledge. This theory highlights that the cognitive deficits associated with sleep loss are not only due to reduced attention but also reflect fundamental disruptions in memory-related neural mechanisms.

In summary, these three theories collectively explain the cognitive consequences of sleep deprivation at both neural and behavioral levels. Together, they demonstrate that sleep deprivation affects not only performance but also the underlying neural systems responsible for cognitive efficiency and psychological well-being.

1.4.2 Factors Impacting Sleep Among Young Adults

Sleep quality and duration among young adults are shaped by a complex interaction of psychological, behavioral, biological, technological, and environmental factors. Understanding these influences is critical, as sleep deprivation has become increasingly prevalent in this population. Research highlights that sleep disturbances rarely arise from a single cause; instead, they reflect overlapping vulnerabilities that collectively impair sleep health.

- **Psychological and Emotional Factors**

Stress and anxiety are among the strongest psychological predictors of poor sleep quality in young adults. High stress levels directly disrupt sleep while also exerting indirect effects through rumination, emotion-focused coping, and smartphone dependence (Li et al., 2024; Tanwar et al., 2024). Longitudinal evidence indicates that stress influences sleep through multiple mediation pathways, emphasizing the complexity of this relationship (Li et al., 2024). Importantly, the stress–sleep relationship is bidirectional: chronic stress worsens sleep, while sleep deprivation intensifies emotional distress and anxiety (Pan et al., 2024).

Depression also demonstrates a bidirectional association with sleep disturbances. Poor sleep quality is both a symptom and a risk factor for depression (Bruce et al., 2017). University students with inadequate sleep show higher levels of depression and anxiety (Çınar & Murat, 2017). Additionally, conditions such as Attention-Deficit/Hyperactivity Disorder (ADHD) are associated with insomnia, further complicating sleep outcomes among young adults (Sanchez et al., 2022).Cognitive factors, particularly dysfunctional beliefs and attitudes about sleep, play a significant role. Unrealistic expectations, excessive worry about sleep, and negative beliefs can create performance anxiety around sleep, perpetuating insomnia and poor sleep quality (Tanwar et al., 2024).

- **Lifestyle and Behavioral Factors**

Academic workload is one of the most frequently reported factors affecting sleep. Over 80% of young adults report that academic demands significantly disrupt their sleep through late-night studying, irregular schedules, and stress (Pan et al., 2024). Poor time management further exacerbates this issue, leading to shortened sleep duration and inconsistent sleep patterns.Physical activity shows a protective relationship with sleep. Sedentary behavior and physical inactivity are linked to poorer sleep quality, while higher activity levels may buffer the negative effects of screen time on sleep (dos Santos et al., 2024; Kim & Lee, 2021).Substance use also substantially affects sleep. Caffeine consumption reduces sleep duration and slow-wave sleep, even when individuals perceive their sleep as adequate (Song et al., 2023; Agarwal, 2024). Alcohol, although sedating initially, disrupts sleep architecture and reduces subjective sleep quality

(Baldassarri et al., 2023). Nicotine use is associated with shorter sleep duration, longer sleep latency, and reduced restorative sleep, with combined substance use exerting additive negative effects (Baldassarri et al., 2023).

- **Technology and Digital Media Use**

Electronic device use is one of the most prominent environmental contributors to poor sleep, second only to academic workload (Pan et al., 2024). Excessive screen time is associated with reduced sleep quality, delayed sleep onset, and increased daytime dysfunction (Han et al., 2024). Screen-induced sleep disruption occurs through multiple mechanisms, including displacement of sleep time, blue-light suppression of melatonin, emotional arousal from content, and bedtime procrastination (LeBourgeois et al., 2024).Social media use and smartphone dependence are particularly disruptive, as late-night engagement prolongs sleep latency and reduces total sleep duration (Nagata et al., 2024).

- **Biological and Sociodemographic Factors**

Biological changes in circadian rhythm during adolescence and young adulthood lead to delayed sleep onset, increasing vulnerability to sleep deprivation when social schedules require early rising (Bruce et al., 2017). Conditions such as Delayed Sleep Phase Syndrome exacerbate this misalignment.Gender differences are consistently observed, with females reporting poorer sleep quality than males, even after controlling for psychological and lifestyle factors (Shareef et al., 2017). Socioeconomic status, living conditions, employment demands, and social obligations further shape sleep outcomes by increasing stress and limiting opportunities for consistent, restorative sleep.Effective interventions must therefore adopt a holistic approach, addressing not only individual behaviors but also broader academic, social, and environmental influences to promote sustainable sleep health in this population.

Thus, young adulthood represents a critical developmental period marked by increased reliance on smartphones, expanding social demands, and changing lifestyle patterns. Excessive smartphone use has contributed to the growing prevalence of nomophobia, which is closely associated with heightened feelings of loneliness and poor sleep quality. Persistent connectivity, fear of disconnection, and increased screen time disrupt healthy sleep routines and reduce meaningful social interactions, thereby negatively

impacting psychological well-being. Understanding the interrelationship among nomophobia, loneliness, and sleep deprivation is therefore essential, as these factors collectively influence the mental health and functioning of young adults. The present study seeks to explore these relationships to contribute empirical evidence that may inform preventive strategies and targeted interventions for promoting healthier technology use and overall well-being among young adults.

1.5 Significance of the study

In today's digital era, smartphones have become deeply integrated into the daily lives of young adults, especially for communication, academics, and entertainment. However, this growing dependence has led to increasing cases of nomophobia—the fear of being without one's mobile phone—now recognized as a significant psychological concern. Research has shown that nomophobia is strongly associated with loneliness and sleep deprivation, as excessive smartphone use not only disrupts sleep routines but also reduces real-world social interaction, increasing feelings of isolation and emotional strain. Since young adulthood is a crucial stage of academic, social, and emotional development, disturbances in sleep and social connectedness can negatively impact mental health and overall well-being.

Given the rapid rise in smartphone usage in India, there is a pressing need to understand how nomophobia contributes to loneliness and sleep-related problems among youth. The present study aims to address this gap by examining the interrelationship among nomophobia, loneliness, and sleep deprivation in young adults, thereby contributing evidence that may support future awareness programs and interventions promoting healthier technology use and psychological well-being.

1.6 STATEMENT OF THE PROBLEM

A Study of Association between Nomophobia, Loneliness and Sleep Deprivation among Young Adults.

1.7 OPERATIONAL DEFINITION

Nomophobia

Nomophobia (No-Mobile-Phone Phobia) refers to the psychological condition

characterized by fear, anxiety, or discomfort when an individual is unable to use or access their mobile phone. It includes excessive dependence on smartphones for communication, information, and social connection, often leading to distress when the device is unavailable.

Loneliness

Loneliness is a subjective emotional state in which an individual perceives a gap between desired and actual social relationships. It reflects feelings of social isolation, lack of companionship, and dissatisfaction with one's social connections, regardless of the actual number of relationships.

Sleep Deprivation

Sleep deprivation refers to a condition in which an individual fails to obtain adequate quantity or quality of sleep required for optimal functioning. It can result from insufficient sleep duration, poor sleep quality, or disrupted sleep patterns, leading to negative effects on physical and psychological well-being.

1.8 OBJECTIVES OF THE STUDY

In view of the available literature & importance of the topic, the following objectives was framed :–

1. To study the effect of nomophobia on sleep deprivation among working young adults.
2. To study the effect of loneliness on sleep deprivation among working young adults.
3. To find out the relationship between loneliness, nomophobia and sleep deprivation among working young adults.
4. To study the mediating role of loneliness in the relationship between nomophobia and sleep deprivation among working young adults.

1.9 HYPOTHESES OF THE STUDY

HA1. There will be a significant effect of nomophobia on sleep deprivation working male and female young adults.

HA2. There will be a significant effect of loneliness on sleep deprivation among working male and female young adults.

HA3. There will be a significant relationship between nomophobia, loneliness and sleep deprivation among male and female young adults.

HA4. There will be a significant mediating role of loneliness in the relationship between nomophobia and sleep deprivation among young adults.

1.10 Delimitations of The Study

1.The study focused on working adults only.

2.The study was conducted in different govt and private sectors and restricted in Jammu districts only.

3.The study is quantitative in nature.

CHAPTER II

REVIEW OF LITERATURE

A literature review is a comprehensive review and analysis of published literature that relates to a particular research topic or question being studied. Various forms of literature are reviewed that can include journal articles, books, magazine and blog articles, published abstracts, conference proceedings, and dissertations. Literature review in research is one of the pillars on which your research idea stands since it provides context, relevance, and background to the research problem you are exploring. A literature review should be a critical and analytical summary of the selected literature that guides the readers through the central theme of the research. Here are some of the literature reviews related to research study:

Mamun et al. (2025) conducted a meta-analysis of 43 studies (n = 36,656 participants) from 18 countries using validated self-report instruments, primarily the NMP-Q. Results indicated 26% of participants reported mild symptoms, 51% moderate symptoms, and 21% severe symptoms. University students exhibited the highest levels of severe nomophobia, while adolescents had the highest prevalence of mild nomophobia.

Vagka et al. (2023) examined 1,408 young adults aged 18-25 years in Greece using cross-sectional design with the NMP-Q questionnaire and generalized linear models for analysis. Results showed 99.9% exhibited some level of nomophobia, with 57.0% at moderate level. Women and non-working participants demonstrated higher likelihood of severe nomophobia (adj PR = 1.57).

Notara et al. (2021) conducted a systematic review examining nomophobia prevalence among young adults aged 18-25 years using the Nomophobia Questionnaire (NMP-Q). The review analyzed 40 studies from April 2015 to August 2020. Results indicated nomophobia prevalence ranging from 15.2% to 99.7% across participants, with significant psychological, emotional, social, and physical side effects associated with excessive smartphone use.

Mejía et al. (2021) performed a systematic review of 108 studies published until January 2020, following PRISMA guidelines. The study examined prevalence data and gender/age differences using the NMP-Q. Results showed at-risk participants ranged from 13% to 79%, with moderate cases varying between 25.7% and 73.3%, and severe cases between 1% and 87%. Females and younger individuals demonstrated higher vulnerability to nomophobia.

Gnardellis et al. (2023) investigated 1,408 young adults aged 18-25 years using the NMP-Q, DASS-21, and Rosenberg Self-Esteem Scale through cross-sectional design. Pearson's correlation coefficients were calculated. Results indicated participants with severe nomophobia exhibited severe emotional states: 40.6% in depression, 73.7% in anxiety, and 32.7% in stress (all $p < 0.001$). Self-esteem demonstrated a moderating effect on the nomophobia-DASS relationship.

Stanković et al. (2022) examined 257 Croatian students (mean age 22 years) using the NMP-Q, DASS scales, SELSA, and ESCQ-15. Pearson's correlations and hierarchical regression analysis were performed. Results demonstrated significant correlations between nomophobia and all examined variables.Nomophobia and emotional competence predicted 30% of depression variance, 24% of anxiety variance,and 26% of stress symptom variance.

Sharma et al. (2019) conducted a cross-sectional study with 1,386 high school students aged 14-17 years using the NMP-Q, Beck's Depression Inventory (BDI), Beck's Anxiety Inventory (BAI), and Short Form-36 (SF-36). Results showed 41.05% had mild, 21.86% moderate, and 5.1% severe nomophobia. Significant positive correlations were found between nomophobia scores and both depression (BDI) and anxiety (BAI) scores.

Abukhanova et al. (2024) studied 307 undergraduate students using validated self-report questionnaires for nomophobia, anxiety, and depression, with GPA for learning performance. Correlation and mediation analyses were conducted. Results showed anxiety significantly mediated the relationship between nomophobia and poor academic performance, while depression had no significant mediation effect.

Göktaş et al. (2024) examined students at a Faculty of Health Sciences (n = 382, 93.2% female) using cross-sectional design with NMP-Q, Canadian Occupational

Performance Measure (COPM), and State-Trait Anxiety Inventory (STAI). Correlation analysis was performed. Results revealed significant negative correlations between activity performance and anxiety levels, with nomophobia adversely affecting psychosocial functioning including academic performance problems.

Tuco et al. (2023) conducted a systematic review and meta-analysis of 28 cross-sectional studies with 11,300 participants from eight countries using the NMP-Q. Random-effects model meta-analysis was performed. Results indicated mild nomophobia prevalence at 24% (95% CI: 20%-28%), moderate at 56% (95% CI: 53%-60%), and severe at approximately 18%. Higher nomophobia levels were associated with poorer academic performance.

Li et al. (2025) investigated 483 rural community residents aged 18+ years in Shandong Province, China, across two waves (2019 and 2023) using the Pittsburgh Sleep Quality Index, Zung Self-Rating Anxiety Scale, and Emotional and Social Loneliness Scale. Cross-lagged path models and mediation analysis were employed. Results demonstrated bidirectional relationships: loneliness in Wave 1 predicted anxiety in Wave 2 ($\beta = 0.12$, $p < .05$), anxiety in Wave 1 predicted poor sleep quality in Wave 2 ($\beta = 0.18$, $p < .01$), and poor sleep quality in Wave 1 predicted both loneliness ($\beta = 0.14$, $p < .05$) and anxiety ($\beta = 0.18$, $p < .01$) in Wave 2. Changes in loneliness partially mediated the relationship between poor sleep quality and anxiety.

Sy et al. (2024) examined 1,001 undergraduate students aged 18-30 years from two universities in the Pacific Northwest and Pacific Islands using the Insomnia Severity Index, UCLA Loneliness Scale, and screen time assessments. Cross-sectional analysis with correlation and regression methods was conducted. Results showed 35% of participants experienced high levels of loneliness, with lonely students nearly twice as likely to report clinically significant insomnia symptoms compared to less lonely peers. Loneliness was a stronger predictor of insomnia than screen time, with screen time effects only significant among students with low loneliness levels at 8-10+ hours daily.

Trost et al. (2024) investigated 215 young adults in Germany using self-report measures for loneliness, bedtime procrastination, and sleep quality through cross-sectional survey design with correlation analysis. Results indicated significant positive correlations between loneliness and bedtime procrastination, as well as between

loneliness and poor sleep quality. Loneliness was associated with increased hypervigilance during sleep, negatively affecting sleep onset and quality.

Liu et al. (2024) examined 689 college students in China using the UCLA Loneliness Scale, Pittsburgh Sleep Quality Index, Perceived Stress Scale, and Emotion Regulation Questionnaire. Structural equation modeling and mediation analysis were conducted. Results revealed 32.4% reported moderate loneliness and 3.2% severe loneliness. Loneliness was linked to sleep quality both directly (42.15% of total effect) and indirectly through perceived stress and expressive suppression as mediators.

Gazder et al. (2024) studied 389 healthy adults aged 40-64 years (61% female) using hourly ecological momentary assessment surveys over 4 days assessing loneliness and emotional support, with 7-10 days of actigraphy-assessed sleep and nightly sleep quality measures. Multilevel modeling examined between- and within-person associations. Results indicated individuals with lower average daily loneliness showed higher sleep quality ($r = -0.19$, $p < .001$) and efficiency ($r = -0.14$, $p = .008$). Within-person analyses revealed unexpected bidirectional effects: days with greater loneliness were followed by nights with greater sleep efficiency ($\gamma = 1.08$, $p = .015$), and nights with poorer sleep quality were followed by days with greater emotional support ($\gamma = -0.04$, $p = .013$).

Berkemeyer et al. (2024) examined bidirectional associations between loneliness, social connectedness, and sleep using trait-level and state-level analyses with wearable-based sleep metrics and daily self-reports. Multilevel modeling and cross-lagged panel analyses were conducted. Results showed that at trait level and state level (t1), good sleep positively impacted loneliness/social connectedness. However, state-level analyses at t0 revealed greater restfulness of sleep was associated with fewer positive social interactions, suggesting complex bidirectional dynamics. Poor sleep was linked to impairments in executive functioning and increased physiological arousal, leading to difficulties in social interactions

Alqahtani et al. (2021) studied 311 nursing students in Saudi Arabia using the NMP-Q and DASS-21 in a self-administered survey. Descriptive statistics, ANOVA, and correlation analysis were conducted. Results showed 12.9% mild, 46.9% moderate, and 40.2% severe nomophobia. Significant positive correlation was found between

depression and nomophobia ($r = 0.11$, $p < 0.05$), with severity of depression contributing positively to nomophobia severity.

Guerrero et al. (2020) investigated young people using correlational and predictive design with quantitative methodology employing the NMP-Q. Results demonstrated significant relationships between nomophobia levels and factors including gender, nutritional habits, and psychosocial wellbeing, with females showing higher nomophobia levels.

Hom et al. (2020) performed a meta-analysis of 84 articles including 110 samples (N = 227,112 participants) examining cross-sectional and longitudinal relationships between sleep problems and loneliness. Random effects models were employed. Results demonstrated a significant medium cross-sectional association between overall sleep problems and loneliness (r = .336, 95% CI [.315, .357]). Specific sleep complaints including insomnia, nightmares, poor sleep efficiency, and poor sleep quality showed small-to-medium and medium associations with loneliness (rs = .165–.354). Longitudinal analyses indicated bidirectional associations, with overall sleep problems predicting subsequent loneliness (rs = .249–.297) and vice versa.

Bajaj et al. (2020) conducted a study to examine nomophobia and its relationship with sociodemographic variables among Indian college students. The sample consisted of 300 undergraduate and postgraduate students. The findings revealed a very high prevalence of nomophobia, with 99.7% of the participants exhibiting nomophobic tendencies. Among them, 32.7% showed severe nomophobia, 59.9% reported moderate nomophobia, and 7.1% experienced mild nomophobia. The results highlight that nomophobia is highly prevalent among college-going students in India, indicating excessive dependence on smartphones irrespective of demographic differences.

Simon et al (2018) conducted a multi-phase study with 18 healthy young adults in a counterbalanced repeated measures design comparing sleep-rested and sleep-deprived conditions, plus two online studies with 138 and 1,033 participants. fMRI brain imaging, standardized loneliness measures, videotaped simulations, and behavioral assessments were used. Results showed sleep-deprived individuals maintained greater physical distance from others, exhibited increased activity in neural networks warning of human approach, and reduced activity in prosocial brain networks. Sleep-deprived

individuals were perceived as lonelier and less socially desirable by observers, with this alienating effect potentially triggering viral contagion of social isolation.

Matthews et al. (2017) studied 2,232 young adults aged 18 years from the Environmental Risk Longitudinal Twin Study in England and Wales using the UCLA Loneliness Scale and Pittsburgh Sleep Quality Index. Within-twin pair analyses and regression models controlling for covariates were employed. Results demonstrated that loneliness was robustly associated with worse overall sleep quality, specifically affecting subjective sleep quality and daytime dysfunction. The association persisted even after controlling for social isolation and psychopathology, and was exacerbated among individuals exposed to violence victimization or childhood maltreatment.

Alharthi et al. (2024) performed an umbrella review of systematic reviews and meta-analyses examining sleep deprivation effects on physical and mental health from 2008-2024. Studies investigated relationships between sleep deprivation and various health outcomes including anxiety, depression, and mood. Results demonstrated sleep deprivation caused definite increases in anxiety levels, aggression, depression, and mood lowering. The anxiogenic effect increased proportionally with duration of sleep deprivation. Sleep deprivation significantly impacted emotional stability and dysregulation, affecting individuals' ability to process and respond to emotional stimuli.

Alfonsi et al. (2023) conducted a systematic review of adolescent sleep deprivation and mental health studies published from multiple databases. PRISMA guidelines were followed for study selection. Results indicated sleep deprivation was significantly associated with increased anxiety levels, aggression, depression, and mood disturbances. Adolescents with sleep problems exhibited emotional lability, poor self-regulation, and high rates of depression, anxiety, and conduct disorders. Sleep deprivation was also linked to cognitive impairments, decreased academic performance, and increased risk-taking behaviors.

Piekarski et al. (2022) studied sleep-deprived individuals using functional MRI to assess brain function in regions processing emotions, combined with cognitive behavioral therapy (CBT) interventions. Longitudinal design with pre-post intervention assessment was employed. Results showed sleep deprivation reduced activity in the theory of mind network, decreasing ability to think about others' perspectives. CBT

improvements in sleep correlated with improvements in mental health, with larger sleep improvements associated with greater reductions in depression and anxiety symptoms.

Scott et al. (2021) examined inadequate sleep and frequent mental distress using Behavioral Risk Factor Surveillance System (BRFSS) data with large population samples. Logistic regression and correlation analyses were conducted. Results indicated inadequate sleep (≤6 hours) was significantly associated with frequent mental distress, including depression and anxiety. The relationship demonstrated sleep inadequacies deriving from preexisting mental distress, as well as mental distress leading to lack of sleep, supporting a bidirectional model.

Roberts et al. (2014) examined adolescents using the National Institute of Mental Health Diagnostic Interview Schedule for Children (DISC-IV) with DSM-IV criteria for major depression and longitudinal design over one year. Logistic regression analysis was conducted. Results showed sleep deprivation (≤6 hours) significantly increased risk for major depression by more than threefold. Sleep-deprived adolescents reported more depression, anxiety, anger, inattention, conduct problems, drug/alcohol use, impaired academic performance, and suicidal thoughts. Baseline sleep deprivation predicted subsequent major depression, while the reciprocal association showed an odds ratio of 4.28 ($p < .05$) for weeknight sleep deprivation.

Huang et al. (2025) examined 1,016 permanent residents aged 45+ years in Ankang City, China, using the UCLA Loneliness Scale, Pittsburgh Sleep Quality Index, and Depression Anxiety Stress Scales. Binary logistic regression and PROCESS macro mediation analysis in SPSS 25.0 were conducted. Results showed 20.9% prevalence of depressive symptoms, with loneliness and poor sleep quality as independent risk factors for depression. Sleep quality significantly mediated the relationship between loneliness and depressive symptoms, with intense feelings of loneliness indicating poor sleep quality, which in turn triggered or exacerbated depressive symptoms.

Seo et al. (2024) investigated adults aged 51+ years using 8 years of data from the University of Michigan Health and Retirement Study with cross-lagged panel models and moderated mediation analyses. The study examined social support, social strain, loneliness, cognitive status, and sleep quality. Results demonstrated loneliness fully mediated the relationships between social support, social strain, and sleep quality.

Better cognitive status enhanced the mediating effect of loneliness between social support and sleep quality. Loneliness was associated with heightened vulnerability and hypervigilance to environmental threats, hindering restorative sleep.

Slavish et al. (2024) studied 71 undergraduate students (77% female, ages 18-28) using ecological momentary assessment with 4 daily electronic surveys over 2 weeks to assess loneliness, plus morning sleep diaries and actigraphy devices for objective sleep parameters. Multilevel models tested within-person associations. Results from 778 momentary surveys and 565 days of actigraphy data showed subjective sleep duration, quality, and fatigue were significantly predicted by daily average loneliness. The shape of loneliness experience across the day (average, maximum, daily variation) provided unique insights into the sleep-loneliness relationship, with different aggregation methods differentially relating to sleep outcomes.

Qutishat et al. (2020) conducted a study to examine nomophobia and its association with demographic variables among university students at Sultan Qaboos University, Oman (Africa). A convenient sampling technique was used to select a sample of 740 students. The findings indicated a very high prevalence of nomophobia, with 99.33% of the participants identified as nomophobic, while only five students were non-nomophobic. Further, 20% of the students exhibited mild nomophobia, 65% moderate nomophobia, and 15% severe nomophobia. The study also found a weak but significant marginal relationship between nomophobia and academic performance. However, no significant gender differences were observed, with mean scores of 81.2 for males and 83.8 for females.

Jilisha et al (2020) conducted a study in India to examine nomophobia in relation to socioeconomic status and demographic variables among college students. The sample consisted of 774 second- and third-year undergraduate students aged 18 years and above. The findings revealed that age, gender, duration and frequency of mobile phone use, checking the phone without any reason, and checking the phone while walking were significantly associated with nomophobia scores. In-depth interviews further indicated that excessive mobile phone dependency reflects compulsive behaviour, which is a characteristic of addiction, accompanied by anxiety and frustration among students.

Khilnani et al. (2019) conducted a study in India to assess nomophobia and its relationship with demographic variables. The sample comprised 331 participants, including 192 males and 139 females. The results showed no significant differences in nomophobia based on gender, age, profession, or marital status. However, participants who spent more time on smartphones per day were found to be more nomophobic. Additionally, higher levels of nomophobia were observed among students experiencing Phantom Ringing Syndrome, indicating a strong association between excessive smartphone use and nomophobic symptoms.

Mallya et al (2018) conducted a study in India to assess nomophobia among first-year medical students. The findings revealed a high prevalence of nomophobia, with 86.9% of the participants exhibiting frank nomophobia, indicating a strong fear of being without a smartphone. Additionally, about 13% of students were found to be at risk of developing nomophobia, while only 7.6% demonstrated normal smartphone usage. The study also reported statistically significant relationships between gender and nomophobia, as well as between perceived smartphone addiction and nomophobia, highlighting the role of addictive smartphone behaviours in the development of nomophobia.

Kurina et al. (2011) examined 95 adults in a communal Hutterite society using actigraphy-assessed sleep fragmentation over multiple nights and validated loneliness measures. Mixed linear models controlling for demographic, physical, and psychological variables were employed. Results showed each unit increase in loneliness was associated with an 8% increase in sleep fragmentation. No association was found between loneliness and sleep duration. Findings replicated earlier college student research in a very different cultural context, supporting the hypothesis that sleep quality mediates the relationship between social connectedness and health.

Research Gap

The rapid growth of smartphone usage has increased the prevalence of nomophobia, loneliness, and sleep-related problems among young adults. Although a considerable number of studies have examined the relationship between nomophobia and psychological well-being, and others have explored the association between loneliness and sleep deprivation, most of these studies have investigated these variables

separately. Very limited research has examined the combined relationship among nomophobia, loneliness, and sleep deprivation within a single framework. Furthermore, previous studies have mainly focused on adolescents, college students, or the general population, while working young adults have received comparatively less attention. The role of loneliness as a mediating factor between nomophobia and sleep deprivation has also not been sufficiently explored. In addition, there is a lack of research conducted in the Indian context, particularly among working young adults in Jammu district. Considering the increasing dependence on smartphones and its possible impact on social and psychological well-being, it is important to understand how nomophobia may contribute to sleep deprivation directly as well as through feelings of loneliness. Therefore, the present study attempts to fill this gap by examining the association between nomophobia, loneliness, and sleep deprivation, and by investigating the mediating role of loneliness among working young adults.

CHAPTER III

RESEARCH METHODS

"Methodology means understanding the entire research process including its social organizational context, philosophical assumptions, ethical principles, and the political impact of new knowledge from the research enterprise." **-Newman**

The present study was conducted to examine the relationship between nomophobia, loneliness, and sleep deprivation among working adults. With the rapid increase in smartphone usage, individuals are becoming increasingly dependent on mobile phones, which may influence their psychological well-being and sleep patterns. Nomophobia, defined as the fear or anxiety of being without a mobile phone, has been associated with several mental health concerns, including feelings of loneliness and poor sleep quality. Working adults are particularly vulnerable to these issues due to occupational stress, excessive screen exposure, and irregular daily routines. Therefore, it is important to investigate how these variables are related in the working population.

The current research follows a quantitative approach using a correlational research design to explore the association among the selected variables. The study was conducted in Jammu district, and the sample consisted of 160 working adults aged 20 to 40 years, selected through purposive sampling technique. Standardized self-report questionnaires were used to measure nomophobia, loneliness, and sleep deprivation. Statistical analysis included descriptive statistics, Pearson's correlation, and simple linear regression, which were performed using SPSS.

This chapter describes the research methodology adopted for the present study, including the research design, participants, sampling technique, tools used for data collection, procedure, and statistical analysis.

Schematic View of Research Methodology.

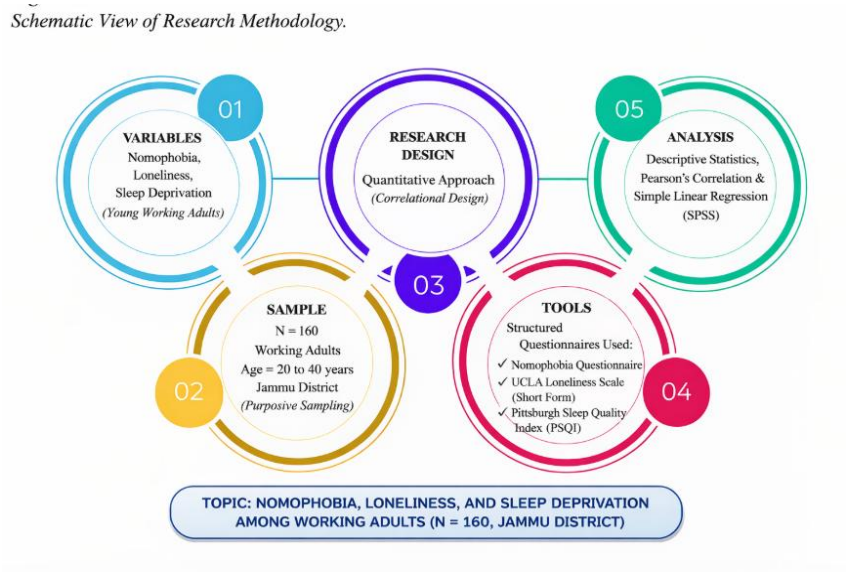


Fig.3.1 Schematic *View of Research Methodology*

3.1 SAMPLE

The sample for the present study consisted of **160 young adults** who are currently employed in **different occupational sectors** within **Jammu District**. The participants were selected using **purposive sampling**, as the study specifically focuses on young adults who are actively working and therefore meet the predefined inclusion criteria of the research. This sampling technique enables the investigator to deliberately select individuals who possess characteristics relevant to the objectives of the study. Participants from diverse sectors such as government services, private organizations, educational institutions, healthcare, and self-employment will be included to ensure variability in occupational background.

3.2 SAMPLING TECHNIQUE

In the present study the investigator used "Purposive sampling technique" for data Collection. The use of purposive sampling allows for the collection of data from information-rich cases, thereby enhancing the relevance and depth of the findings.

3.3 RESEARCH TOOLS USED AND ITS DESCRIPTION

The selection of suitable tools is of vital importance for successful research. Different tools are suitable for collecting different kinds of information for various purposes. Selection of tools for Data collection depends upon the nature of the problem undertaken.

For the present investigation the investigator has used the following tools of research:

● Nomophobia scale

Nomophobia Questionnaire (NMP-Q) was developed by Yildirim and Correia (2015) to assess the severity of nomophobia, defined as the fear or anxiety of being without access to a mobile phone. The scale consists of 20 self-report items rated on a 7-point Likert scale, ranging from *strongly disagree* to *strongly agree*. It measures four key dimensions of nomophobia: (1) not being able to communicate, (2) losing connectedness, (3) not being able to access information, and (4) giving up convenience. Higher total scores indicate greater levels of nomophobia, which can be categorized into mild, moderate, and severe levels. The NMP-Q has demonstrated good reliability and validity and is widely used in research involving adolescents and young adults. The scale has demonstrated high internal consistency, with a Cronbach's alpha coefficient of 0.95, indicating excellent reliability.

●Loneliness scale

The UCLA Loneliness Scale was developed by Russell et al. (1978) to measure subjective feelings of loneliness and social isolation. It is a self-report instrument consisting of 20 items rated on a 4-point Likert scale, ranging from never to often. The scale assesses individuals' perceptions of their social relationships rather than the objective size of their social network. Some items are positively worded and reverse-scored to reduce response bias. Higher total scores indicate greater levels of perceived loneliness. The scale has shown high reliability and strong construct validity and is widely used in psychological research across different age groups, including young adults. The Cronbach's alpha coefficient is typically reported as $\alpha = 0.89$ to 0.94, indicating excellent reliability.

● Sleep quality scale

The Sleep Quality Scale (SQS) was developed by Yi, Shin, and Shin (2006) to assess overall sleep quality and sleep-related difficulties. It is a self-report measure consisting of 28 items rated on a 4-point Likert scale, ranging from rarely to almost always. The scale evaluates multiple aspects of sleep, including daytime dysfunction, difficulty falling asleep, difficulty maintaining sleep, sleep satisfaction, and

restoration after sleep. Higher scores indicate poorer sleep quality. The SQS has demonstrated good reliability and validity and is commonly used in research involving adolescents and adults to assess subjective sleep quality. The Cronbach's alpha coefficient for the PSQI is approximately $\alpha = 0.83$, indicating good reliability.

3.4 INCLUSION CRITERIA

1. The Study includes only working adults.
2. The study was conducted in different govt and private sectors.
3. The study was restricted in Jammu districts only.

3.5 STATISTICAL TECHNIQUE

The data obtained in the present study was analyzed using appropriate statistical techniques. Initially, descriptive statistics were computed to understand the basic characteristics of the sample. To examine the relationships among the study variables, Pearson's product-moment correlation analysis was employed. Further, regression analysis was conducted to determine the predictive relationships between the independent and dependent variables. In addition, mediation analysis was performed using the PROCESS Macro developed by Andrew F. Hayes in SPSS. Specifically, the mediation model was tested to examine the indirect effects of the independent variable on the dependent variable through the mediator variable.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

This section represents the findings derived from quantitative investigation into " A study of association between nomophobia, loneliness and sleep deprivation among young adults" as conducted through structured questionnaire with 160 sample. The results tables, graphical presentations and their interpretations aligned with the specified objectives and hypotheses. The research goal is to determine the frequency distribution on the basis occupation and gender, followed by an assessment of loneliness and sleep deprivation patterns. To address these objectives, a series of hypotheses have been formulated. This chapter unfolds in four distinct parts for clarity and comprehension:

I. Section A: Frequency distribution of demographics
II. Section B: Descriptive Statistics (Mean, Standard Deviations)
III. Section C: Correlational and Regression Analysis
IV. Section D: Mediation Analysis (MACRO PROCESS)

Table 4.1
Frequency distribution of Types of Occupation (N=160)

Types of occupation	Frequency	%age
Banker	49	30.6
Engineer	9	5.6
Lecturer	70	43.8
Private job	12	7.5
Lawyer	19	11.9
Social media manager	1	0.6

The data presented in Table 4.1 show the distribution of participants based on their occupation among young working adults (N = 160). The majority of the participants were lecturers (n = 70, 43.8%), followed by bankers (n = 49, 30.6%). A smaller proportion of participants were lawyers (n = 19, 11.9%) and individuals working in private jobs (n = 12, 7.5%). Engineers constituted 9 participants (5.6%), while only one participant (0.6%) was a social media manager. Overall, the sample was

predominantly composed of lecturers and bankers, indicating that these professions formed the major portion of the participants included in the present study.

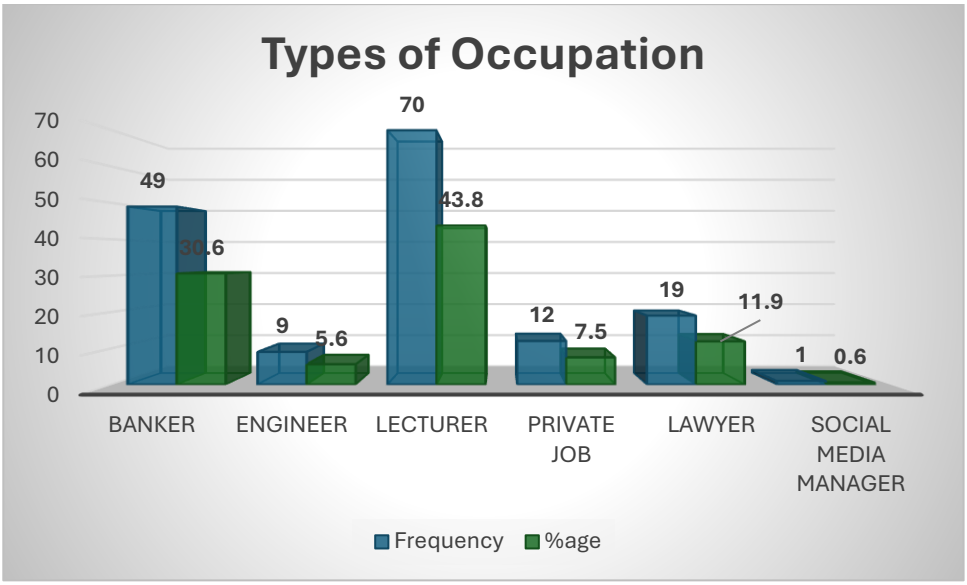


Figure 4.1 *Figure showing Types of Occupation*

Table 4.2

Frequency Distribution of Types of Gender

Gender	Frequency	%Age
Male	49	30.6
Female	111	69.4

The data presented in Table 4.2 indicate the gender distribution of the participants included in the study (N = 160). Out of the total sample, 111 participants (69.4%) were female, whereas 49 participants (30.6%) were male. The results show that the sample consisted of a higher proportion of female participants compared to male participants, indicating that females represented the majority of young working adults included in the present study.

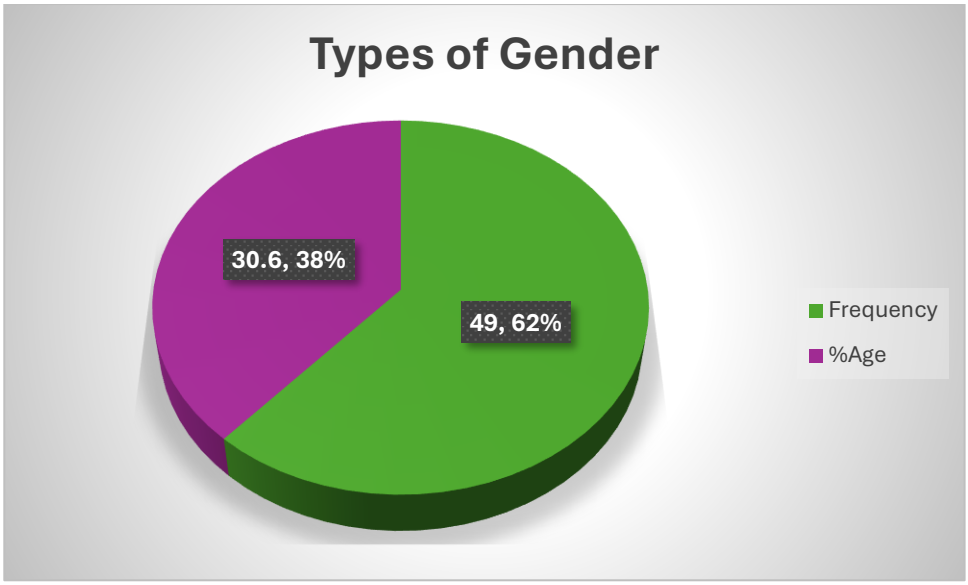


Figure 4.2 *Figure showing Types of Gender*

HYPOTHESIS 1: To study the effect of nomophobia on sleep deprivation among young working adults.

Table 4.3A

Model summary of effect of nomophobia on sleep deprivation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df2	Sig. F Change
1	.01[a]	.00	-.006	5.29	.00	.05	158	.81

Table 4.3A shows the results of the linear regression analysis conducted to examine the effect of nomophobia on sleep deprivation among young working adults. The value of R = .018 indicates a very weak relationship between nomophobia and sleep deprivation. The coefficient of determination (R^2 = .000) shows that nomophobia explains almost no variance in sleep deprivation. The adjusted R^2 value (−.006) further indicates that the model does not fit the data well. The F-change value was 0.052 with df(1,158), and the significance value was p = .819, which is greater than .05, indicating that the regression model is not statistically significant. Therefore, the results suggest that nomophobia does not have a significant effect on sleep deprivation among young working adults, and hence the proposed hypothesis is not supported.

Table 4.3B

Linear regression analysis predicting Nomophobia on Sleep deprivation (N=160)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	15.18	1.42		10.65	.00
Nomophobia	-.004	.018	-.018	-.22	.81

Dependent Variable: *Sleep Deprivation*

The coefficients table presented in Table 4.3B shows the contribution of nomophobia in predicting sleep deprivation among young working adults. The regression coefficient for nomophobia was not statistically significant (B = −0.004, β = −.018, t = −0.229, p = .819). The p value is greater than .05, indicating that nomophobia is not a significant predictor of sleep deprivation. The negative beta value suggests a very weak inverse relationship between nomophobia and sleep deprivation; however, the relationship is not statistically significant. The constant value (B = 15.187, p < .001) indicates the predicted level of sleep deprivation when nomophobia is zero. Therefore, the findings indicate that nomophobia does not significantly predict sleep deprivation among young working adults, and hence the proposed hypothesis is not supported.

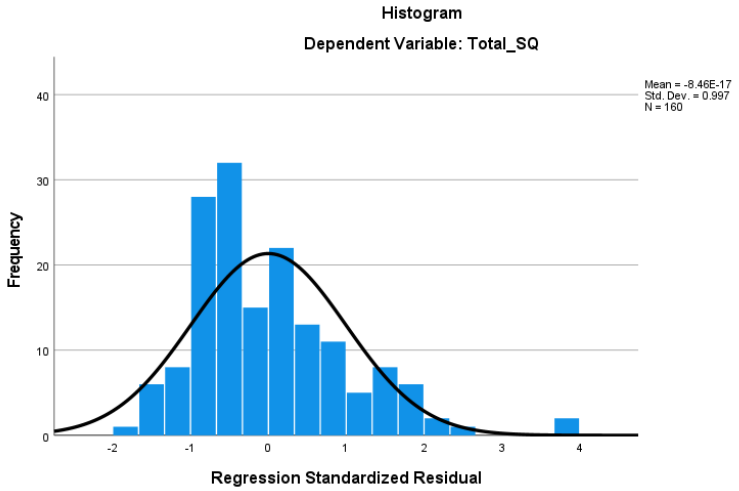


Figure4.3 *Linear regression analysis predicting Nomophobia and Sleep quality*

HYPOTHESIS 2: To study the effect of Loneliness on sleep deprivation among young working adults.

Table 4.4A

Model summary of effect of Loneliness on sleep deprivation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F	df	Sig.
1	.088[a]	.008	.002	5.27	.008	1.24	158	.02*

The regression model shows a very weak positive relationship between the predictor and the dependent variable (R = .088). The R Square value of .008 indicates that the model explains only 0.8% of the variance in the dependent variable, meaning the predictor has very little explanatory power. The Adjusted R Square (.002) further suggests that the model contributes minimally after adjusting for sample size and number of predictors.The Standard Error of the Estimate (5.27) shows the average deviation of observed values from the predicted values. Although the effect size is very small, the F value (1.24) and significance level (p = .02, p < .05) indicate that the model is statistically significant. Therefore, the predictor has a small but statistically meaningful influence on the dependent variable.

Table4.4B

Linear Regression Analysis Predicting effect of Loneliness on sleep deprivation

Model	Predictor	B	SE	β	t	p
1	Constant	13.35	1.42	—	9.39	.000*
	TotalL	.03	.03	.088	1.11	.002*

. Dependent Variable: Total_SQ

The regression results show that loneliness has a weak positive effect on sleep deprivation (β = .088). The unstandardized coefficient (B = .03) indicates that for every one-unit increase in loneliness, the dependent variable increases by .03 units. The predictor is statistically significant (p = .002 < .05), suggesting that loneliness has a significant influence on sleep deprivation, although the effect is small.

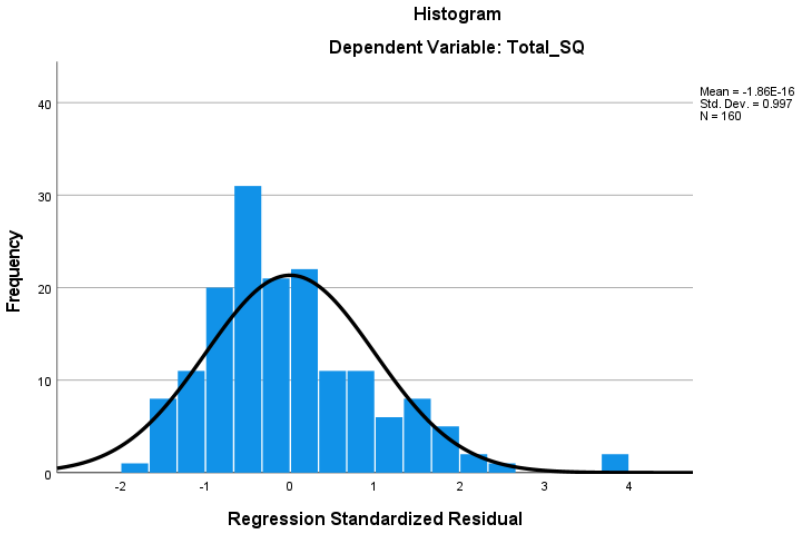


Figure4.4 *Representing Regression Analysis Predicting Total_SQ*

HYPOTHESIS 3: To find out the relationship between loneliness, nomophobia and sleep deprivation among young working adults.

Table 4.5A

Mean and standard deviation of nomophobia, loneliness and sleep deprivation

Variables	Mean	Std. Deviation
NP	73.95	22.78
LN	42.61	13.10
SD	14.87	5.27

Note: *NP: Nomophobia, LN: Lonelines ,SD: Sleep Deprivation*

The descriptive statistics presented shows the mean and standard deviation of nomophobia, loneliness, and sleep deprivation among young working adults(N = 160). The mean score for nomophobia was 73.95 (SD = 22.78), indicating a moderate level of nomophobia among the participants. The mean score for loneliness was 42.62 (SD = 13.10), suggesting a moderate level of loneliness in the sample. The mean score for sleep deprivation was 14.88 (SD = 5.28), indicating a moderate level of sleep-related difficulties among the participants.These descriptive results provide an overview of the levels of nomophobia, loneliness, and sleep deprivation in the sample and serve as a basis for further analysis to examine the relationship among these variables.

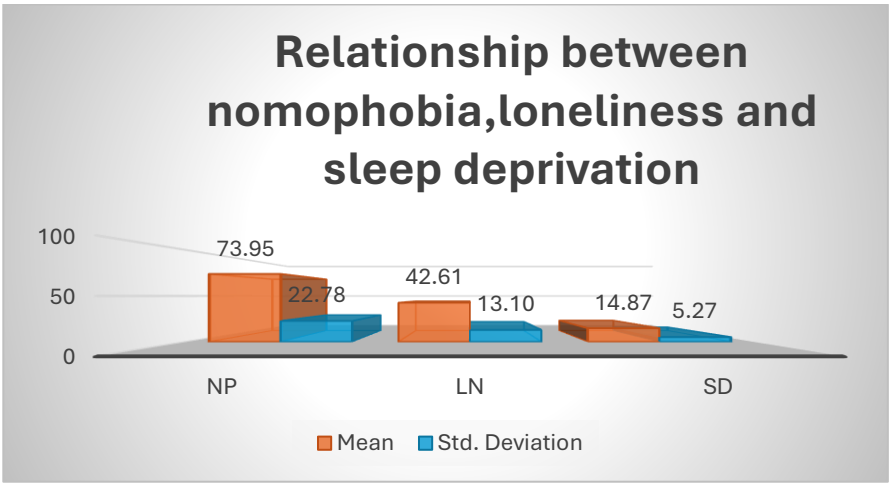


Figure 4.5A *Representing Regression Analysis*

Table 4.5B

Correlation between nomophobia, loneliness and sleep deprivation

Variable	1	2	3
1. Nomophobia	—	.166*	−.018
2. Loneliness	.166*	—	.088
3. Sleep Deprivation	−.018	.088	—

Note: *p<0.05; **p<0.01

The correlation analysis presented in Table 4.5B examined the relationships among nomophobia, loneliness, and sleep deprivation among young working adults. The results indicated a significant positive correlation between nomophobia and loneliness

(r = .166, p < .05), suggesting that higher levels of nomophobia are associated with higher levels of loneliness. However, the relationship between nomophobia and sleep deprivation was found to be negative and not statistically significant (r = −.018, p = .819). Similarly, the correlation between loneliness and sleep deprivation was positive but not statistically significant (r = .088, p = .266).These findings suggest that while nomophobia and loneliness are significantly related, neither nomophobia nor loneliness shows a significant relationship with sleep deprivation. Therefore, the hypothesis proposing a significant relationship among nomophobia, loneliness, and sleep deprivation among young working adults is partially supported.

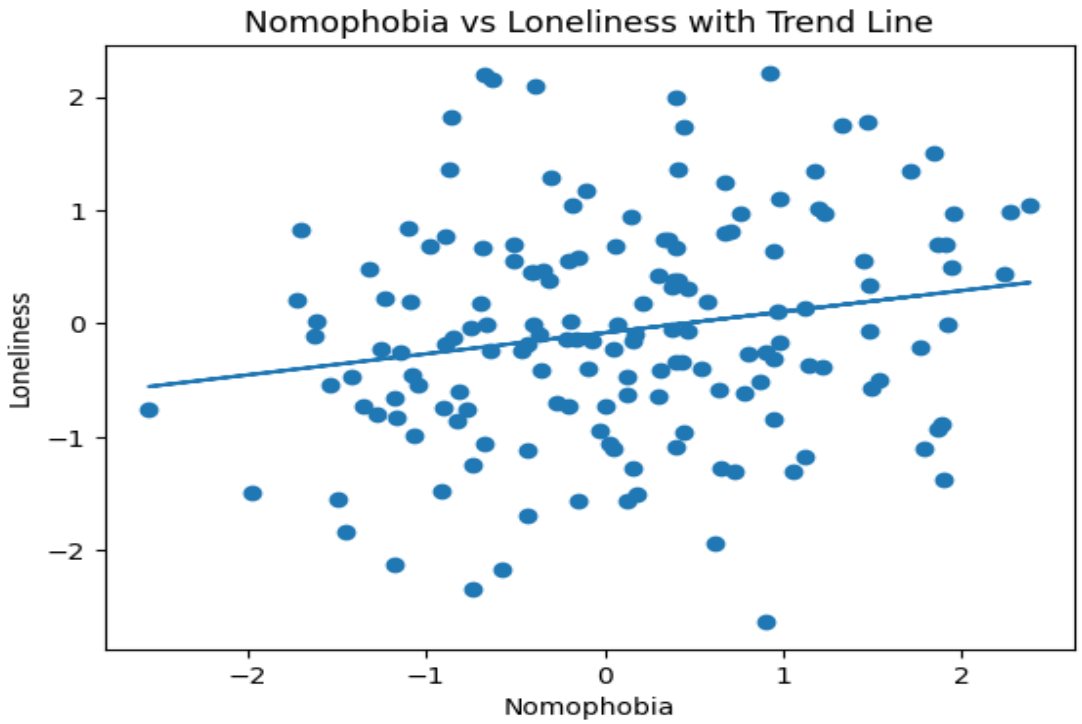


Figure4.5B *Correlation between nomophobia, loneliness and sleep deprivation*

HYPOTHESIS 4

To study the mediating role of loneliness in the relationship between nomophobia and sleep deprivation among young working adults.

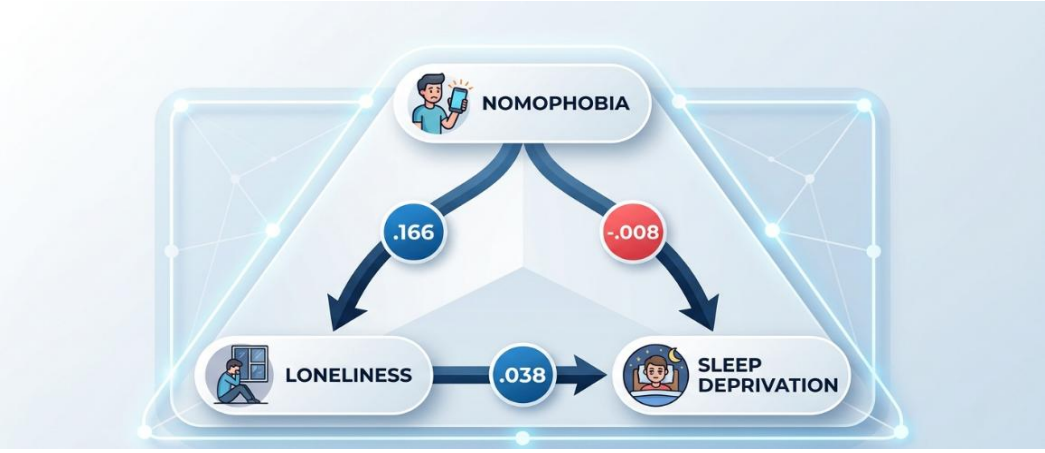


Table 4.6A

Model Summary for Sleep Deprivation as Outcome Variable

R	R^2	F	df1	df2	p
.095	.009	0.71	2	15	.49

Note. Outcome variable = Sleep Deprivation (Total_SQ), Predictor = Nomophobia, Mediator = Loneliness.

Table 4.6B

Regression Analysis Showing Effect of Nomophobia and Loneliness on Sleep Deprivation

Predictor	B	SE	t	p	LLCI	ULCI
Constant	13.84	1.83	7.55	.00	10.22	17.46
Nomophobia	−0.008	0.01	−0.42	.67	−0.04	0.02
Loneliness	0.03	0.03	1.17	.24	−0.02	0.10

Note. Outcome variable = Sleep Deprivation.

Table 4.6C

Indirect Effect of Nomophobia on Sleep Deprivation through Loneliness

Mediator	Effect	Boot SE	Boot LLCI	Boot ULCI
Loneliness	.004	.005	−.002	.016

Note. Confidence interval includes zero, indicating no significant m

Mediation analysis was done to study mediating analysis. Loneliness was tested as a mediator in the relationship between nomophobia and sleep deprivation. The overall model was not significant, $R^2 = .009$, $F(2,157) = 0.71$, $p > .05$. Nomophobia did not significantly predict sleep deprivation ($B = -0.008$, $p > .05$), and loneliness also did not significantly predict sleep deprivation ($B = 0.038$, $p > .05$). The indirect effect of nomophobia on sleep deprivation through loneliness was not significant, as the bootstrap confidence interval included zero. Therefore, loneliness did not mediate the relationship between nomophobia and sleep deprivation**.**

CHAPTER V
FINDINGS, CONCLUSION, DISSCUSSION, EDUCATIONAL IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Nomophobia refers to the fear or anxiety experienced when an individual is unable to use or access their mobile phone. The term is derived from the phrase “no mobile phone phobia” and is considered a modern psychological condition associated with excessive dependence on smartphones and digital communication. Individuals with high levels of nomophobia often feel uncomfortable, stressed, or restless when they are unable to check their phone, lose network connectivity, or run out of battery. In the present study, nomophobia was considered an important variable because young working adults frequently rely on mobile phones for communication, work-related tasks, and social interaction, which may influence their psychological well-being and daily functioning.

Loneliness is a subjective emotional state characterized by feelings of isolation, lack of companionship, or dissatisfaction with one’s social relationships. It does not necessarily mean being physically alone, but rather the perception that one’s social needs are not being adequately fulfilled. Loneliness has been associated with various psychological and behavioral problems such as stress, anxiety, depression, and reduced life satisfaction. In the present study, loneliness was included as a variable to understand whether increased dependence on mobile phones and reduced face-to-face interaction among young working adults may lead to feelings of social disconnection.

Sleep deprivation refers to a condition in which an individual does not get sufficient or adequate sleep required for proper physical and mental functioning. It may result from reduced sleep duration, poor sleep quality, irregular sleep patterns, or excessive use of electronic devices, especially before bedtime. Sleep deprivation can lead to fatigue, difficulty in concentration, mood disturbances, and decreased work performance. In the present study, sleep deprivation was examined because young working adults often experience irregular schedules, work stress, and prolonged mobile phone use, which may negatively affect their sleeping habits.

Young working adults refer to individuals who are engaged in employment and fall within the early adulthood age range. In the present study, young working adults between the age of **20 to 40 years** were selected as the target population. This age group was chosen because individuals in this stage of life are actively involved in professional responsibilities, social relationships, and frequent use of mobile technology. These factors may increase the chances of experiencing nomophobia, loneliness, and sleep-related problems.

5.1 RESEARCH PROBLEM: "A study of association between nomophobia, loneliness and sleep deprivation among young adults."

5.2 OBJECTIVES OF THE STUDY

The objective of research study was to study:

1. To study the effect of nomophobia on sleep deprivation among working young adults.
2. To study the effect of loneliness on sleep deprivation among working young adults.
3. To find out the relationship between loneliness, nomophobia and sleep deprivation among working young adults.
4. To study the mediating role of loneliness in the relationship between nomophobia and sleep deprivation among working young adults.

5.3 HYPOTHESES OF THE STUDY

HA1. There will be a significant effect of nomophobia on sleep deprivation working male and female young adults. **NOT ACCEPTED**

HA2. There will be a significant effect of loneliness on sleep deprivation among working male and female young adults. **ACCEPTED**

HA3. There will be a significant relationship between nomophobia, loneliness and sleep deprivation among male and female young adults. **PARTIALLY ACCEPTED**

HA4. There will be a significant mediating role of loneliness in the relationship between nomophobia and sleep deprivation among young adults. **NOT ACCEPTED**

5.4 FINDINGS OF THE PRESENT STUDY

5.4.1 HYPOTHESIS 1

To study the effect of nomophobia on sleep deprivation among young working adults.

The model summary presented in Table 4.3A shows the results of the simple linear regression analysis carried out to examine whether nomophobia predicts sleep deprivation among young working adults. The obtained value of R = .018 indicates that the relationship between nomophobia and sleep deprivation is extremely weak. The R^2 value (.000) suggests that nomophobia explains almost no variance in sleep deprivation scores. The adjusted R^2 value (−.006) further indicates that the regression model does not provide a good fit for the data.The change in F value was 0.052 with degrees of freedom (1,158), and the significance value was p = .819, which is higher than the acceptable level of .05. This shows that the regression model is not statistically significant. Therefore, the findings suggest that nomophobia does not significantly influence sleep deprivation among young working adults. Hence, the proposed hypothesis is not supported.

The coefficients table presented in Table 4.3B explains the individual contribution of nomophobia in predicting sleep deprivation among young working adults. The regression coefficient for nomophobia was found to be not statistically significant (B = −0.004, β = −.018, t = −0.229, p = .819). Since the p value is greater than .05, nomophobia cannot be considered a significant predictor of sleep deprivation.The negative beta value indicates a very weak inverse relationship between nomophobia and sleep deprivation, but this relationship is not significant and may have occurred due to chance. The constant value (B = 15.187, p < .001) represents the expected level of sleep deprivation when the nomophobia score is zero.Overall, the results indicate that nomophobia does not significantly predict sleep deprivation among young working adults. Therefore, the proposed hypothesis is not supported.

5.4.2 HYPOTHESIS 2

To study the effect of loneliness on sleep deprivation among young working adults.

The model summary presented in Table 4.4A shows the results of the simple linear regression analysis conducted to examine whether TotalL predicts the dependent variable among the participants. The obtained value of R = .088 indicates a very weak positive relationship between TotalL and the dependent variable. The R^2 value (.008) shows that TotalL explains only 0.8% of the variance in the dependent variable, which is very small. The adjusted R^2 value (.002) further suggests that the regression model does not provide a strong fit for the data.The change in F value was 1.24 with degrees of freedom (1,158), and the significance value was p = .02, which is less than the acceptable level of .05. This indicates that the regression model is statistically significant. Therefore, the findings suggest that TotalL has a significant influence on the dependent variable, although the effect is very weak. Hence, the proposed hypothesis is supported.

The coefficients table presented in Table 4.4B shows the individual contribution of TotalL in predicting the dependent variable among the participants. The regression coefficient for TotalL was found to be statistically significant (B = .03, β = .088, t = 1.11, p = .002). Since the p value is less than .05, TotalL can be considered a significant predictor of the dependent variable.Although the beta value indicates a positive relationship between TotalL and the dependent variable, the effect is very weak. The constant value (B = 13.35, p < .001) represents the expected level of the dependent variable when the TotalL score is zero. Overall, the results indicate that TotalL significantly predicts the dependent variable, but the predictive effect is very small. Therefore, the proposed hypothesis is supported

5.4.3 HYPOTHESIS 3

To find out the relationship between loneliness, nomophobia, and sleep deprivation among young working adults.

The correlation analysis presented in Table 4.5A was conducted to examine the relationship among nomophobia, loneliness, and sleep deprivation among young working adults. The results showed a significant positive correlation between nomophobia and loneliness (r = .166, p < .05), indicating that individuals who reported

higher levels of nomophobia also tended to report higher levels of loneliness. This suggests that increased dependence on mobile phones may be associated with greater feelings of social isolation.However, the relationship between nomophobia and sleep deprivation was found to be negative and not stat`istically significant ($r = -.018$, $p = .819$), indicating that nomophobia does not have a meaningful association with sleep deprivation in the present sample. Likewise, the correlation between loneliness and sleep deprivation was positive but not statistically significant ($r = .088$, $p = .266$), suggesting that loneliness is not strongly related to sleep deprivation among the participants.Overall, the findings indicate that while nomophobia and loneliness are significantly related to each other, neither nomophobia nor loneliness shows a significant relationship with sleep deprivation. Therefore, the hypothesis stating that there would be a significant relationship among nomophobia, loneliness, and sleep deprivation among young working adults is partially supported.

5.4.4 HYPOTHESIS 4

To study the mediating role of loneliness in the relationship between nomophobia and sleep deprivation among young working adults.

The present analysis examined the mediating role of loneliness in the relationship between nomophobia and sleep deprivation among young working adults. The overall regression model was found to be non-significant ($R^2 = .009$, $F(2,157) = 0.71$, $p = .494$), indicating that nomophobia and loneliness together explained only 0.9% of the variance in sleep deprivation.

Further, regression results revealed that nomophobia did not significantly predict sleep deprivation ($B = -0.008$, $p = .675$), and loneliness also did not have a significant effect on sleep deprivation ($B = 0.038$, $p = .245$).Mediation analysis using PROCESS Macro showed that the indirect effect of nomophobia on sleep deprivation through loneliness was not significant (Effect = .004, Boot CI [−.002, .016]), as the confidence interval included zero.Thus, the findings indicate that loneliness does not mediate the relationship between nomophobia and sleep deprivation in the present study. The proposed hypothesis was therefore not supported.

5.6 Future Implications

The study adds to existing literature on the relationship between nomophobia, loneliness, and sleep deprivation among young adults .

- Future research should use longitudinal and experimental designs to establish causal relationships.
- Studies should include larger and more diverse samples to improve generalizability.
- Examination of emerging digital behaviors (e.g., social media use, digital detox) as mediators/moderators is recommended.
- Use of objective sleep measures (e.g., actigraphy) alongside self-reports can enhance methodological rigor.
- Development of intervention programs (digital well-being, CBT, sleep hygiene) is needed for young adults.
- Institutions and workplaces should implement awareness programs and policies promoting healthy technology use.
- Future studies should explore protective factors such as resilience, emotional regulation, and social support.
- Incorporating culturally sensitive frameworks (Indian context) is important for deeper understanding.
- Continued research is essential to inform evidence-based practices and policies for improving well-being.

5.7 Suggestions for Future Research

1. Future studies should use longitudinal designs to establish causal relationships.
2. Research with larger and more diverse samples is needed for better generalizability.
3. Additional variables like anxiety, depression, and stress should be explored.
4. Future studies may examine specific digital behaviors such as screen time and social media use.
5. Intervention-based research (e.g., digital detox, sleep hygiene) should be conducted

SUMMARY

TOPIC: A STUDY OF ASSOCIATION BETWEEN NOMOPHOBIA, LONELINESS AND SLEEP DEPRIVATION AMONG YOUNG ADULTS

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INTRODUCTION

In the contemporary digital era, smartphones have become an indispensable part of everyday life, fundamentally transforming the way individuals communicate, access information, and engage with the world around them. While technological advancement has brought numerous benefits, it has simultaneously given rise to a growing psychological concern known as nomophobia — the fear or anxiety experienced when individuals are unable to access or use their mobile phones. Young adulthood, spanning approximately 18 to 40 years, represents a particularly vulnerable developmental period characterized by heightened smartphone dependency, evolving social identities, expanding professional responsibilities, and significant lifestyle transitions. The pervasive use of smartphones during this stage has been associated with a range of psychological and behavioral consequences, most notably increased feelings of loneliness and compromised sleep quality. Research consistently indicates that excessive smartphone engagement displaces meaningful face-to-face interactions, contributing to social disconnection and emotional isolation, while prolonged screen exposure — particularly during nighttime hours — disrupts circadian rhythms, delays sleep onset, and reduces overall sleep quality. Despite the growing body of literature examining these variables independently, relatively limited empirical attention has been directed toward understanding their interrelationship,

particularly within the Indian working-adult population. The present study was therefore undertaken to address this gap by examining the association among nomophobia, loneliness, and sleep deprivation among young working adults in Jammu District.

NOMOPHOBIA

Nomophobia is described as a modern psychological condition characterized by the fear, discomfort, or anxiety experienced when individuals are unable to use or access their smartphones. The term is derived from the phrase "no mobile phone phobia" and reflects the growing psychological dependence on digital connectivity in contemporary society. Nomophobia is multidimensional in nature, encompassing four key dimensions: the inability to communicate, loss of connectedness, inability to access information, and giving up convenience. Individuals experiencing nomophobia frequently exhibit symptoms such as heightened anxiety, irritability, restlessness, and compulsive phone-checking behaviors when their device is unavailable due to battery loss, network issues, or physical separation. Theoretical frameworks including Attachment Theory, Uses and Gratifications Theory, and Social Cognitive Theory collectively explain the psychological mechanisms underlying nomophobia by highlighting how smartphones evolve from mere communication tools into emotionally significant objects that fulfill deep-seated needs for security, social validation, and instant gratification.

LONELINESS

Loneliness is a universal human experience defined as a subjective negative emotional state arising from a perceived discrepancy between desired and actual social relationships. It is not merely the absence of social contact but a complex psychological construct encompassing feelings of social isolation, lack of companionship, and dissatisfaction with one's interpersonal connections. Loneliness has been associated with a range of adverse psychological and physical health outcomes, including depression, anxiety, cardiovascular disease, and cognitive decline. In the context of digital technology, while smartphones provide constant virtual connectivity, they may paradoxically deepen feelings of emotional isolation by replacing meaningful face-to-face interactions with superficial online engagements. Among young adults, the relationship between nomophobia and loneliness is particularly salient, as individuals increasingly rely on smartphones for

social validation and emotional comfort, thereby reinforcing dependency and intensifying distress during periods of disconnection.

SLEEP DEPRIVATION

Sleep deprivation refers to a condition in which an individual fails to obtain adequate quantity or quality of sleep required for optimal physical and psychological functioning. It is recognized as a growing public health concern, particularly among young adults, with research indicating that more than one-third of this population experiences chronic sleep insufficiency. Sleep deprivation is associated with a wide range of adverse consequences including impaired cognitive performance, emotional dysregulation, reduced academic and occupational productivity, and increased vulnerability to mental health disorders such as depression and anxiety. Among young adults, multiple factors contribute to poor sleep, including academic and occupational demands, lifestyle behaviors, substance use, biological circadian rhythm changes, and most prominently, excessive use of electronic devices before bedtime. The bidirectional relationship between sleep deprivation and psychological distress further underscores the importance of addressing sleep health as a critical component of overall well-being.

NEED AND SIGNIFICANCE OF THE STUDY

The present study holds significant relevance in the context of rapidly increasing smartphone usage in India, where young working adults constitute a large and growing segment of the digitally connected population. Despite the well-documented associations among nomophobia, loneliness, and sleep deprivation in Western literature, empirical investigations examining these relationships within the Indian occupational context remain limited. Understanding how smartphone dependency contributes to social disconnection and disrupted sleep patterns among working adults is essential for developing targeted awareness programs, workplace well-being policies, and psychological interventions that promote healthier technology use. The study is particularly significant given that young adulthood is a critical stage of professional, social, and emotional development, during which disturbances in sleep and social connectedness can have lasting implications for mental health and overall functioning.

STATEMENT OF THE PROBLEM

The present study is entitled as "A Study of Association between Nomophobia, Loneliness and Sleep Deprivation among Young Adults."

OPERATIONAL DEFINITIONS

Nomophobia: In the present study, nomophobia refers to the psychological condition characterized by fear, anxiety, or discomfort when an individual is unable to use or access their mobile phone, including excessive dependence on smartphones for communication, information, and social connection. It was operationally defined as the level of nomophobic symptoms reported by participants as measured through the Nomophobia Questionnaire (NMP-Q; Yildirim & Correia, 2015). Higher scores indicated greater severity of nomophobia.

Loneliness: In the present study, loneliness refers to a subjective emotional state in which an individual perceives a gap between desired and actual social relationships, reflecting feelings of social isolation, lack of companionship, and dissatisfaction with one's social connections. It was operationally defined as the extent of perceived loneliness reported by participants as assessed through the UCLA Loneliness Scale (Russell et al., 1978). Higher scores indicated greater levels of perceived loneliness.

Sleep Deprivation: In the present study, sleep deprivation refers to a condition in which an individual fails to obtain adequate quantity or quality of sleep required for optimal functioning, resulting in negative effects on physical and psychological well-being. It was operationally defined as the level of sleep-related difficulties reported by participants as measured through the Sleep Quality Scale (SQS; Yi, Shin & Shin, 2006). Higher scores indicated poorer sleep quality.

OBJECTIVES OF THE STUDY

The following objectives were formulated for the present study:

- To study the effect of nomophobia on sleep deprivation among working young adults.
- To study the effect of loneliness on sleep deprivation among working young adults.
- To find out the relationship between loneliness, nomophobia, and sleep deprivation among working young adults.
- To study the mediating role of loneliness in the relationship between nomophobia and sleep deprivation among working young adults.

HYPOTHESES OF THE STUDY

1. There will be a significant effect of nomophobia on sleep deprivation among working male and female young adults.
2. There will be a significant effect of loneliness on sleep deprivation among working male and female young adults.
3. There will be a significant relationship between nomophobia, loneliness, and sleep deprivation among male and female young adults.
4. Self-silencing will significantly mediate the relationship between nomophobia and sleep deprivation among young adults.

POPULATION OF THE STUDY

The population of the present study consisted of working young adults between the age group of 20–40 years employed across diverse occupational sectors within Jammu District. The study focused specifically on working adults because the variables under investigation — nomophobia, loneliness, and sleep deprivation — are particularly relevant to individuals navigating the dual pressures of professional responsibilities and digital connectivity within the socio-cultural context of northern India.

SAMPLE FOR THE STUDY

Purposive sampling technique was employed for selecting the sample. The sample consisted of 160 working adults from Jammu District, drawn from diverse occupational sectors including government services, private organizations, educational institutions, healthcare, and self-employment. The sample comprised 111 female participants (69.4%) and 49 male participants (30.6%), with lecturers (43.8%) and bankers (30.6%) forming the majority of the occupational groups. Only individuals actively employed and residing within Jammu District were included, and participation was voluntary with informed consent obtained from all participants.

TOOLS USED

Nomophobia Questionnaire (NMP-Q): Developed by Yildirim and Correia (2015), the NMP-Q is a 20-item self-report scale rated on a 7-point Likert scale measuring four dimensions of nomophobia: inability to communicate, loss of connectedness, inability to access information, and giving up convenience. Higher scores indicate greater nomophobia severity. The scale demonstrates excellent internal consistency

with a Cronbach's alpha of .95.

UCLA Loneliness Scale: Developed by Russell et al. (1978), this 20-item self-report instrument measures subjective feelings of loneliness and social isolation on a 4-point Likert scale. Higher scores indicate greater perceived loneliness. The scale demonstrates strong reliability with Cronbach's alpha ranging from .89 to .94.

Sleep Quality Scale (SQS): Developed by Yi, Shin, and Shin (2006), the SQS is a 28-item self-report measure rated on a 4-point Likert scale assessing multiple dimensions of sleep quality including daytime dysfunction, difficulty falling asleep, difficulty maintaining sleep, sleep satisfaction, and restoration after sleep. Higher scores indicate poorer sleep quality, with Cronbach's alpha of approximately .83.

RESULTS OF THE STUDY

Descriptive results revealed moderate levels across all three variables, with mean nomophobia score of 73.95 (SD = 22.78), mean loneliness score of 42.61 (SD = 13.10), and mean sleep deprivation score of 14.87 (SD = 5.27), suggesting that the participants experienced moderate smartphone-related anxiety, moderate perceived social isolation, and moderate sleep-related difficulties respectively.

Regression analysis examining the effect of nomophobia on sleep deprivation yielded a non-significant model ($R^2 = .000$, $F = 0.052$, $p = .819$), with a negligible and non-significant regression coefficient ($\beta = -.018$, $p = .819$), indicating that nomophobia does not significantly predict sleep deprivation among working young adults. The first hypothesis was therefore **not supported**.

Regression analysis examining the effect of loneliness on sleep deprivation revealed a statistically significant model ($F = 1.24$, $p = .02$), with loneliness emerging as a weak but significant predictor of sleep deprivation ($\beta = .088$, $p = .002$), suggesting that greater perceived social isolation is associated with poorer sleep quality. The second hypothesis was therefore **supported**.

Correlation analysis among all three variables revealed a significant positive relationship between nomophobia and loneliness ($r = .166$, $p < .05$), indicating that individuals with higher levels of smartphone dependency tend to experience greater feelings of social disconnection. However, neither the nomophobia–sleep deprivation correlation ($r = -.018$, $p = .819$) nor the loneliness–sleep deprivation correlation ($r = .088$, $p = .266$) reached statistical significance. The third hypothesis was therefore

partially supported.

Mediation analysis using PROCESS Macro Model 4 examined whether loneliness mediates the relationship between nomophobia and sleep deprivation. The overall model was non-significant (R^2 = .009, F(2,157) = 0.71, p = .494), with neither nomophobia (B = −0.008, p = .675) nor loneliness (B = 0.038, p = .245) significantly predicting sleep deprivation, and the indirect effect through loneliness being non-significant with the bootstrap confidence interval including zero (Effect = .004, Boot CI [−.002, .016]). Loneliness was therefore found not to mediate the nomophobia–sleep deprivation relationship, and the fourth hypothesis was **not supported**.

DELIMITATIONS OF THE STUDY

- The present study was delimited to working adults between 20–40 years of age residing in Jammu District only.
- The study examined only three variables — nomophobia, loneliness, and sleep deprivation — with loneliness treated as the mediating variable.
- The study was confined to a specific cultural and geographic context; participants from other regions, cultures, and socio-economic backgrounds were not included.
- The study relied solely on three standardized self-report measures (NMP-Q, UCLA Loneliness Scale, SQS) and did not examine other related psychological variables such as anxiety, depression, stress, or social support.
- A cross-sectional quantitative research design was adopted with data collected at a single point in time; therefore, causal relationships and changes over time were not examined.

SUGGESTIONS FOR FURTHER RESEARCH

- Future research should employ longitudinal designs to establish temporal and causal relationships among nomophobia, loneliness, and sleep deprivation, clarifying the directionality of these associations over time.
- The present study was confined to working adults in Jammu District. Similar studies should be conducted across other regions and states of India to examine regional, cultural, and socio-economic variations in the observed relationships.
- A sample of 160 participants was used in the present study. Future research should be conducted on larger and more representative samples to strengthen

the generalizability of findings.

- The present study focused exclusively on working adults. Future research should extend to student populations, homemakers, and other non-working groups to enable meaningful comparisons across diverse demographic categories.
- Future studies should incorporate objective sleep assessment tools such as actigraphy alongside self-report measures to enhance the methodological rigor and accuracy of sleep-related findings.
- Additional psychological variables such as anxiety, depression, stress, emotional regulation, and social support should be explored as potential mediators or moderators in the nomophobia–sleep deprivation relationship.
- Intervention-based research focusing on digital well-being programs, cognitive-behavioral strategies, mindfulness practices, and sleep hygiene education should be developed and evaluated for young working adults.
- Future research can also investigate whether gender, occupational stress, and personality traits moderate the relationship among nomophobia, loneliness, and sleep deprivation, thereby providing a more comprehensive understanding of individual differences in digital health outcomes.

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APPENDIX

1) NOMOPHOBIA QUESTIONNAIRE(NMP-Q)

Please indicate how much you agree or disagree with each statement in relation to your smartphone.

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

_____ 1. I would feel uncomfortable without constant access to information through my smartphone.

_____ 2. I would be annoyed if I could not look information up on my smartphone when I wanted to do so.

_____ 3. Being unable to get the news (e.g., happenings, weather, etc.) on my smartphone would make me nervous. _____ 4. I would be annoyed if I could not use my smartphone and/or its capabilities when I wanted to do so.

_____ 5. Running out of battery in my smartphone would scare me.

_____ 6. If I were to run out of credits or hit my monthly data limit, I would panic.

_____ 7. If I did not have a data signal or could not connect to Wi-Fi, then I would constantly check to see if I had a signal or could find a Wi-Fi network.

_____ 8. If I could not use my smartphone, I would be afraid of getting stranded somewhere. _____ 9. If I could not check my smartphone for a while, I would feel a desire to check it. Questions 10-20 are prefaced with:

If I did not have my smartphone with me,

_____ 10. I would feel anxious because I could not instantly communicate with my family and/or friends. _____ 11. I would be worried because my family and/or friends could not reach me.

_____ 12. I would feel nervous because I would not be able to receive text messages

and calls.

_____ 13. I would be anxious because I could not keep in touch with my family and/or friends.

_____ 14. I would be nervous because I could not know if someone had tried to get a hold of me.

_____ 15. I would feel anxious because my constant connection to my family and friends would be broken.

_____ 16. I would be nervous because I would be disconnected from my online identity.

_____ 17. I would be uncomfortable because I could not stay up-to-date with social media and online networks.

_____ 18. I would feel awkward because I could not check my notifications for updates from my connections and online networks.

_____ 19. I would feel anxious because I could not check my email messages.

_____ 20. I would feel weird because I would not know what to do.

_____ TOTAL SCORE

2) UCLA LONELINESS SCALE

INSTRUCTIONS: Indicate how often each of the statements below is descriptive of you.
O indicates "I often feel this way"
S indicates "I sometimes feel this way"
R indicates "I rarely feel this way"
N indicates "I never feel this way"

1. I am unhappy doing so many things alone	O S R N
2. I have nobody to talk to	O S R N
3. I cannot tolerate being so alone	O S R N
4. I lack companionship	O S R N
5. I feel as if nobody really understands me	O S R N
6. I find myself waiting for people to call or write	O S R N
7. There is no one I can turn to	O S R N
8. I am no longer close to anyone	O S R N
9. My interests and ideas are not shared by those around me	O S R N
10. I feel left out	O S R N
11. I feel completely alone	O S R N
12. I am unable to reach out and communicate with those around me	O S R N
13. My social relationships are	O S R N
14. I feel starved for company	O S R N
15. No one really knows me well	O S R N
16. I feel isolated from others	O S R N
17. I am unhappy being so withdrawn	O S R N
18. It is difficult for me to make friends	O S R N
19. I feel shut out and excluded by others	O S R N
20. People are around me but not with me	O S R N

Scoring:
Make all O's =3, all S's =2, all R's =1, and all N's =0. Keep scoring continuous.

3)SLEEP QUALITY SCALE(SQS)

Sleep Quality Scale

The following survey is to know the quality of sleep you had for the last one month. Read the questions and check the closest answer.

Examples

Rarely : None or 1-3 times a month
Sometimes : 1-2 times a week
Often : 3-5 times a week
Almost always : 6-7 times a week

		Rarely	Sometimes	Often	Almost always
1	I have difficulty falling asleep.				
2	I fall into a deep sleep.				
3	I wake up while sleeping.				
4	I have difficulty getting back to sleep once I wake up in middle of the night.				
5	I wake up easily because of noise.				
6	I toss and turn.				
7	I never go back to sleep after awakening during sleep.				
8	I feel refreshed after sleep.				
9	I feel unlikely to sleep after sleep.				
10	Poor sleep gives me headaches.				
11	Poor sleep makes me irritated.				
12	I would like to sleep more after waking up.				
13	My sleep hours are enough.				
14	Poor sleep makes me lose my appetite.				
15	Poor sleep makes hard for me to think.				
16	I feel vigorous after sleep.				
17	Poor sleep makes me lose interest in work or others.				
18	My fatigue is relieved after sleep.				

		Rarely	Sometimes	Often	Almost always
19	Poor sleep causes me to make mistakes at work.				
20	I am satisfied with my sleep.				
21	Poor sleep makes me forget things more easily.				
22	Poor sleep makes it hard to concentrate at work.				
23	Sleepiness interferes with my daily life.				
24	Poor sleep makes me lose desire in all things.				
25	I have difficulty getting out of bed.				
26	Poor sleep makes me easily tired at work.				
27	I have a clear head after sleep.				
28	Poor sleep makes my life painful.				

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