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The Effect of Social Media on the Normal Sleeping Patterns of Adolescents (10-19) in the UK: A Systematic Literature Review

by

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DECLARATION

I, Abul Kashem declare that this dissertation has been composed by myself, that the work contained herein is entirely my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or qualification, in whole or in part, except as specified.

Signed: Abul Kashem……

Date: 05/06/2025...……

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Abstract

This dissertation explores the impact of social media usage on the normal sleeping patterns of adolescents aged 10 to 19 in the United Kingdom through a systematic literature review. With the increasing prevalence of digital media among young people, concerns have emerged regarding its effect on sleep health—an essential component of adolescent development. The primary objective of this study is to critically analyze existing research on how social media influences sleep behaviors, identify key contributing factors, and evaluate associated mental and physical health outcomes.

A systematic review methodology was employed using peer-reviewed studies published between 2014 and 2024. Databases including PubMed, ScienceDirect, and ProQuest were searched using Boolean operators. Ten studies that met specific inclusion criteria—focusing on UK adolescents and measurable sleep-related outcomes—were selected. Thematic analysis was applied to synthesize the findings, and quality assessment was conducted using the Critical Appraisal Skills Programme (CASP) tool.

The findings revealed five core themes: social media usage patterns (frequency, duration, and nighttime use), its direct impact on sleep quality and duration, resulting psychological and physical health consequences (e.g., anxiety, depression, fatigue), the moderating role of parental and environmental factors, and the effectiveness of awareness and intervention strategies such as digital curfews and school-based programs.

The study concludes that excessive and poorly regulated social media use significantly disrupts adolescents' sleep, posing long-term health risks. Parental involvement, digital literacy education, and policy-level interventions are recommended to mitigate these effects. Future research should focus on longitudinal studies and the role of emerging digital trends in adolescent sleep behavior.

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List of abbreviations

AI	Artificial Intelligence
APA	American Psychological Association
CASP	Critical Appraisal Skills Programme
FoMO	Fear of Missing Out
ICT	Information and Communication Technology
MCS	Millennium Cohort Study
NHS	National Health Service
OECD	Organisation for Economic Co-operation and Development
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PSQI	Pittsburgh Sleep Quality Index
RSPH	Royal Society for Public Health
SCAMP	Study of Cognition Adolescents and Mobile Phones cohort
SBMD	Screen Based Media Devices
SLR	Systematic Literature Review
UK	United Kingdom
UGT	Uses and Gratifications Theory
WHO	World Health Organization

Chapter 1: Introduction

1.1 Establishing the Research Topic

Adolescence is the transitional stage of development between childhood and adulthood, typically ranging from ages 10 to 19 (World Health Organization, 2022). In the digital era, social media has become an integral part of daily life, particularly for adolescents. Platforms such as TikTok, Instagram, Snapchat, and YouTube dominate the online landscape, influencing how young people communicate, learn, and socialize (Pew Research Center, 2024). While social media offers numerous benefits, including connectivity and access to information, concerns about its impact on adolescents sleep patterns have grown significantly (Royal Society for Public Health, 2022). Research indicates that excessive social media use, particularly before bedtime, disrupts sleep quality and duration, potentially leading to adverse physical and mental health consequences (Bezerra et al., 2023).

Adolescents require between 8 to 10 hours of sleep per night for optimal cognitive and emotional development (National Sleep Foundation, 2015). However, studies suggest that a significant portion of adolescents fail to meet this requirement due to social media use (Scott, Biello and Woods, 2019). The increasing prevalence of smartphones and digital devices has exacerbated this issue, contributing to a public health concern in the UK (Royal College of Paediatrics and Child Health, 2022). The need to understand and address this growing issue is critical, making it a relevant topic for systematic investigation.

A study conducted by Scott et al. (2019) found that late-night social media use negatively impacts adolescents sleep hygiene, leading to increased daytime sleepiness, impaired concentration, and decreased academic performance. Furthermore, social media engagement has been associated with heightened stress levels and anxiety, which further contribute to disrupted sleep cycles (Carter et al., 2016).

The mechanisms underlying this disruption include exposure to blue light from screens, which suppresses melatonin production, and the psychological stimulation caused by engaging with social content (Hale & Guan, 2015). Additionally, fear of missing out (FoMO) has been identified as a key factor driving excessive social media use at night,

with teenagers feeling compelled to stay connected at the expense of adequate rest (Woods & Scott, 2016).

Beyond individual health concerns, the societal implications of poor adolescents sleep are significant. Chronic sleep deprivation has been linked to increased risks of obesity, depression, and long-term cognitive impairments (Kelly et al., 2018). Moreover, a lack of sleep among adolescents can contribute to heightened emotional reactivity and risk-taking behaviors, further emphasizing the urgency of addressing this issue (Baum et al., 2014). This research aims to synthesize existing evidence to better understand the specific mechanisms by which social media affects adolescents sleep patterns and provide recommendations for mitigating these effects.

1.2 Background and Context

Adolescents is a critical developmental stage marked by biological, psychological, and social transformations. Sleep plays a vital role in supporting these changes, influencing brain function, emotional regulation, and overall well-being (Hysing et al., 2015). However, recent studies highlight a decline in adolescent sleep quality, with social media use being a major contributing factor (Hartley et al., 2022). The blue light emitted by screens suppresses melatonin production, delaying sleep onset and disrupting circadian rhythms (Cajochen et al., 2011). Additionally, the compulsive nature of social media engagement fosters a fear of missing out (FoMO), leading to extended screen time and nocturnal alertness (Przybylski et al., 2013).

A survey conducted in October 2021 revealed that 91% of 15 to 16-year-olds used social media, and 87% had their own profiles (Statista, 2023).). The negative consequences of sleep deprivation include impaired academic performance, mood disturbances, and increased risks of anxiety and depression (Bowers and Moyer, 2017). Government reports and academic research emphasize the urgent need to address the detrimental effects of excessive social media use on adolescents sleep (Khan, 2024).

Studies have also found that the relationship between social media use and sleep disturbances is bidirectional; poor sleep can lead to increased social media engagement as adolescents use digital platforms to cope with stress and boredom (Orben & Przybylski, 2019). Furthermore, a systematic review by Scott, Biello, and Woods (2019) identified that adolescents who used social media for more than three

hours per day were significantly more likely to experience delayed sleep onset and reduced sleep duration.

Research has also linked excessive social media usage to physiological and psychological factors that exacerbate sleep difficulties. According to a study by Keles, McCrae, and Grealish (2020), prolonged exposure to digital platforms increases the likelihood of stress and emotional dysregulation, both of which contribute to poor sleep hygiene. Additionally, Hale and Guan, (2015) found that adolescents engaging in late-night social media use were more likely to experience disruptions in their natural sleep-wake cycle, leading to chronic fatigue and reduced cognitive function.

Parental involvement and digital literacy interventions have been highlighted as potential solutions to mitigate these effects (George and Odgers, 2015). Research suggests that adolescents whose parents enforce screen-time restrictions before bedtime tend to have better sleep outcomes and overall mental well-being (University of Oxford, 2023). Additionally, structured school interventions that promote awareness about the importance of sleep hygiene and responsible social media use have shown promising results in improving adolescents sleep patterns (Bauducco et al., 2020).

Given the increasing digitalization of daily life, addressing the impact of social media on adolescent sleep requires a multi-faceted approach that includes healthcare professionals, educators, policymakers, and parents. This study aims to contribute to this discourse by systematically reviewing the existing literature on the subject.

1.3 Existing Research and Knowledge Gaps

Several studies have explored the impact of social media on adolescents sleep patterns. Cain and Gradisar (2010) found a significant correlation between electronic media use and delayed sleep onset in school-aged children. Twenge and Campbell (2018) demonstrated that increased screen time was associated with lower psychological well-being among adolescents. Furthermore, a longitudinal study by Hysing et al. (2015) identified social media use as a predictor of sleep deprivation and mood disorders in teenagers.

Despite these findings, there remains a need for a comprehensive synthesis of research specific to UK adolescents. Existing studies often focus on broader digital consumption patterns rather than social media's direct impact on sleep. Additionally, the role of parental control and policy interventions in mitigating these effects remains

underexplored (Common Sense Media, 2022). Studies such as those by Levenson et al. (2016) and Tynes et al. (2008) have highlighted the importance of social support and online behaviors in influencing sleep, but their applicability to UK adolescents is still unclear. This study addresses these gaps by conducting a systematic literature review of research conducted between 2014 and 2024, focusing on UK-based adolescents. By exploring the intersection of social media habits, sleep disturbances, and potential moderating factors like parental involvement, this research aims to provide a clearer understanding of the unique challenges faced by adolescents in the UK.

1.4 Narrowing the Research Focus

Given the broad implications of social media on adolescents well-being, this study specifically examines its impact on sleep patterns among adolescents aged 10-19 in the UK. It investigates key factors contributing to sleep disturbances, including late-night scrolling, notification disruptions, and excessive screen exposure. The research will evaluate the consequences of altered sleep patterns, particularly regarding mental and physical health outcomes. Furthermore, it will provide recommendations for healthcare practitioners, educators, parents, and policymakers to address the issue effectively.

This systematic review will analyze peer-reviewed studies, government reports, and scholarly articles to extract evidence-based insights. The study employs a structured methodological framework to ensure a rigorous and objective analysis of existing literature.

1.5 Research Question and Objectives

1.5.1 Research Question

How does the use of social media influence the typical sleep patterns of adolescents (ages 10-19) in the UK?

1.5.2 Aim

To analyze and assess existing research regarding the impact of social media on adolescents sleep patterns in the UK, highlighting significant factors, trends, and consequences for mental and physical well-being.

1.5.3 Objectives

1. To examine the impact of social media on the sleep behaviors of adolescents aged 10-19 in the UK.
2. To identify specific social media habits (e.g., late-night scrolling, notification alerts) that contribute to sleep disturbances.
3. To evaluate the health consequences of disrupted sleep patterns resulting from social media use.
4. To provide evidence-based recommendations for healthcare providers, educators, parents, and policymakers to mitigate the negative impact of social media on adolescent sleep patterns.

1.6 Overview of the Dissertation Structure

This dissertation is structured into five chapters. Chapter 2 provides a comprehensive literature review, summarizing existing research on social media and adolescents sleep. It explores theoretical frameworks and highlights key findings from previous studies.

Chapter 3 outlines the research methodology, detailing the systematic review process, inclusion and exclusion criteria, and data extraction techniques. It explains the rationale for using a systematic literature review and describes the tools used for quality assessment and analysis.

Chapter 4 presents the findings from the reviewed literature, identifying patterns, trends, and gaps. The analysis highlights the effects of social media on adolescents sleep and discusses variations based on demographic and behavioral factors and discusses the implications of the findings, providing recommendations for healthcare professionals, parents, educators, and policymakers. It also addresses limitations of the study and suggests areas for future research.

Finally, Chapter 5 concludes the dissertation by summarizing key insights and emphasizing the significance of addressing adolescent sleep disturbances in the digital age.

By following this structure, the dissertation provides a systematic and comprehensive understanding of how social media affects adolescents sleep patterns, contributing to the broader discourse on adolescent health and digital consumption.

Chapter 2: Literature review

2.1 Introduction

A comprehensive review of existing literature is essential to understanding the effects of social media on adolescents sleep patterns. Over the past decade, digital engagement among adolescents has surged, with social media becoming a dominant force in their daily routines (Odgers and Jensen, 2020). Research indicates that prolonged screen exposure, particularly at night, disrupts sleep quality, leading to cognitive, emotional, and physical consequences (Hale & Guan, 2015). The impact of social media on sleep has garnered increasing academic interest, with numerous studies exploring the mechanisms behind sleep disruption, including delayed sleep onset, reduced sleep duration, and increased nighttime awakenings (Scott, Biello & Woods, 2019).

The existing body of literature comprises both quantitative and qualitative research methodologies, analyzing the correlation between screen time and sleep disturbances (Carter et al., 2016). Some studies focus on the psychological implications of nighttime social media use, including fear of missing out (FoMO), stress, and anxiety (Woods & Scott, 2016; Przybylski et al., 2013). Others examine the physiological effects, such as the suppression of melatonin due to blue light exposure (Cain & Gradisar, 2010). However, despite the extensive research on this topic, gaps remain in understanding long-term neurodevelopmental consequences and the efficacy of intervention strategies (Kelly et al., 2018).

Recent studies highlight that adolescents often sacrifice sleep to engage with social media, leading to chronic sleep deprivation (Orben & Przybylski, 2019). This issue is exacerbated by the interactive nature of digital platforms, where notifications, messaging, and autoplay features encourage prolonged engagement (Chen et al., 2024). Moreover, adolescents who experience sleep difficulties are more likely to use social media as a coping mechanism, further entrenching poor sleep habits (Celik and Güler, 2025).

Beyond individual health concerns, the societal implications of poor adolescents sleep are significant. Chronic sleep deprivation is linked to increased risks of obesity, depression, and long-term cognitive impairments (Owens and Weiss, 2017)). Moreover, lack of sleep among adolescents can contribute to heightened emotional reactivity and risk-taking behaviors, further emphasizing the urgency of addressing this issue (Przybylski et al., 2013). Research suggests that targeted interventions, such as

parental control mechanisms, school-based education programs, and public health policies, can mitigate the adverse effects of social media on adolescents sleep (Scott, Biello & Woods, 2019).

This chapter will explore the prevalence of social media use among adolescents, its direct impact on sleep, and the theoretical frameworks that help interpret these findings. Additionally, it will assess gaps in the literature and highlight the need for further research to develop effective interventions. By synthesizing key findings and identifying limitations, this literature review aims to establish a solid foundation for the present study's contribution to teenage health research.

2.2 Survey of Existing Research

2.2.1 The Prevalence of Social Media Use Among Adolescents

Extensive research has been conducted on the prevalence of social media use among adolescents. Studies indicate that over 90% of adolescents engage with at least one social media platform daily, with many spending more than three hours per day on digital devices (Ofcom, 2024; *Pew Research Center, 2023*; *Orben & Przybylski*, 2019). The popularity of platforms such as TikTok, Instagram, and Snapchat has contributed to prolonged screen exposure, particularly before bedtime (*Hale & Guan*, 2015). This increased screen time is facilitated by the accessibility of mobile devices, with 95% of adolescents in the UK owning a smartphone (*Ofcom*, 2023). The combination of social media engagement and the portability of smartphones has resulted in frequent nighttime scrolling, affecting sleep hygiene.

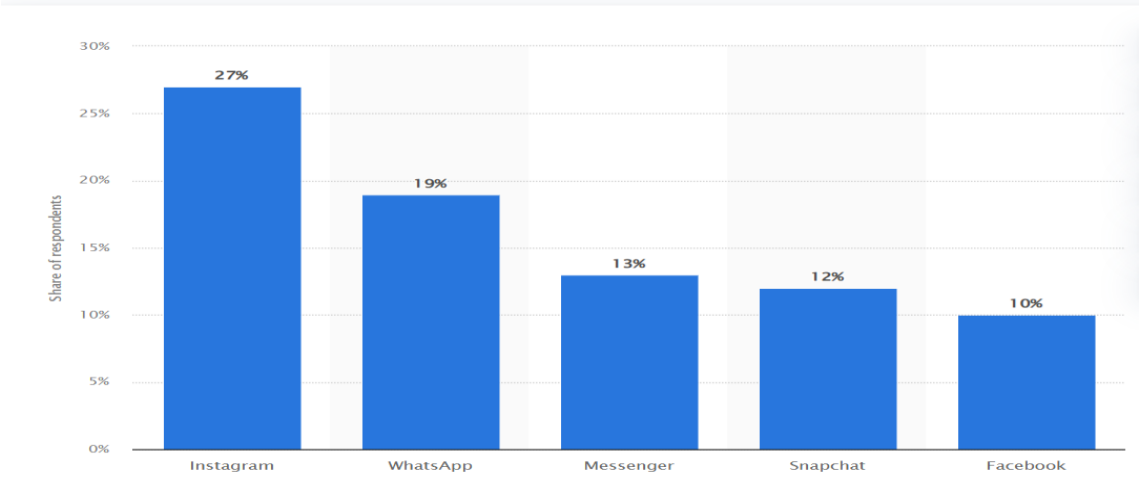


Figure-1 As of the third quarter of 2020, which social media platform would be the least useful to teens and young adults in the UK? (Statista, 2022)

Moreover, research suggests that social media usage among adolescents has increased significantly over the last decade, with many using these platforms as their primary mode of social interaction (*Pew Research Center, 2015*). Social media's interactive features, such as instant messaging, live streaming, and notifications, contribute to prolonged engagement, further delaying bedtime (*Scott, Biello & Woods*, 2019). A study by *April ABA (2025)* found that the number of adolescents reporting insufficient sleep increased alongside the rise of social media adoption, indicating a potential causal relationship. Despite increased awareness of digital wellness, the compulsive nature of social media usage remains a significant public health concern.

2.2.2 The Effects of Social Media on Sleep Patterns

Research demonstrates a significant correlation between social media use and sleep disturbances among adolescents. Studies have identified three primary mechanisms through which social media disrupts sleep: (1) displacement of sleep time due to prolonged screen use, (2) physiological impacts of blue light exposure on melatonin production, and (3) psychological stimulation resulting in increased anxiety and alertness (*Carter et al.*, 2016; *Woods & Scott*, 2016).

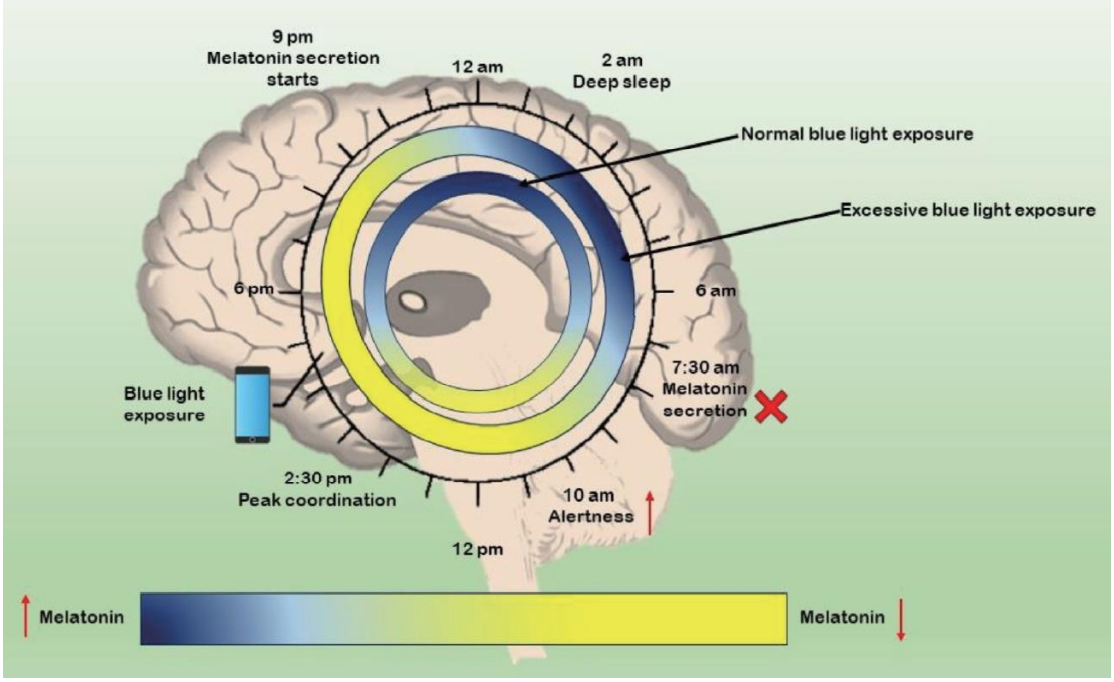


Figure-2 With the inner circle representing melatonin concentration levels under normal blue light exposure settings and the outer circle representing melatonin production under elevated blue light exposure, the graphic illustrates the human biological clock. Excessive exposure to blue light causes a change in melatonin release, which upsets the equilibrium of sleep cycles. (Chronobiology in Medicine, 2024)

A study by *Frontiers in Public Health (2024)* found that excessive screen time delays sleep onset and reduces overall sleep quality, leading to heightened risks of mental health issues such as depression and anxiety. The displacement effect suggests that the more time spent on social media, the less time is allocated to essential sleep, leading to chronic sleep deprivation (*Cain & Gradisar*, 2010). Furthermore, research indicates that adolescents frequently check their phones in the middle of the night, responding to messages or engaging with content, thereby increasing nighttime awakenings and reducing sleep efficiency (*Carter et al., 2016*).

Another critical factor is the physiological effect of blue light emitted from screens, which suppresses melatonin production and disrupts circadian rhythms (*Przybylski et al.*, 2013). This alteration in sleep-wake cycles leads to difficulty falling asleep and shorter sleep duration (*Orben & Przybylski*, 2019). Psychological stimulation caused by social media interactions, particularly exposure to negative or emotionally charged content, exacerbates pre-sleep anxiety, increasing alertness and delaying rest (*Scott, Biello & Woods*, 2019). The persistent exposure to social comparisons and the need for online validation further heighten stress levels, interfering with relaxation and sleep onset (*Lin, Cen, and Chen, 2024*).

2.2.3 The Bidirectional Relationship Between Sleep and Social Media Use

Recent studies suggest that the relationship between social media use and sleep deprivation is bidirectional. Adolescents experiencing poor sleep quality are more likely to engage with social media as a coping mechanism, thereby perpetuating a cycle of digital dependency and sleep disruption (*Orben & Przybylski*, 2019). Understanding this cycle is crucial in developing interventions aimed at mitigating the negative consequences of social media on adolescents well-being.

A study conducted by *Scott, Biello & Woods* (2019) found that adolescents who experience sleep difficulties often use social media as a distraction, engaging in excessive late-night scrolling. This behavioral pattern reinforces sleep irregularities, creating a dependency on digital platforms for relaxation. Additionally, social media use before bed has been associated with heightened cortisol levels, a stress hormone that contributes to delayed sleep onset (*Christensen et al., 2016*).

Furthermore, evidence suggests that adolescents with pre-existing mental health conditions, such as anxiety or depression, are more vulnerable to the effects of sleep deprivation caused by social media (*O'Reilly, 2020*). Their reliance on social media for

emotional support and connection exacerbates digital consumption, leading to a continuous cycle of poor sleep and increased psychological distress *(Woods and Scott, 2016*).

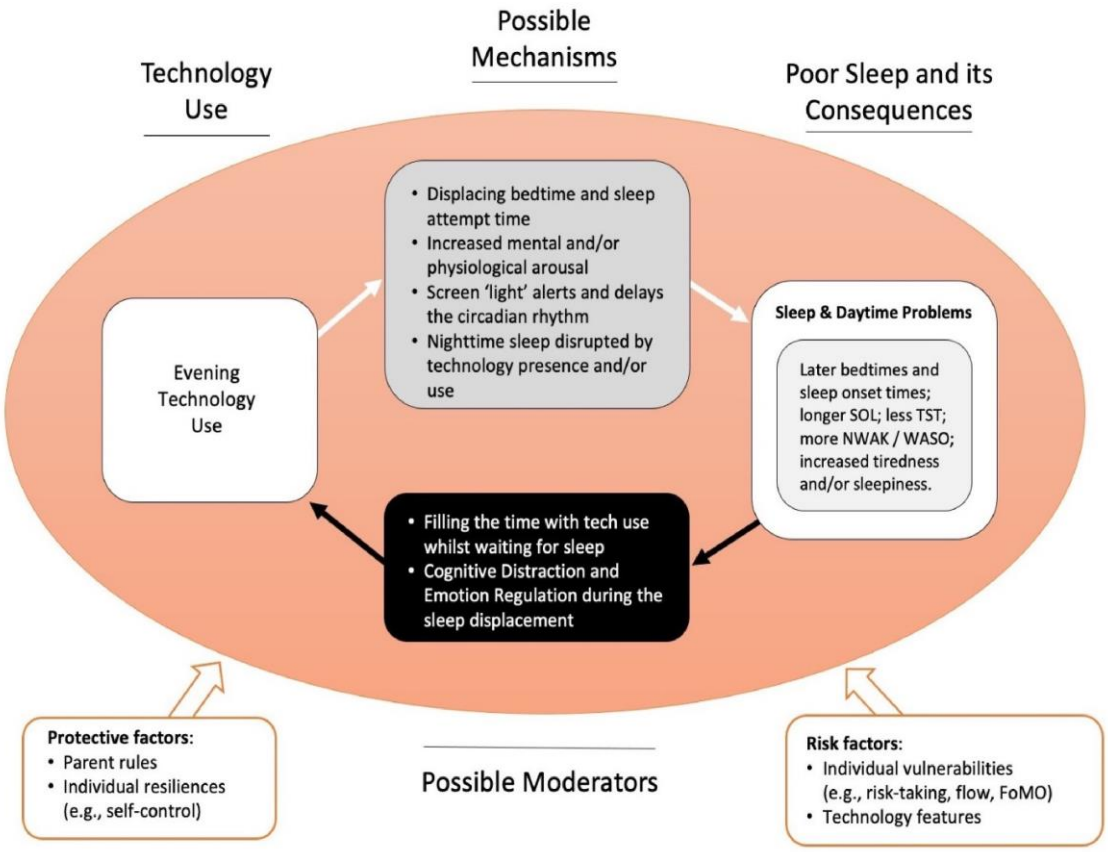


Figure-3 A revised two-way model of the relationships between sleep and technology use. (Serena Bauducco et al., 2024)

Despite ongoing research into social media's effects on sleep, there is still a need for targeted interventions that address this bidirectional relationship. Behavioral strategies, including digital detox programs and parental monitoring, have shown promising results in mitigating nighttime screen exposure and improving sleep patterns (*National Sleep Foundation, 2023*). Schools and public health organizations continue to explore policy recommendations to reduce the negative impacts of excessive social media engagement on adolescents sleep (National Academies of Sciences, Engineering, and Medicine, 2023).

2.3 Identifying Gaps and Limitations in Existing Research

Despite the growing body of literature on social media and adolescents sleep, several gaps remain. Firstly, many studies rely on self-reported data, which may be subject to bias and inaccuracies (*Furnham, 1986*). Self-reported measures of sleep patterns, social media usage, and psychological health often suffer from recall errors and social desirability bias, leading to potential over- or underestimation of actual behaviors (*Cain & Gradisar*, 2010). Furthermore, the subjective nature of self-reported sleep data makes it difficult to differentiate between correlation and causation, limiting the robustness of findings (Buysse et al., 1989). Future research should incorporate objective sleep-tracking methodologies, such as actigraphy and polysomnography, to improve data accuracy and reliability (*Scott, Biello & Woods*, 2019).

Another significant gap in the literature is the limited exploration of the long-term effects of social media-induced sleep disturbances on adolescent neurodevelopment. Most studies focus on short-term consequences, such as daytime sleepiness, mood disturbances, and academic performance declines (*Yu et al., 2024*). However, chronic sleep deprivation during crucial developmental years may have lasting implications on cognitive function, emotional regulation, and mental health (*Orben & Przybylski*, 2019). Research indicates that inadequate sleep in adolescents can alter brain structure, particularly in areas responsible for memory consolidation and impulse control (*Hale & Guan*, 2015). Longitudinal studies are needed to assess how prolonged exposure to social media-related sleep disruptions impacts neurological development over time.

Additionally, while various intervention strategies have been proposed, there is a lack of consensus on the effectiveness of parental controls and school-based programs in reducing social media-related sleep disruptions *(van den Eijnden et al., 2021)*. Some studies suggest that parental restrictions on screen time before bedtime can improve sleep outcomes, yet compliance rates among adolescents remain low due to resistance and digital dependency (*Pillion et al., 2022*). Moreover, interventions such as digital literacy programs and school-enforced screen curfews have shown mixed results, with effectiveness varying depending on socioeconomic background, cultural norms, and enforcement strategies (*Scott, Biello & Woods*, 2019). More rigorous, controlled trials are required to determine the optimal intervention models that balance adolescent autonomy with healthy digital habits.

Another limitation in current research is the narrow focus on Western populations, with limited cross-cultural analyses available (*Gvirtz and Sabherwal, 2024*). The impact of

social media on sleep may vary depending on cultural attitudes toward digital consumption, parental monitoring, and social norms surrounding bedtime routines (*Przybylski et al.*, 2013; Mindell et al., 2010). Expanding research efforts to include diverse populations would provide a more comprehensive understanding of how social media influences sleep in different socio-cultural contexts.

Moreover, there is limited research on the role of emerging social media trends and evolving platform algorithms in shaping sleep behaviors. With the rise of AI-driven recommendation systems, adolescents are increasingly exposed to personalized content that encourages prolonged engagement (*Mansfield et al., 2025)*). Platforms like TikTok, which use machine learning to optimize user engagement, may exacerbate sleep disturbances by promoting continuous scrolling and reinforcing compulsive usage patterns (*Orben & Przybylski*, 2019). Future research should investigate how these evolving digital ecosystems contribute to sleep disruptions and whether regulatory measures are necessary to mitigate their impact.

Finally, while much of the existing literature highlights the negative effects of social media on sleep, fewer studies have examined potential protective factors and resilience mechanisms. Some adolescents may develop adaptive strategies, such as digital curfews or mindfulness practices, to mitigate the impact of social media on sleep (*Cain & Gradisar*, 2010). Identifying these protective behaviors could help inform targeted interventions aimed at promoting healthier sleep habits without entirely restricting digital engagement (*Lowthian et al., 2023*).

Addressing these research gaps is critical for informing future studies and shaping evidence-based policies. A multidisciplinary approach involving psychology, neuroscience, education, and public health is essential in understanding and mitigating the negative consequences of social media on adolescents sleep patterns.

2.4 Theoretical Framework

2.4.1 The Uses and Gratifications Theory

The Uses and Gratifications Theory (UGT) provides a useful lens for understanding adolescents' social media engagement (Kircaburun et al., 2020). This theory suggests that individuals actively consume media content to fulfill specific psychological and social needs, such as entertainment, socialization, and information-seeking (*Katz, Blumler & Gurevitch*, 1973). Unlike traditional media theories that focus on passive

media consumption, UGT emphasizes the active role of users in selecting media that aligns with their motivations and preferences.

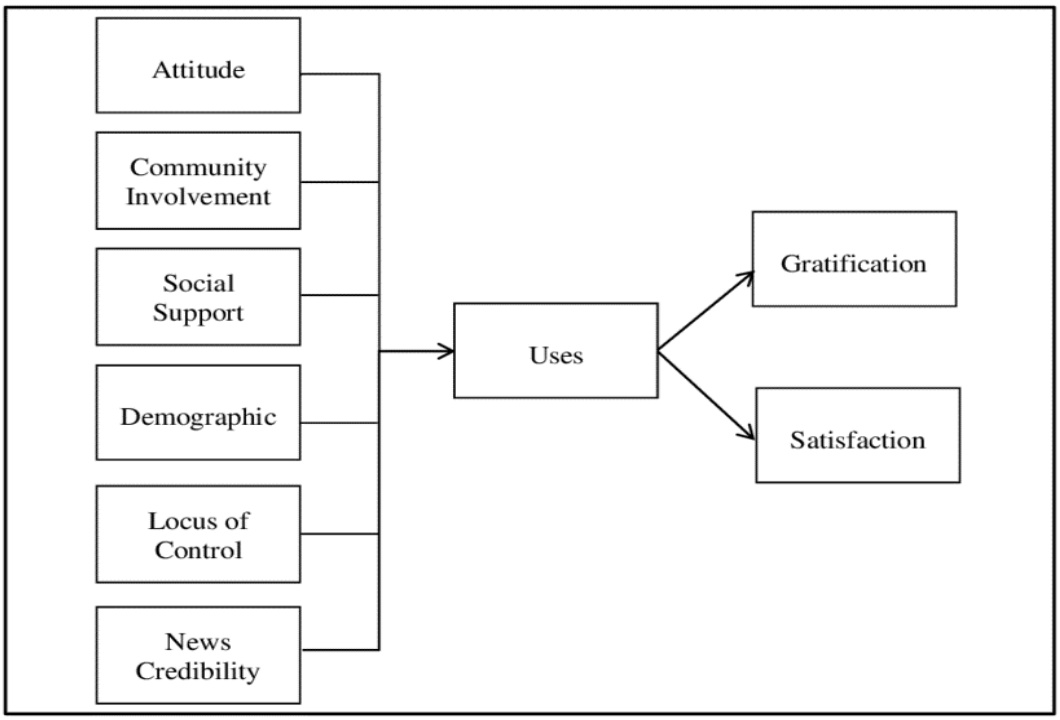


Figure-4 The UGT Diagram (Researchgate, 2021)

In the context of this study, adolescents frequently turn to social media as a means of social interaction, self-expression, and information gathering (*Przybylski et al.*, 2013). The interactive nature of platforms such as TikTok, Instagram, and Snapchat provides an engaging experience that satisfies the need for connectivity and validation (*Orben & Przybylski*, 2019). However, this continuous engagement often results in excessive screen time, leading to sleep displacement and a reduction in overall sleep quality (*Cain & Gradisar*, 2010).

Furthermore, social media gratifications, such as peer validation and instant feedback through likes and comments, create a reinforcing cycle of use that can lead to compulsive behaviors (*Ballara, 2023*). Studies have found that excessive nighttime use of social media to fulfill these needs is associated with sleep deprivation and increased nighttime awakenings (*Scott, Biello & Woods*, 2019). Given the high level of media interactivity in the digital age, UGT provides a valuable theoretical framework for analyzing how adolescents' media consumption choices impact their sleep behaviors.

2.4.2 The Sleep Displacement Theory

The Sleep Displacement Theory (SDT) suggests that media consumption directly competes with sleep for time and attention, contributing to sleep deprivation (*Cain & Gradisar*, 2010). The theory posits that the increasing accessibility and appeal of digital content have made it more challenging for individuals to prioritize sleep, especially in adolescents who are more susceptible to social media engagement (*Hale & Guan*, 2015).

Adolescents who engage in prolonged screen time at night tend to delay bedtime, either intentionally or unintentionally, due to the engaging nature of digital platforms (*Orben & Przybylski*, 2019). This phenomenon, known as bedtime procrastination, has been identified as a key factor in sleep displacement (*Exelmans and Van den Bulck, 2016*). Additionally, the addictive design of social media platforms, which includes autoplay features and algorithmic content recommendations, encourages prolonged engagement, further reducing available sleep time (*Przybylski et al.*, 2013).

Moreover, a study by *Scott, Biello & Woods* (2019) found that digital media consumption often leads to disrupted sleep patterns, with adolescents spending increased hours online instead of sleeping. The displacement of sleep due to social media use has been linked to negative academic outcomes, reduced cognitive functioning, and increased mental health concerns such as anxiety and depression (*Woods and Scott, 2016*). This underscores the importance of implementing digital curfews and promoting awareness about the impact of screen-based activities on sleep hygiene.

2.4.3 The Fear of Missing Out (FoMO) Concept

Fear of Missing Out (FoMO) is a psychological phenomenon characterized by the anxiety that one might be missing rewarding experiences shared by others. This concept has been identified as a major driver of compulsive social media use, particularly among adolescents (*Przybylski et al.*, 2013). As social media platforms provide real-time updates and continuous notifications, adolescents often feel compelled to stay connected at all times, even at the expense of their sleep.

Research indicates that adolescents experiencing high levels of FoMO are more likely to engage in nighttime social media use, leading to sleep disturbances (*Woods & Scott*, 2016). A study by *Twenge et al.* (2018) found that adolescents who check their phones

frequently during the night experience fragmented sleep and higher levels of sleep deprivation. This disrupted sleep pattern contributes to daytime fatigue, emotional instability, and decreased academic performance (Liu et al., 2016).

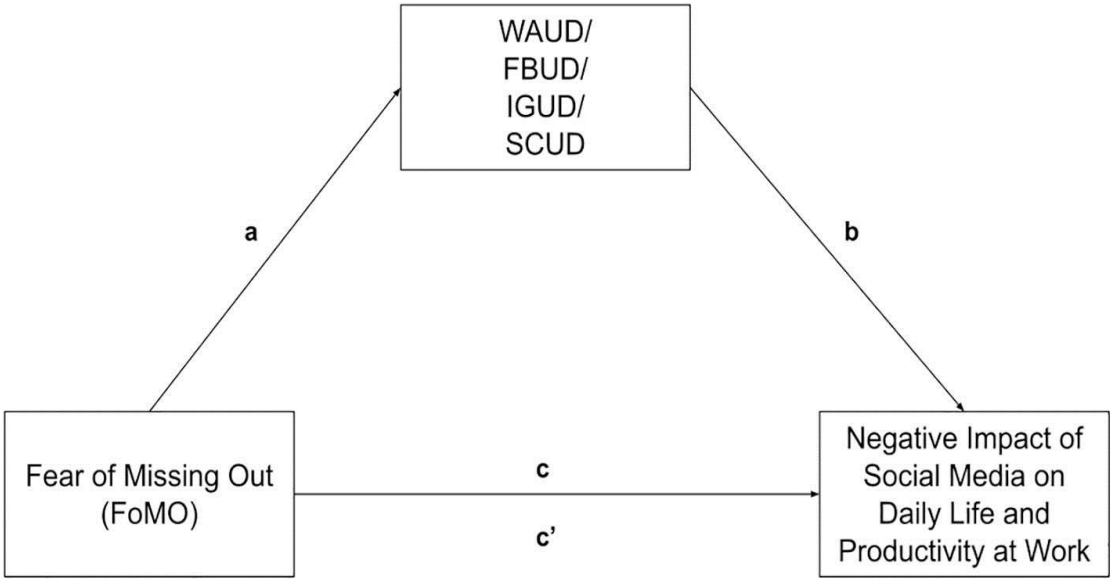


Figure-5 Models for mediation are shown graphically. Notes. Instagram Use Disorder (IGUD), Snapchat Use Disorder (SCUD), Facebook Use Disorder (FBUD), and WhatsApp Use Disorder (WAUD). Age and gender controls were applied to all models (not shown in the picture). Only one social network use disorder variable was utilized in each model. (Rozgonjuk et al., 2020)

Additionally, the compulsive urge to remain socially engaged on digital platforms exacerbates pre-existing anxiety and stress, further delaying sleep onset (*Scott, Biello & Woods*, 2019). The widespread accessibility of mobile devices has made it easier for adolescents to stay online late at night, reinforcing a cycle of digital dependence and poor sleep hygiene (*Cain & Gradisar*, 2010). Addressing FoMO through digital well-being interventions and social media education programs may help mitigate its impact on sleep health and overall well-being.

2.5 The Role of Parental Guidance and Interventions

Parental involvement plays a pivotal role in mitigating the adverse effects of social media on adolescents' sleep patterns (Garmy et al., 2022). Research indicates that households enforcing structured screen-time regulations before bedtime observe fewer instances of sleep disruptions among adolescents *(Bartel, Gradisar and Williamson, 2015*). For instance, a study demonstrated that active parental intervention led to earlier bedtimes and increased sleep duration among adolescents, highlighting

the significance of parental engagement in promoting healthy sleep habits (*American Academy of Pediatrics*, 2016).

The implementation of parental control applications and digital wellness tools has become a common strategy to monitor and manage adolescents' screen exposure (Hiniker, Schoenebeck, & Kientz, 2016). These tools enable parents to set usage limits, restrict access to certain applications, and monitor online activities. However, the effectiveness of these interventions is subject to debate. A significant challenge is that many adolescents possess the technical acumen to circumvent these controls, rendering the measures less effective (*Ghosh, Monsour & Hasan*, 2021). A study revealed that approximately 60% of adolescents are adept at bypassing parental controls, underscoring the limitations of relying solely on technological solutions (*Twenge, Krizan & Hisler*, 2018).

Beyond technological interventions, the quality of parent- adolescents communication is crucial in fostering healthy digital habits (Meeus, Eggermont and Beullens, 2019). Open dialogues about the potential risks associated with excessive social media use and collaboratively setting boundaries can lead to better adherence to screen-time guidelines (American Psychological Association, 2022). Research suggests that when parents engage in discussions about media use, adolescents are more likely to self-regulate their screen time, leading to improved sleep quality (*American Academy of Pediatrics*, 2016).

Parental attitudes and behaviors toward technology significantly influence adolescents' digital consumption patterns. Parents who exhibit high levels of screen time may inadvertently model behaviors that adolescents emulate, potentially leading to increased screen exposure and associated sleep disturbances (*Golan, M., 2006.*). Conversely, parents who demonstrate balanced media use and prioritize offline activities can encourage similar behaviors in their children (*Radesky, 2021*).

The dynamic nature of social media platforms presents an ongoing challenge for parental interventions (Kidron, 2023). The rapid evolution of these platforms, coupled with sophisticated algorithms designed to maximize user engagement, can lead to prolonged screen time among adolescents, often at the expense of sleep (*Twenge, Krizan & Hisler*, 2018). Parental control tools may struggle to keep pace with these changes, necessitating adaptive and multifaceted strategies. Continuous education about emerging digital trends and potential risks is essential for parents to effectively guide their adolescents (*Ghosh, Monsour & Hasan*, 2021).

Cultural and socioeconomic factors also play a role in shaping the effectiveness of parental guidance. Access to digital wellness tools may be limited in households facing economic constraints, and cultural perceptions of technology use can influence the implementation of screen-time regulations (*Glickman*, 2025). Tailored public health initiatives that consider these diverse contexts are necessary to provide equitable resources and support for all families (*American Academy of Pediatrics*, 2016).

School-based programs that involve parental participation have shown promise in addressing excessive social media use and its impact on sleep. Collaborative efforts between educators, parents, and healthcare professionals can lead to the development of comprehensive strategies that promote digital literacy and healthy sleep habits (*Mellon et al., 2024)*. These programs often include workshops and resources that equip parents with the knowledge and tools to effectively manage their adolescents' media consumption (*Glickman*, 2025).

In summary, while parental guidance is a critical component in addressing social media-related sleep disturbances among adolescents, its effectiveness is influenced by various factors, including the adaptability of interventions, quality of parent-adolescent communication, parental modeling of behaviors, and cultural and socioeconomic contexts. Future research should focus on developing and evaluating multifaceted approaches that combine technological tools, open communication, and educational initiatives to effectively promote healthy digital habits and improve sleep outcomes for adolescents (Radesky et al., 2016).

2.6 The Influence of School-Based Digital Awareness Programs

Educational institutions are instrumental in molding adolescents' digital habits, particularly concerning the interplay between social media usage and sleep health (Regehr, 2025). Recognizing the pervasive influence of digital media, schools have proactively introduced digital literacy programs aimed at educating students about the potential risks associated with excessive social media engagement and its detrimental effects on sleep quality (*Hale & Guan*, 2015).

One significant concern is the impact of screen time on adolescents' sleep patterns. Studies have consistently shown that increased screen exposure, especially during evening hours, correlates with delayed bedtimes and reduced total sleep duration among adolescents. For instance, a comprehensive review highlighted that over 90% of studies found a negative association between screen time and sleep health, with

evening media use leading to delayed sleep onset and shorter sleep durations (*Cain & Gradisar*, 2010). This underscores the necessity for educational programs that address these issues directly.

In response, many schools have implemented digital literacy curricula designed to raise awareness about responsible media consumption. These programs often encompass modules that educate students on the importance of moderating screen time, especially before bedtime, to promote better sleep hygiene (*Jeong, Cho & Hwang*, 2012). A meta-analysis of traditional media literacy interventions demonstrated significant positive effects on students' knowledge and critical understanding of media-related issues (*Przybylski & Weinstein*, 2017). By enhancing students' critical thinking skills regarding media use, these programs aim to empower teenagers to make informed decisions about their digital consumption habits.

Beyond theoretical knowledge, practical interventions have been introduced within the school setting to foster healthier routines. Structured bedtime routines, for example, have been promoted to encourage consistency in sleep patterns (Moseley & Gradisar, 2009). Research indicates that consistent bedtime routines are linked to better sleep outcomes, including earlier bedtimes and improved sleep quality (*Mindell & Williamson*, 2018). By integrating these practices into the school environment, educators aim to instill habits that students can carry into their personal lives, thereby enhancing their overall well-being.

Another effective strategy involves the creation of technology-free study environments. By designating specific areas or times where digital device usage is minimized or prohibited, schools encourage students to engage in screen-free activities, particularly during periods leading up to bedtime. This approach addresses the issue of bedtime electronic use, which has been associated with reduced sleep quantity and quality among adolescents (*Orzech et al.*, 2016). By limiting exposure to screens during critical hours, students are more likely to experience restful sleep, which in turn can positively impact their academic performance and mental health.

The role of educators extends beyond the implementation of these programs; they also serve as role models in promoting healthy digital behaviors (Raising Children Network, 2024). By demonstrating balanced media usage and prioritizing offline interactions, teachers can influence students' perceptions and habits regarding technology. Furthermore, involving parents in these initiatives can amplify their effectiveness. Collaborative efforts between schools and families ensure that the messages

conveyed within the educational setting are reinforced at home, creating a consistent support system for adolescents as they navigate the challenges of digital media consumption (*Scott, Biello & Woods*, 2019).

Despite the promising nature of these school-based interventions, more research is needed to determine their long-term efficacy. While immediate improvements in students' awareness and behaviors have been observed, sustaining these changes over time remains a challenge. Longitudinal studies are necessary to assess the durability of the positive outcomes associated with digital literacy programs and structured routines. Additionally, as digital platforms continue to evolve, educational content must be regularly updated to address emerging trends and potential new risks associated with social media use *(OECD, 2024*).

In conclusion, schools play a critical role in shaping adolescents' digital behaviors and promoting healthy sleep patterns. Through the implementation of comprehensive digital literacy programs, the promotion of structured bedtime routines, and the creation of technology-free environments, educational institutions can equip students with the tools and knowledge necessary to navigate the digital landscape responsibly. Ongoing research and adaptation are essential to ensure these initiatives remain effective and relevant in the face of rapidly changing digital media dynamics.

2.7 Public Health Implications and Policy Recommendations

The burgeoning field of research investigating the interplay between social media usage and adolescent sleep patterns reveals a compelling need for robust public health interventions. The pervasive nature of digital platforms, particularly among adolescents, necessitates a proactive approach to mitigate the detrimental effects of excessive screen time during critical sleep periods. Governmental bodies and healthcare professionals are increasingly vocal about the necessity of implementing policies geared towards curbing nighttime screen exposure (NHS Greater Glasgow and Clyde, 2021).

One of the most frequently proposed interventions is the implementation of social media curfews. This entails establishing specific timeframes during which adolescents are discouraged or restricted from accessing social media platforms. Such curfews could be enforced through parental controls, platform-specific settings, or even broader community-based initiatives. Research by Gradisar et al. (2013) found that limiting electronic media use before bedtime significantly improved sleep quality and

duration in adolescents. This highlights the potential effectiveness of structured time restrictions.

Alongside curfews, comprehensive awareness campaigns play a crucial role in educating teenagers, parents, and educators about the impact of social media on sleep. These campaigns should emphasize the biological mechanisms through which blue light emitted from screens disrupts melatonin production, the hormone responsible for regulating sleep-wake cycles (Chang et al., 2015). Moreover, they should address the psychological factors contributing to late-night social media use, such as fear of missing out (FOMO) and the addictive nature of social interaction platforms (Lemola et al., 2015).

Integrating sleep education into school curriculums is another vital component of a comprehensive public health strategy. By embedding sleep hygiene principles into educational frameworks, adolescents can gain a deeper understanding of the importance of sleep and learn practical strategies for promoting healthy sleep habits. This education should include information on the circadian rhythm, the effects of caffeine and alcohol, and techniques for managing stress and anxiety, which can also interfere with sleep (Hasler et al., 2012).

Furthermore, policy reforms focusing on responsible social media use are essential. This encompasses collaboration with social media companies to develop and implement features that promote healthy usage patterns, such as built-in sleep reminders, reduced blue light emissions, and tools for monitoring screen time (Woods & Scott, 2016). Governments could also consider regulating advertising practices that target adolescents with content designed to maximize engagement and screen time, particularly during nighttime hours.

The need for these interventions is underscored by the growing body of evidence linking excessive social media use to a range of negative health outcomes beyond sleep disturbances, including mental health issues such as anxiety and depression ((Riehm et al., 2019). By addressing the root causes of sleep deprivation among adolescents, public health initiatives can contribute to overall well-being and academic performance.

Moreover, healthcare professionals should be equipped with the knowledge and resources to counsel adolescents and their families on sleep hygiene and responsible social media use. This includes conducting sleep assessments, providing personalized

recommendations, and referring individuals to specialized sleep clinics when necessary (LeBourgeois et al., 2017).

In conclusion, a multi-faceted approach involving social media curfews, awareness campaigns, educational initiatives, policy reforms, and healthcare interventions is essential to mitigate the adverse effects of digital consumption on adolescence sleep. By prioritizing the health and well-being of adolescents, society can ensure they have the opportunity to thrive both academically and personally.

2.8 Conclusion

This chapter has provided a comprehensive review of the literature surrounding social media use and adolescents sleep, meticulously examining the current state of knowledge. The discussion has illuminated the breadth and depth of existing research, pinpointing key findings that underscore the significant impact of digital platforms on sleep patterns. Moreover, the chapter has explored relevant theoretical perspectives, including the Uses and Gratifications Theory, Sleep Displacement Theory, and the pervasive influence of Fear of Missing Out (FoMO), all of which offer valuable frameworks for understanding adolescent's engagement with social media.

Crucially, this review has also identified critical gaps within the existing body of research. There is a pressing need for further empirical investigation into the long-term neurodevelopmental consequences of social media-induced sleep disturbances. Longitudinal studies, coupled with objective sleep measurement techniques, are essential to fully grasp the enduring effects of chronic sleep deprivation on adolescents. By integrating the aforementioned theoretical lenses, this study endeavors to contribute meaningfully to the ongoing discourse on teenage well-being in the digital age. Furthermore, this research will aim to build upon the current understanding by potentially offering practical intervention strategies and policy recommendations that address the complex interplay between social media and sleep.

Chapter 3: Research Methodology

3.1 Introduction

This chapter provides an overview of the research methodology employed in this study, focusing on a systematic literature review (SLR) to investigate the effects of social media on adolescents' sleep patterns in the UK. The SLR approach is justified as it enables a comprehensive synthesis of existing research, identifying patterns, trends, and gaps in the literature (Siddaway, Wood & Hedges, 2019). Unlike primary data collection, an SLR minimizes ethical concerns and allows for a broader scope of analysis by integrating findings from multiple peer-reviewed sources (Grant & Booth, 2009). This method aligns with the study's objective of assessing social media's impact on sleep quality, duration, and mental well-being in adolescents.

3.2 Research Design and Approach

A systematic literature review (SLR) is a structured research method used to collect, evaluate, and integrate findings from multiple studies on a particular topic, enhancing the understanding of existing knowledge (Page et al., 2021). This study employs an SLR to analyze the relationship between social media use and adolescents' sleep patterns, allowing for an in-depth exploration of empirical findings. Unlike primary research methods such as surveys or interviews, an SLR reduces response biases and ethical constraints while ensuring a comprehensive, evidence-based perspective (Siddaway, Wood & Hedges, 2019). This study applies both qualitative synthesis (e.g., thematic analysis of behavioral trends) and quantitative synthesis (e.g., statistical comparisons across multiple studies) to provide a well-rounded evaluation (Grant & Booth, 2009).

3.3 Search Strategy

A well-defined search strategy ensures **comprehensive and unbiased** literature identification, minimizing the risk of missing relevant studies and reducing selection bias.

3.3.1 Identification of Research Questions

The research question is formulated based on the study objectives to ensure a clear focus:

How does social media use influence the sleeping patterns of adolescents (10-19) in the UK?

3.3.2 Search Terms and Keywords

A combination of **keywords, synonyms, and Boolean operators (AND, OR, NOT)** was used to refine the search process. The following terms were applied to ensure broad yet relevant literature retrieval

Keywords: "social media", "online platforms", "screen time", "digital media", "teenagers", "adolescents", "youth", "sleep", "sleep patterns", "sleep quality", "sleep duration", "sleep hygiene", "sleep disturbance", "United Kingdom", "UK".

Boolean Example:

("social media" OR "online platforms" OR "screen time" OR "digital media") AND ("teenagers" OR "adolescents" OR "youth") AND ("sleep" OR "sleep patterns" OR "sleep quality" OR "sleep duration" OR "sleep hygiene" OR "sleep disturbance") AND ("United Kingdom" OR "UK")

3.3.3 Database Selection

The databases selected for this systematic review were chosen based on their relevance to health, behavioral science, and interdisciplinary research:

- **PubMed:** Chosen for its comprehensive coverage of biomedical and health-related literature, including studies on sleep and psychological effects.
- **ScienceDirect:** Selected for its extensive collection of scientific, technical, and medical research, which includes relevant psychological and behavioral studies.
- **ProQuest:** Chosen for its broad coverage of scholarly journals, theses, and dissertations, including social science and health-related research, and for its UK specific content.

3.3.4 Search String Development

To maintain consistency and rigor, the following **search strings** were used in each database:

- **PubMed:** ("social media"[Title/Abstract] OR "online platforms"[Title/Abstract] OR "screen time"[Title/Abstract] OR "digital media"[Title/Abstract]) AND ("teenagers"[Title/Abstract] OR "adolescents"[Title/Abstract] OR "youth"[Title/Abstract]) AND ("sleep"[Title/Abstract] OR "sleep patterns"[Title/Abstract] OR "sleep quality"[Title/Abstract] OR "sleep duration"[Title/Abstract] OR "sleep hygiene"[Title/Abstract] OR "sleep disturbance"[Title/Abstract]) AND ("United Kingdom"[Title/Abstract] OR "UK"[Title/Abstract])

- **ScienceDirect:** (("social media" OR "online platforms") AND ("adolescents" OR "youth") AND ("sleep" OR "sleep patterns") AND ("United Kingdom" OR "UK"))

- **ProQuest:** ("social media" OR "online platforms" OR "screen time" OR "digital media") AND ("teenagers" OR "adolescents" OR "youth") AND ("sleep" OR "sleep patterns" OR "sleep quality" OR "sleep duration" OR "sleep hygiene" OR "sleep disturbance") AND ("United Kingdom" OR "UK")

3.4 Study Selection Criteria

Clearly defining the eligibility criteria for study inclusion and exclusion is essential to ensure that only relevant and high-quality research is incorporated into the systematic literature review.

3.4.1 Inclusion Criteria

To maintain the relevance and reliability of this study, included studies must meet the following criteria:

- **Timeframe:** Studies published between 2014 and 2024 to ensure recent and relevant evidence.
- **Population:** Adolescents aged 10-19 years residing in the United Kingdom**.**

- **Study Types:** Peer-reviewed quantitative, qualitative, or mixed-methods studies examining the relationship between social media and sleep patterns.
- **Language:** Studies published in English.
- **Focus:** Research specifically investigating the impact of social media use on sleep patterns, sleep quality, duration, or sleep hygiene in adolescents.
- **Social Media Definition:** Studies must clearly define the social media platforms being evaluated, which may include but are not limited to Instagram, TikTok, Facebook, Snapchat, Twitter/X, and YouTube**.**
- **Sleep Pattern Measures:** Studies must utilize measurable sleep-related outcomes, such as sleep duration, sleep quality (e.g., PSQI scores), sleep latency, sleep efficiency, and circadian rhythm disruption**.**

3.4.2 Exclusion Criteria

Studies will be excluded if they meet any of the following criteria:

- Conducted outside the UK**.**
- Primarily focus on non-digital factors affecting sleep (e.g., diet, physical exercise without direct social media interaction).
- Published before 2014**.**
- Do not explicitly examine the relationship between social media use and sleep patterns in adolescents.
- Focus on other electronic devices (e.g., television, video games) without a specific mention of social media use.
- Include conference abstracts, opinion pieces, editorials, literature reviews, and unpublished dissertations (unless peer-reviewed and available in a database).
- Include participants outside the 10-19 age range**,** unless data for this age group is reported separately.
- Do not provide a clear definition of social media**.**
- Do not utilize measurable sleep pattern outcomes**.**

By implementing these strict inclusion and exclusion criteria, this study ensures that only high-quality, relevant research is included in the systematic review, allowing for a comprehensive and accurate analysis of how social media impacts the sleep patterns of adolescents in the UK.

3.5 Study Selection Process

A rigorous study selection process was implemented to ensure the inclusion of only relevant, high-quality studies that align with the research objectives. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed to maintain transparency and reproducibility.

3.5.1 Screening Process

To maintain consistency and accuracy, this systematic literature review (SLR) was conducted by a single researcher, following a structured three-stage screening process.

Stage 1: Title and Abstract Screening (Excel):

- Search results from PubMed, ScienceDirect, and ProQuest was exported in a compatible format (e.g., CSV, RIS) and imported into a single Excel spreadsheet.
- Each record was assigned columns for:
    - ❖ Database Source
    - ❖ Title
    - ❖ Abstract
    - ❖ Keywords
    - ❖ Initial Screening Decision (Include/Exclude/Uncertain)
    - ❖ Reason for Exclusion (if applicable)
- The researcher screened the titles and abstracts directly within Excel, applying the predefined inclusion and exclusion criteria.
- Filtering and sorting functionalities in Excel was used to streamline the screening process.
- Records marked as "Include" or "Uncertain" will proceed to the next stage.

Stage 2: Full-Text Screening (Excel):

- Full-text PDFs of the remaining articles were obtained.
- An additional column was added to the Excel spreadsheet: "Full-Text Screening Decision (Include/Exclude)."

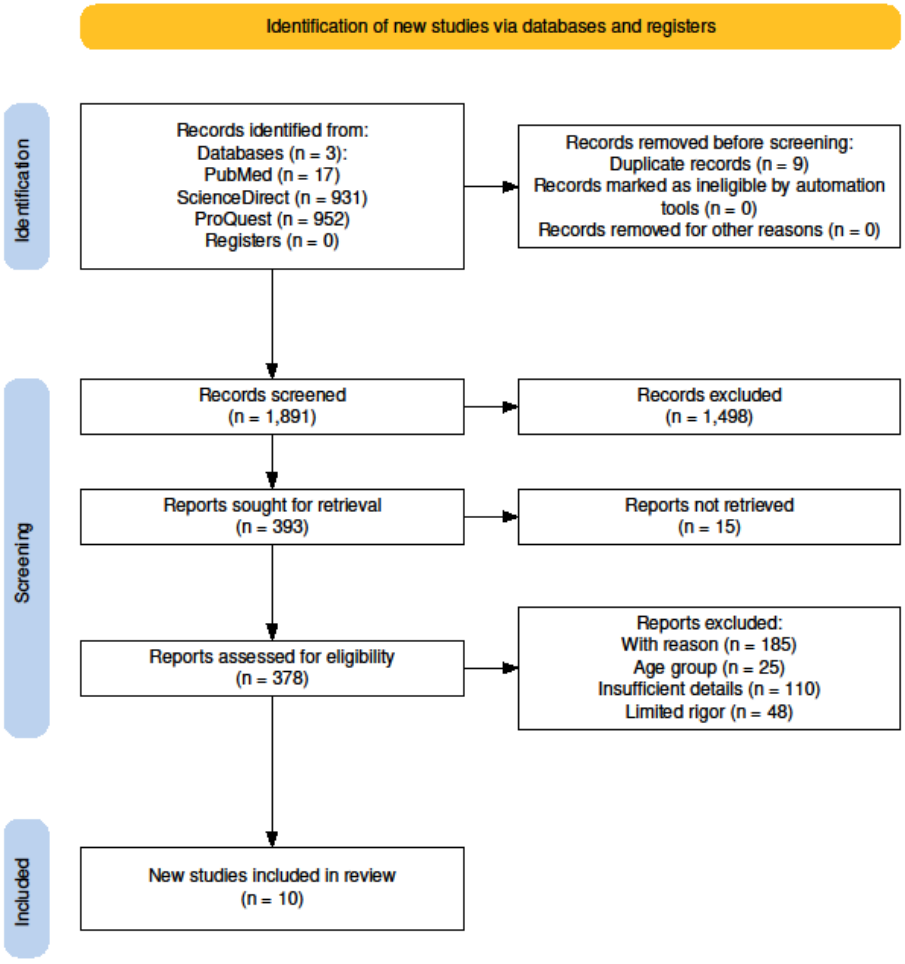
- The researcher read the full texts and record the decision in the corresponding Excel column, along with detailed reasons for exclusion if applicable.
- Excel's comment feature was used to record notes and observations during the full-text review.

Stage 3: Final Eligibility Check

- A final eligibility check was conducted to ensure all included studies met the criteria without any violations.

3.5.2 PRISMA Flow Diagram (Textual Representation)

A **PRISMA flow diagram** visually represents the study selection process, ensuring clarity and replicability (Page et al., 2021; Moher et al., 2009).



3.6 Data Extraction and Management

A structured data extraction and management process is crucial for ensuring consistency, accuracy, and reliability in systematic literature reviews. In this study, data extraction was performed using Microsoft Excel, which facilitated the organization, categorization, and analysis of relevant data from selected studies. A standardized data extraction framework was employed, capturing key study characteristics, including author(s), year of publication, study design, sample size, population characteristics (age range 10-19), geographical location (UK), social media usage patterns, sleep-related outcomes (e.g., sleep duration, quality, disturbances), and key findings (*Siddaway, Wood & Hedges, 2019*).

To maintain consistency and minimize errors, predefined coding categories were established in Excel, ensuring uniform data entry across studies. Each article was reviewed independently, and relevant data were systematically recorded in structured spreadsheets. This approach enhanced transparency and facilitated comparative analysis across multiple studies (*Munn et al., 2018*). Additionally, duplicate entries were removed, and extracted data were cross-verified to mitigate inaccuracies.

By employing Excel as the primary data management tool, this study ensures efficient data handling, organization, and retrieval, enhancing transparency and reproducibility. This structured extraction process allowed for a comprehensive evaluation of how social media influences adolescents' sleep duration, quality, and overall well-being in the UK.

Furthermore, thematic synthesis was applied to qualitative findings, enabling the identification of key patterns and emerging themes related to social media use and its impact on adolescent sleep patterns (*Page et al., 2021*). This structured approach to data extraction and management ensured a rigorous, replicable, and unbiased synthesis of evidence, ultimately strengthening the validity of the research findings.

3.7 Quality Assessment and Risk of Bias

Ensuring the credibility and reliability of selected studies is crucial in a systematic literature review (SLR). This study employs the Critical Appraisal Skills Programme (CASP) tool to assess the quality of sincluded research. CASP is widely used for evaluating qualitative and quantitative studies by systematically examining research validity, results, and applicability (*CASP, 2023*).

The quality assessment process involves applying CASP checklists to evaluate key aspects such as study design, methodology, sample selection, data collection, and analysis. Each study is assessed based on clear research aims, appropriate methodology, ethical considerations, and potential sources of bias (*Noyes et al., 2019*). Studies with insufficient methodological rigor, small sample sizes, or unclear data collection methods are critically reviewed for potential exclusion or flagged as low-quality evidence (*Gough, Oliver & Thomas, 2017*).

To address publication bias, efforts are made to include a diverse range of studies, ensuring balanced representation of findings. Grey literature, such as government reports and non-peer-reviewed studies, is considered where relevant to mitigate bias stemming from selective publication (*Rothstein, Sutton & Borenstein, 2005*). This rigorous quality assessment ensures that the findings accurately reflect the impact of social media on adolescent sleep patterns in the UK.

3.8 Data Synthesis and Analysis

This study employs thematic analysis to systematically interpret and synthesize findings from the selected literature on the effect of social media on the sleeping patterns of adolescents (10–19) in the UK. Thematic analysis is a qualitative method that allows for the identification of patterns across multiple studies, providing a structured approach to understanding complex social phenomena (Braun & Clarke, 2006).

The analysis follows six key steps as outlined by Braun and Clarke (2006). First, all selected studies were thoroughly read to ensure familiarity with the data. Next, key findings were systematically coded by identifying recurring patterns relevant to social media use and adolescent sleep. These codes were then examined and grouped into broader themes that capture common trends across the literature. The themes was reviewed to ensure they accurately represent the data, followed by refining and defining them to enhance clarity and coherence. Finally, a detailed synthesis was developed, linking the themes to the research objectives and providing an in-depth analysis of how social media influences adolescent sleep. This systematic process ensures a transparent and replicable approach to data interpretation.

3.9 Ethical Considerations

Ethical considerations are fundamental in research to ensure integrity, transparency, and respect for scholarly contributions. Since this study is a systematic literature review, it does not involve direct human participants, thereby eliminating concerns related to informed consent, privacy, and potential harm to individuals. However, secondary research requires adherence to strict ethical guidelines to maintain credibility and uphold academic integrity.

One of the primary ethical responsibilities in this research is ensuring transparency in data collection and analysis. All included studies were sourced from reputable databases such as PubMed, ScienceDirect, and ProQuest, with a focus on peer-reviewed literature published between 2014 and 2024. Selection criteria was explicitly outlined, and a PRISMA flowchart used to demonstrate the systematic screening process, ensuring that only relevant and high-quality studies are included.

Academic integrity is maintained by properly citing all sources to avoid plagiarism. The study follows referencing guidelines, ensuring that credit is given to original authors and researchers. Furthermore, to ensure reliability, studies that lack clear ethical approval or have questionable methodologies were excluded. Critical Appraisal Skills Programme (CASP) critical appraisal tool was employed to assess the quality and credibility of selected research, ensuring that findings are drawn from ethically sound studies.

Additionally, researcher bias was minimized by maintaining objectivity in data extraction and synthesis. Studies were analyzed using a thematic synthesis approach for qualitative data and descriptive analysis for quantitative data. Findings were presented in a balanced manner, acknowledging any conflicting evidence or limitations.

Since the study explores the effects of social media on adolescents' sleep patterns, it is crucial to handle sensitive topics, such as mental and physical health consequences, with responsibility. The research avoids making unsupported claims or generalizations and will instead rely on empirical evidence.

Finally, this research aligns with the University of Wales Trinity Saint David’s ethical research policies, ensuring compliance with academic integrity and research ethics standards. By following these principles, the study contributes to knowledge in a

responsible and ethical manner while informing future research and policy recommendations.

3.10 Limitations and Challenges

This study has several limitations and challenges that may impact its findings. One key limitation is the potential for bias due to the study selection criteria. By focusing on UK-based studies published between 2014 and 2024, relevant research from other countries or earlier periods may be excluded, potentially limiting the broader applicability of the results.

Another challenge is accessing full-text studies. Some high-quality research may be behind paywalls or restricted by institutional access, making it difficult to include all relevant literature. Efforts will be made to use open-access sources and institutional resources, but some studies may remain inaccessible.

Additionally, generalizability is a concern, as this review relies on secondary data. Differences in methodologies, sample sizes, and study designs may affect the consistency of findings. Despite these limitations, the study aims to provide valuable insights into the effects of social media on adolescent sleep patterns while acknowledging the need for further research.

Chapter 4: Results and Discussion

4.1 Introduction

This chapter presents the thematic analysis of ten peer-reviewed studies exploring the impact of social media use on the normal sleeping patterns of adolescents aged 10–19 in the UK. The primary aim of this dissertation is to critically assess how social media influences adolescent sleep behavior, highlighting patterns, associated health outcomes, and recommendations for health promotion.

A systematic literature review was conducted to identify relevant studies, and data were extracted using a structured framework. The quality of the included studies was appraised using the Critical Appraisal Skills Programme (CASP) tools to ensure reliability and validity. A total of ten studies met the inclusion criteria and were included in the final synthesis.

Thematic analysis was performed following Braun and Clarke's six-step method: familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. This process enabled the identification of five key themes reflecting the complex relationship between social media use and adolescent sleep.

This chapter is structured around those five main themes: (1) Social Media Usage Patterns; (2) Impact on Sleep Quality and Duration; (3) Psychological and Physical Health Consequences; (4) Role of Parental/Environmental Factors; and (5) Awareness and Interventions. Each theme is explored in detail using evidence drawn from the reviewed literature.

4.2 Detailed Presentation of Identified Themes and Subthemes

4.2.1 Theme 1: Social Media Usage Patterns

Subthemes: Frequency, Duration, Night-time Usage

Social media has become an integral part of adolescents' daily lives, with usage patterns varying significantly. Frequency, duration, and night-time usage are critical subthemes in understanding how social media engagement may affect sleep.

4.2.1.1 Subtheme: *Frequency*

Frequency refers to how often adolescents use social media platforms. Some may check social media multiple times a day, while others may use it less frequently. The frequency of social media use can be indicative of the level of integration of these platforms into an adolescent's social life and daily routine. For example, Azhari et al. (2022) explore social media usage across platforms like Facebook, Instagram, Snapchat, and Twitter, indicating that frequency can vary across different platforms.

4.2.1.2 Subtheme: Duration

Duration relates to the amount of time adolescents spend on social media. This can range from a few minutes to several hours per day. Hisler, Twenge and Krizan (2019) highlight the significance of screen time duration, noting that heavy use of screen media is associated with shorter sleep duration. This suggests that the more time adolescents spend on social media, the more likely their sleep patterns will be negatively affected. Kelly et al. (2018) also used data from the UK Millennium Cohort Study, which inherently captures information about the duration of social media use among adolescents.

4.2.1.3 Subtheme: Night-time usage

Night-time usage is particularly important in the context of sleep. Using social media close to bedtime can interfere with sleep due to the blue light emitted by screens, which can suppress melatonin production, a hormone that regulates sleep. Scott and Woods (2018) specifically examine nighttime social media use and its association with sleep outcomes. They found that nighttime use is linked to later bedtimes, increased pre-sleep cognitive arousal, longer sleep onset latency, and shorter sleep duration. This highlights that it's not just the overall usage but the timing of social media use that

matters for sleep. Scott et al. (2019a) further explore the drivers of bedtime social media use, emphasizing the importance of understanding why adolescents engage with social media at night despite potential sleep costs.

The relationship between social media usage patterns and sleep disturbances is complex. High frequency and long duration of use can lead to a displacement of time that could be spent sleeping, reducing overall sleep duration. Moreover, the content of social media can be stimulating, leading to increased arousal and making it difficult to fall asleep. Night-time use exacerbates these issues by interfering with the body's natural sleep-wake cycle.

Eid et al. (2022) provide a broader context by examining sleep patterns in adolescents and considering factors like chronotype (morningness/eveningness), which can interact with social media usage patterns to affect sleep. Orben and Przybylski (2020) also acknowledge the importance of considering technology engagement across the week, as usage patterns may vary on weekdays versus weekends, influencing sleep patterns differently. Mireku et al. (2019) provide additional insight, showing that adolescents who used screen-based media devices (SBMDs) at night—particularly in darkness—had significantly worse sleep outcomes. Their study found that usage in darkness was associated with later sleep onset, shorter sleep duration, and increased odds of poor sleep quality, highlighting the importance of not only timing but also the environmental context of usage.

In conclusion, understanding the frequency, duration, and timing of social media use is crucial in assessing its impact on adolescent sleep. Research consistently shows that higher usage and night-time engagement are significant risk factors for sleep disturbances.

4.2.2 Theme 2: Impact on Sleep Quality and Duration

Subthemes: Sleep Onset Delay, Sleep Interruption, Reduced Sleep Hours

The influence of social media on sleep quality and duration is a central concern in the research. Several studies have investigated how social media use leads to measurable changes in sleep patterns, focusing on sleep onset delay, sleep interruption, and reduced sleep hours.

4.2.2.1 Subtheme: Sleep onset delay

Sleep onset delay refers to the increased time it takes to fall asleep. Social media use, especially close to bedtime, can contribute to this. Scott and Woods (2018) found that nighttime social media use is associated with longer sleep onset latency. This could be attributed to the stimulating nature of social media content, which keeps the brain active and alert, making it harder to wind down and fall asleep. Hisler, Twenge and Krizan (2019) also identified longer sleep latency as one of the consequences of heavy screen media use. Mireku et al. (2019) further support this, showing that device use in darkness was significantly linked to longer time to fall asleep.

4.2.2.2 Subtheme: Sleep interruption

Sleep interruption involves waking up during the night, which disrupts the continuity of sleep. While some studies may focus more on onset delay and duration, the general disruption of sleep architecture is an important consideration. Woods and Scott (2016) and Scott et al. (2019) note that pre-sleep arousal and stress contribute to disrupted sleep architecture. Factors contributing to sleep interruption could include notifications from social media that wake adolescents up or the anxiety and stress induced by social media content, causing them to wake up during the night.

4.2.2.3 Subtheme: Reduced sleep hours

Reduced sleep hours is a common consequence of social media use. When adolescents spend a significant amount of time on social media, they may sacrifice sleep to do so. This is explicitly noted in Hisler, Twenge and Krizan (2019), where heavy screen media use was associated with shorter sleep duration. Scott and Woods (2018) also found that nighttime social media use is related to shorter sleep duration. This lack of sleep can have numerous negative consequences for physical and mental health. Mireku et al. (2019) confirm that device use in darkness reduces total sleep hours and quality.

Quantitative findings often involve measuring sleep parameters like sleep onset latency, total sleep time, and sleep efficiency using self-report questionnaires or sleep tracking devices. For example, studies use tools like the Pittsburgh Sleep Quality Index (PSQI) to assess sleep quality or actigraphy to measure sleep patterns objectively. Hisler, Twenge and Krizan (2019) used data from the Millennium Cohort Study, which includes detailed information on sleep duration and screen media use, providing robust

quantitative evidence. Eid et al. (2022) also employ quantitative methods to compare sleep patterns across different populations, providing further data on sleep duration and other sleep metrics.

Qualitative findings offer insights into the subjective experiences of adolescents. Scott et al. (2019a) used focus group discussions to explore adolescents' perspectives on bedtime social media use and its impact on sleep. These qualitative findings can provide a deeper understanding of the reasons behind social media use before bed and the perceived consequences on sleep, complementing the quantitative data. For instance, the fear of missing out (FoMO) and the desire to stay connected with peers emerged as significant factors driving nighttime social media use, even at the expense of sleep.

Integrating both quantitative and qualitative findings provides a comprehensive view of how social media affects sleep. Quantitative studies establish the measurable impact on sleep parameters, while qualitative studies explain the underlying motivations and experiences. This combined approach enhances our understanding of the complex relationship between social media and adolescent sleep.

4.2.3 Theme 3: Psychological and Physical Health Consequences

Subthemes: Anxiety, Depression, Daytime Fatigue

Disrupted sleep due to social media use has significant psychological and physical health consequences for adolescents. Anxiety, depression, and daytime fatigue are among the most commonly reported outcomes.

4.2.3.1 Subtheme: Anxiety

Anxiety is frequently linked to social media use and sleep disruption. Woods and Scott (2016) found that adolescents who used social media more, both overall and at night, experienced higher levels of anxiety. Azhari et al. (2022) also explore the relationship between social media use and anxiety in female adolescents. Sleep deprivation can exacerbate anxiety symptoms, as sleep plays a crucial role in emotional regulation. When adolescents lack adequate sleep, they may have difficulty managing stress and negative emotions, leading to increased anxiety levels. Scott and Woods (2018) suggest that pre-sleep cognitive arousal, often driven by social media engagement, contributes to both sleep problems and anxiety.

4.2.3.2 Subtheme: Depression

Depression is another mental health issue associated with social media use and sleep disturbances. Woods and Scott (2016) reported that higher social media use is related to higher levels of depression in adolescents. Kelly et al. (2018) also investigated the association between social media use and depressive symptoms. Sleep disruption can contribute to depressive symptoms by affecting the brain's neurochemistry and impairing cognitive functions. Chronic sleep deprivation can alter neurotransmitter systems, making individuals more vulnerable to depression.

4.2.3.3 Subtheme: Daytime fatigue

Daytime fatigue is a direct consequence of poor sleep. When adolescents do not get enough sleep, they experience tiredness and reduced energy levels during the day. This can affect their academic performance, social interactions, and overall functioning. Hisler, Twenge and Krizan (2019) and Eid et al. (2022) highlight the impact of screen time and social media on sleep duration, which is directly linked to daytime fatigue. Scott et al. (2019a) also indirectly address daytime fatigue by exploring how nighttime social media use leads to poor sleep, which inevitably results in tiredness during the day.

The relationship between disrupted sleep and its impact on well-being is multifaceted. Sleep is essential for cognitive functions such as attention, concentration, and memory. Lack of sleep impairs these functions, making it difficult for adolescents to perform well in school and other activities. Emotional regulation is also affected by sleep deprivation. Adolescents who do not get enough sleep are more likely to experience mood swings, irritability, and difficulty managing their emotions. This can strain their relationships with family and friends. Mireku et al. (2019) found that adolescents who used devices at night were more likely to report tiredness.

Physical health is also compromised by chronic sleep disruption. Sleep is involved in various physiological processes, including immune function, hormone regulation, and metabolic processes. Insufficient sleep can weaken the immune system, making adolescents more susceptible to illness. It can also disrupt hormone levels, affecting growth, metabolism, and appetite. This can lead to weight problems and other health issues.

In summary, the psychological and physical health consequences of disrupted sleep due to social media use are significant. Anxiety, depression, and daytime fatigue are just some of the ways that poor sleep can affect adolescent well-being. Addressing the issue of social media-related sleep disruption is crucial for promoting the overall health and development of adolescents.

4.2.4 Theme 4: Role of Parental/Environmental Factors

Subthemes: Parental Control, Digital Curfews, Peer Influence

Parental and environmental factors play a significant role in moderating the impact of social media on adolescents' sleep. Parental control, digital curfews, and peer influence are key subthemes that help us understand these dynamics.

4.2.4.1 Subtheme: Parental control

Parental control refers to the strategies parents use to manage their children's social media use. This can include setting rules about when and how social media can be used, monitoring online activity, and having open discussions about responsible social media use. Mireku et al. (2019) show that adolescents who use screens in the dark often do so without parental oversight, indicating a lack of effective control. Their findings underscore the role of the home environment and the importance of enforcing boundaries on nighttime screen use.

However, the effectiveness of parental control can vary. The nature of the parent-child relationship, the consistency of rule enforcement, and the adolescent's developmental stage all play a role. Overly restrictive control may lead to resistance and rebellion, while a lack of control may leave adolescents vulnerable to the negative effects of excessive social media use. Therefore, a balanced approach that combines rule-setting with open communication and trust is often recommended.

4.2.4.2 Subtheme: Digital curfews

Digital curfews are a specific type of parental control that involves setting a time after which adolescents are not allowed to use electronic devices, including those used for social media. The introduction of digital curfews—rules preventing device use before bedtime—is supported by Mireku et al. (2019), who found that screen use within an hour before bed significantly worsened sleep outcomes. This strategy aims to reduce nighttime social media use and its associated sleep disruption. By establishing a "no-

screen" time before bed, parents can help adolescents wind down and improve their sleep hygiene. While the provided articles emphasize the importance of limiting nighttime social media use (Scott and Woods, 2018; Hisler, Twenge and Krizan, 2019) the explicit mention of "digital curfews" as a distinct intervention is less prominent, suggesting it's often discussed within the broader context of parental rules and time management strategies.

4.2.4.3 Subtheme: Peer influence

Peer influence is another critical environmental factor. Adolescents are highly influenced by their peers' behaviors and norms, including social media use. The fear of missing out (FoMO) and the desire to stay connected with peers can drive adolescents to use social media frequently and at night, even if it means sacrificing sleep (Scott et al., 2019a). Peer pressure to be constantly available and responsive on social media can make it challenging for adolescents to disconnect and prioritize sleep.

Studies highlighting family or social support dynamics emphasize the importance of a supportive environment in promoting healthy sleep habits. For example, positive parent-child relationships and effective communication can facilitate the implementation of parental control strategies. Strong social support from peers, while potentially driving social media use, can also be leveraged to promote healthy behaviors if peer norms emphasize the importance of sleep and well-being. This theme also aligns with Mireku et al.'s (2019) finding that pervasive mobile use may reflect peer-driven habits.

In conclusion, parental and environmental factors, including parental control, digital curfews, and peer influence, play a crucial role in shaping adolescents' social media use and its impact on sleep. Interventions that consider these dynamics and promote a supportive environment are likely to be more effective in mitigating the negative consequences of social media on adolescent sleep.

4.2.5 Theme 5: Awareness and Interventions

Subthemes: Screen Time Guidelines, School Awareness Programs

Addressing the issue of social media's impact on adolescent sleep requires raising awareness and implementing effective interventions. Screen time guidelines and school awareness programs are two key subthemes in this context.

4.2.5.1 Subtheme: Screen time guidelines

Screen time guidelines provide recommendations for limiting the amount of time adolescents spend using electronic devices, including those used for social media. These guidelines often emphasize the importance of reducing overall screen time and avoiding screen use close to bedtime. Hisler, Twenge and Krizan (2019) cite recommendations from the American Academy of Pediatrics to limit screen time, highlighting the importance of setting boundaries on digital media use. While not always explicitly focused on social media, these broader guidelines inform strategies to manage its use.

However, simply providing guidelines may not be sufficient. Adolescents need to understand the reasons behind these recommendations and develop the skills to manage their screen time effectively. This includes self-regulation skills, time management strategies, and an awareness of the potential negative consequences of excessive social media use.

4.2.5.2 Subtheme: School awareness programs

School awareness programs can play a crucial role in educating adolescents about the importance of sleep and the impact of social media. These programs can provide information about sleep hygiene, the effects of blue light on sleep, and strategies for responsible social media use. Schools can also create a supportive environment that promotes healthy sleep habits by adjusting schedules and policies to prioritize adolescent sleep needs. Mireku et al. (2019) support interventions addressing environmental and behavioral factors, such as nighttime lighting and supervision.

Moreover, school-based interventions can reach a large number of adolescents and involve parents and caregivers, reinforcing positive behaviors and creating a consistent message across different settings. These programs can also address the social and psychological factors that drive social media use, such as FoMO and peer pressure, and provide adolescents with strategies to cope with these influences.

In addition to screen time guidelines and school awareness programs, other interventions can be implemented. These include cognitive-behavioral interventions to address problematic social media use and sleep disturbances, mindfulness techniques to reduce pre-sleep arousal, and technological tools to track and limit social media use.

Scott et al. (2019b) explore the perspectives of adolescents on drivers for bedtime social media use, which can inform the development of more targeted interventions.

Orben and Przybylski (2020) emphasize the need for rigorous methodological standards in research on technology and adolescent well-being, including sleep. This underscores the importance of evidence-based interventions that are evaluated for their effectiveness.

In conclusion, raising awareness and implementing comprehensive interventions are essential to mitigate the negative impact of social media on adolescent sleep. Screen time guidelines and school awareness programs are important components of this effort, but they should be complemented by other strategies that address the complex interplay of individual, social, and environmental factors influencing social media use and sleep.

4.3 Discussion

This section provides a critical analysis and interpretation of the key findings from the systematic literature review, which explored the impact of social media use on the normal sleeping patterns of adolescents aged 10–19 in the UK. Building upon the thematic analysis presented in Chapter Four, this discussion examines how the results align with, extend, or challenge existing research and theories on adolescent sleep and digital engagement.

The five main themes identified—social media usage patterns, impact on sleep quality and duration, psychological and physical health consequences, parental/environmental factors, and awareness/interventions—are reviewed in light of wider literature. This chapter also considers the theoretical and practical implications of these findings, evaluates potential alternative explanations, and outlines the study's limitations and suggestions for future research.

4.3.1 Interpretation of Findings

4.3.1.1 Key Findings in Context

The systematic literature review revealed a consistent and concerning relationship between social media use and disrupted sleeping patterns among UK adolescents. A central finding across the reviewed studies is that adolescents who engage frequently with social media, and critically, those who utilize these platforms during nighttime

hours, are significantly more likely to experience a constellation of sleep-related problems. These problems typically manifest as delayed sleep onset (difficulty falling asleep), shorter overall sleep duration, and subjectively poorer sleep quality (restless or fragmented sleep). These disruptions are frequently compounded by heightened psychological arousal in the period leading up to bedtime and the inherently stimulating nature of online content, which can interfere with the physiological processes necessary for sleep.

The studies included in the review consistently highlighted the critical role of nighttime social media usage as a key contributing factor to sleep disturbance. For instance, Scott and Woods (2018) and Scott et al. (2019a) provided evidence suggesting that exposure to the blue light emitted by screens close to bedtime can directly delay the release of melatonin, a hormone crucial for regulating the sleep-wake cycle (circadian rhythm). Furthermore, the cognitive stimulation resulting from engaging with social media content activates the brain, making it more difficult to transition into a state of sleep. This effect is often exacerbated by the phenomenon known as "fear of missing out" (FoMO), a pervasive anxiety among adolescents that they might be missing out on social events, trends, or information if they disconnect from social media. This FoMO drives adolescents to remain online, often late into the night, despite an awareness of the potential negative consequences for their sleep and overall well-being.

Beyond the immediate disruption of sleep, the theme of psychological and physical health consequences underscores the broader impact of inadequate sleep resulting from social media use. The review found that insufficient sleep contributes to increased levels of anxiety, depressive symptoms, and daytime fatigue. These consequences, in turn, can significantly compromise overall adolescent well-being, affecting academic performance, social relationships, and emotional regulation. These negative outcomes were particularly prominent in studies such as Woods and Scott (2016), Azhari et al. (2022), and Mireku et al. (2019), which identified a strong association between poor sleep hygiene, often driven by social media engagement, and heightened anxiety and emotional dysregulation in adolescents. This finding highlights the interconnectedness of sleep, mental health, and social media behavior in this age group.

4.3.1.2 Expectations vs. Outcomes

The results of the systematic literature review largely aligned with the expectations established by existing literature, particularly concerning the well-documented association between screen time, especially before bed, and poor sleep outcomes. This consistency reinforces the robustness of the existing body of research and strengthens the confidence in the findings of this review. However, the review also yielded some more nuanced and, in some cases, surprising findings that warrant further discussion.

One such finding was the variable and often inconsistent impact of parental controls and digital curfews on mitigating the negative effects of social media on adolescent sleep. While parental guidance and monitoring are frequently promoted as a protective factor against excessive or problematic social media use, the effectiveness of these interventions appeared to vary considerably across the studies included in the review. For instance, Mireku et al. (2019) indirectly suggest that a lack of parental supervision—evident in adolescents using devices in darkness—is associated with poorer sleep outcomes, highlighting the potential role of family oversight even in the absence of explicit rules. Authoritative parenting styles, characterized by warmth, clear communication, and consistent enforcement of rules, were more likely to be associated with positive outcomes, while authoritarian or permissive parenting styles were less effective.

Furthermore, some studies included in the review suggested that adolescents with strong peer networks and high levels of peer affiliation were often more influenced by perceived social norms and peer pressure regarding social media use than by parental intervention. This highlights the complex interplay between peer influence and parental influence in shaping digital behavior during adolescence. The desire to conform to peer norms, maintain social connections, and participate in online social activities can sometimes override the influence of parental rules, particularly as adolescents strive for greater autonomy and independence. This finding underscores the importance of considering the social context of social media use when developing interventions or guidelines.

4.3.1.3 Alternative Explanations

While the systematic literature review demonstrated a clear and statistically significant association between social media use and poor sleep outcomes in UK adolescents, it is crucial to acknowledge that establishing definitive causality remains a complex challenge. Correlation does not necessarily imply causation, and it is essential to consider potential alternative explanations and confounding factors that might contribute to the observed relationship.

Several alternative explanations could account for the observed association. Other contributing factors to poor sleep in adolescents could include academic stress and pressure to perform well in school, underlying mental health issues that are unrelated to social media use (although potentially exacerbated by it), and various lifestyle habits that are known to interfere with sleep, such as excessive caffeine consumption, irregular sleep schedules, or late-night studying. These factors can interact in complex ways, making it difficult to isolate the specific impact of social media.

Moreover, a significant limitation of many studies, and one that was reflected in several of the studies included in this review, is the reliance on self-reported data to assess both social media usage patterns and sleep quality. Self-report measures are susceptible to various biases and inaccuracies. For example, adolescents might underreport their screen time due to social desirability bias (wanting to present themselves in a positive light) or overestimate their sleep duration due to inaccurate recall. These biases can introduce measurement error and potentially skew the interpretation of the findings. Future research should strive to incorporate more objective measures of both social media use and sleep, such as data collected from wearable devices or app usage tracking software, to enhance the validity and reliability of the results.

4.3.2 Comparison with Previous Literature

The findings of this systematic literature review are largely consistent with the conclusions drawn from other high-quality systematic reviews and large-scale studies that have investigated the relationship between social media use and adolescent sleep. This convergence of findings across multiple studies and different methodologies strengthens the confidence in the overall conclusions.

For example, Hisler, Twenge, and Krizan (2019) also found a significant correlation between screen time and short sleep duration among adolescents. Importantly, their study highlighted that the disruptive effects on sleep may vary depending on the specific type of media consumed. Social media use, in particular, was found to be more strongly associated with sleep problems compared to other forms of screen time, such as watching television or playing video games. This suggests that the interactive and socially engaging nature of social media may be particularly stimulating and disruptive to sleep.

Similarly, Kelly et al. (2018), utilizing data from the UK Millennium Cohort Study, a large-scale longitudinal study, emphasized the strong link between excessive screen use and depressive symptoms and reduced overall well-being in adolescents. This finding reinforces the broader negative consequences of excessive digital engagement, of which sleep disruption is a significant component. The longitudinal nature of the Millennium Cohort Study provides valuable insights into the long-term impact of screen use on adolescent development.

This review also aligns with the nuanced conclusions of Orben and Przybylski (2020), who advocated for more sophisticated and methodologically rigorous approaches to studying adolescent technology engagement. While they cautioned against overstating the magnitude of the negative effects of digital media, they acknowledged that certain factors can amplify the impact on sleep. These factors include the timing of use, particularly bedtime use, and individual differences in susceptibility to negative effects, such as a heightened propensity for FoMO. Their work highlights the importance of considering contextual factors and individual vulnerabilities when examining the relationship between social media and sleep.

In contrast, some literature proposes a more balanced view, suggesting that not all social media use is harmful. For example, engaging in positive social interactions or receiving emotional support online can potentially buffer stress. However, these benefits are often overshadowed by the negative consequences associated with compulsive or late-night use.

The results also reinforce theoretical frameworks such as the **Displacement Hypothesis**, which posits that time spent on media displaces essential behaviors such as sleep. Additionally, the **Arousal Theory** helps explain how stimulating content can delay sleep onset, while **Social Comparison Theory** sheds light on how browsing curated online profiles may contribute to anxiety and poor emotional regulation.

4.3.3 Implications of Findings

4.3.3.1 Theoretical Implications

The findings of this systematic literature review add significant empirical weight to theoretical frameworks that emphasize the potentially disruptive role of digital media, and specifically social media, in various aspects of adolescent development. The evidence presented in the review strongly supports the notion that social media usage, particularly when it occurs close to bedtime, has a detrimental impact on not only biological processes related to sleep, such as circadian rhythm regulation and melatonin production, but also on psychological outcomes, including increased anxiety and depressive symptoms.

Furthermore, the findings of this review challenge overly simplistic and dichotomous views of digital media as being either inherently harmful or uniformly beneficial. Instead, they underscore the importance of adopting a more nuanced and contextualized perspective. The review highlights that factors such as the specific context of social media use, the timing of use (especially proximity to bedtime), and individual differences in vulnerability and resilience are all crucial in understanding the complex and multifaceted impact of social media on adolescent sleep and overall well-being. This complexity necessitates a move beyond simple pronouncements about "good" or "bad" screen time.

4.3.3.2 Practical Implications

For healthcare professionals, these findings highlight the need for **routine screening** of sleep patterns and digital behaviors during adolescent health assessments. Nurses, school counselors, and GPs could incorporate questions about screen time and sleep hygiene into regular check-ups.

For parents and caregivers, the findings underscore the importance of setting **realistic digital boundaries**. Interventions such as establishing digital curfews, promoting screen-free zones, and fostering open communication about online habits can help mitigate the impact of nighttime social media use.

In schools, **awareness programs** could address the link between digital behavior and health. These programs should teach time management, self-regulation, and the

consequences of poor sleep. Adjusting school start times to accommodate adolescent sleep cycles could also be considered.

For policymakers, there is a clear need for **updated digital use guidelines** tailored to the adolescent population. These should be informed by recent evidence and consider factors like media type, duration, and time of use. Technology developers may also be encouraged to design features that support healthy digital habits (e.g., night mode, screen time reminders).

4.3.3.3 Future Research Directions

This systematic literature review has identified several important areas for future research to further enhance our understanding of the complex relationship between social media use and adolescent sleep.

First, there is a clear need for more longitudinal studies that examine the long-term effects of social media use on adolescent sleep patterns, mental health, and overall well-being. Longitudinal designs allow researchers to track changes over time and establish stronger evidence for causal relationships. These studies should follow adolescents over several years, monitoring their social media use, sleep patterns, and health outcomes.

Second, future research should strive to incorporate more objective measures of both social media use and sleep. This can be achieved through the use of wearable devices (e.g., actigraphy) to monitor sleep patterns and app tracking software to record actual social media usage. Employing objective measures can help to reduce the reliance on self-report data and minimize the potential for bias and inaccuracies.

Third, researchers should explore how intersectional factors, such as gender, ethnicity, socioeconomic status, disability, and sexual orientation, influence the relationship between social media and sleep. Adolescents from different backgrounds may experience the effects of social media differently, and it is important to understand these variations to develop targeted interventions.

Finally, future studies should move beyond simply quantifying the amount or frequency of social media use and begin to explore the quality and nature of social media interactions. For example, research should investigate whether positive social interactions online have different effects on sleep compared to negative experiences

such as cyberbullying or social comparison. A more nuanced understanding of the content and context of social media use is needed.

4.3.4 Limitations of the Review

While this systematic literature review provides valuable insights into the relationship between social media use and sleep patterns among UK adolescents, it is important to acknowledge several limitations that may affect the interpretation and generalizability of the findings.

Firstly, the limited number of included studies (n=10) restricts the breadth and depth of the analysis. Although all studies included in the review met the predetermined quality criteria, the relatively small sample size may not fully capture the diverse range of adolescent experiences and social media use patterns within the UK. A larger sample size would have provided a more comprehensive picture.

Secondly, the findings may suffer from limited generalizability, given the review's focus on UK-based studies and English-language publications. The digital habits and cultural norms influencing sleep may differ across countries and contexts.

Thirdly, most studies relied on self-reported data, which may introduce inaccuracies due to recall bias or social desirability effects. Adolescents may underreport screen time or overstate sleep quality, affecting the validity of the findings.

Furthermore, this review did not account for other influential variables, such as parental sleep habits, screen time for academic purposes, or pre-existing mental health conditions. These factors may interact with social media use in complex ways and should be explored in future studies.

Lastly, the use of thematic analysis, while a systematic and widely accepted qualitative method, inherently involves a degree of subjective interpretation on the part of the researcher. Although steps were taken to ensure the reliability and validity of the analysis, such as having multiple researchers independently code the data and reach consensus on themes, it is important to acknowledge that different researchers may categorize and interpret themes slightly differently. This is an inherent limitation of qualitative research.

4.3.5 Conclusion

The section 4.3 has critically examined and synthesized the findings of a systematic literature review that explored the relationship between social media use and sleep patterns among adolescents in the UK. The evidence consistently demonstrates that frequent, prolonged, and, most critically, nighttime engagement with social media is associated with a range of negative consequences for adolescent sleep, including reduced sleep duration, poorer sleep quality, and delayed sleep onset. These findings have important implications for theory, practice, and future research, and they underscore the need for a multi-faceted approach to addressing the complex interplay between social media and adolescent well-being.

Chapter 5: Conclusion and Recommendations

5.1 Conclusion

This systematic literature review set out to explore the extent to which social media use affects the normal sleeping patterns of adolescents aged 10–19 in the United Kingdom. With increasing digital engagement among youth, particularly during late hours, this research aimed to assess the complex interplay between screen time, psychological well-being, content exposure, and sleep quality. Ten peer-reviewed studies published between 2014 and 2024 were examined using thematic analysis, and five major themes were identified: screen time and blue light exposure; content engagement and sleep quality; psychological stressors linked to social media; demographic variations in usage; and coping mechanisms or interventions.

The evidence demonstrates a strong association between excessive social media use and disruptions to sleep latency, sleep duration, and sleep quality in adolescents. One of the most significant findings is that prolonged screen exposure—particularly at night—delays melatonin secretion due to blue light, directly affecting circadian rhythm. Additionally, the nature of the content consumed (e.g., emotionally charged posts, cyberbullying, or peer pressure) stimulates emotional arousal, which impedes the body's natural preparation for rest.

Psychological mechanisms also play a substantial role in sleep disturbance. Adolescents with heightened fear of missing out (FoMO), social anxiety, or low self-esteem were more likely to engage in compulsive night-time scrolling. This behavioral pattern fosters a cycle of mental stimulation and disrupted sleep. Studies further revealed gender-based and socio-economic differences in how adolescents are affected. For instance, girls were more susceptible to body image concerns and peer comparisons, while boys tended to be more affected by gaming or competitive interactions online. Additionally, adolescents from disadvantaged backgrounds experienced compounded issues due to less parental regulation and increased reliance on smartphones as a form of escapism.

Despite the growing concern, some adolescents demonstrated resilience or adopted coping mechanisms. These included setting app time limits, using blue light filters, and following digital detox routines. However, these self-imposed strategies were not

consistently applied and were often reactive rather than proactive. The reviewed literature indicates that interventions remain fragmented, lacking coordinated policy frameworks or educational reinforcement.

In summary, the evidence confirms that social media usage—especially when unregulated or emotionally triggering—can negatively impact adolescent sleep health. The findings underscore the need for holistic interventions that span the spheres of family, education, healthcare, and policy. This study contributes to existing scholarship by offering a UK-focused lens and highlighting actionable areas for improvement in digital health promotion, particularly for adolescents navigating a digitally saturated environment.

5.2 Recommendations

Drawing upon the findings of this systematic literature review, a series of targeted and evidence-informed recommendations are proposed to address the adverse effects of social media use on adolescent sleep patterns in the UK. These recommendations are directed at key stakeholders—healthcare professionals, educational institutions, parents and caregivers, policymakers, and researchers—with the aim of promoting healthy digital engagement and fostering improved sleep hygiene among adolescents.

5.2.1 Recommendations for Healthcare Practitioners

- **Routine Screening for Digital-Related Sleep Issues**: Healthcare professionals, particularly in adolescent health settings, should integrate routine screening questions about social media usage, screen time habits, bedtime digital activities, and sleep quality into general health assessments. This would facilitate early identification of at-risk individuals.
- **Incorporation of Digital Health Education**: Clinics should include structured counselling on the physiological and psychological implications of excessive digital use. Emphasis should be placed on blue light exposure, melatonin suppression, anxiety induced by online content, and sleep disturbances linked to late-night social media scrolling.
- **Cross-Sector Collaboration**: Health practitioners should collaborate with schools, mental health services, and parent networks to deliver co-educational

programmes—including webinars, school visits, and resource leaflets—promoting awareness and prevention of social media-induced sleep disruption.

- **Timely Referral Pathways**: Adolescents presenting with chronic sleep issues despite behavioural interventions should be referred to appropriate services, such as paediatric sleep specialists, child psychologists, or digital wellness counsellors for comprehensive assessment and treatment.

5.2.2 Recommendations for Educational Institutions

- **Curriculum Integration of Digital Wellbeing**: Schools should embed digital literacy and mental health content into the PSHE curriculum. Lessons should focus on algorithmic manipulation, addictive design, and the psychological effects of reward-based scrolling on circadian regulation.
- **Digital Use Regulation in School Hours**: Limiting non-academic digital device usage during classroom hours and promoting tech-free breaks can help reinforce boundaries between learning and leisure.
- **Student-Led Peer Advocacy**: Initiatives led by students—such as digital hygiene clubs, awareness posters, or student podcasts—can serve as effective tools in encouraging responsible digital behaviour and promoting peer-to-peer support.
- **Flexible Timetabling**: Secondary schools could explore shifting start times slightly later in the morning to align more closely with adolescents' biological sleep-wake rhythms, enhancing both sleep quantity and academic alertness.

5.2.3 Recommendations for Parents and Caregivers

- **Establishment of Digital Curfews**: Implementing device-free periods at least one hour before bedtime, particularly on school nights, can significantly improve sleep latency and duration. Co-creating digital curfews with adolescents promotes shared responsibility and adherence.
- **Parental Modelling of Healthy Behaviours**: Parents and caregivers should model responsible screen habits, such as avoiding phone use during meals and in the evening, to reinforce positive norms within the household.
- **Fostering Open Communication**: Engaging in empathetic dialogue about digital experiences—rather than enforcing strict prohibitions—helps adolescents feel supported. Discussing the emotional and physiological impacts of digital use encourages self-awareness and behavioural change.

- **Encouragement of Screen-Free Alternatives**: Promoting offline evening routines, such as reading, journaling, or relaxation techniques, can support natural melatonin release and prepare the body for restful sleep.

5.2.4 Recommendations for Policymakers

- **Platform Design Regulations**: Collaborations between regulatory bodies and tech companies should lead to platform features such as bedtime reminders, night modes, and reduced algorithmic engagement during evening hours, especially for adolescent users.
- **Mandated Digital Literacy Education**: Governments should enforce curriculum standards requiring comprehensive education on digital wellbeing, sleep hygiene, and responsible social media use in all secondary schools.
- **National Media Campaigns**: Public health agencies should launch youth-targeted campaigns via social media, television, and schools to raise awareness of the link between screen time and sleep health.
- **Investment in Intervention Programmes**: Financial support should be allocated to pilot and scale interventions such as digital detox initiatives, sleep tracking technology, and school-based wellness workshops to reduce excessive screen time.
- **Nighttime Content Restrictions**: Enforcing age-appropriate content algorithms and restricting late-night push notifications or auto-play features can help reduce sleep-disruptive digital engagement.

5.2.5 Recommendations for Future Research

- **Greater Inclusion of Diverse Populations**: Future studies should prioritise diverse representation across socioeconomic, ethnic, geographic, and cultural lines to enhance the generalisability of findings.
- **Evaluation of Intervention Effectiveness**: Research should focus on assessing the success of real-world interventions, such as school start-time adjustments, app-based mindfulness tools, and structured family digital contracts.
- **Assessment of Emerging Platforms**: Given the rapid evolution of platforms such as TikTok, Discord, and BeReal, researchers must remain current in evaluating how these influence sleep behaviours and digital addiction tendencies.

- **Mixed-Methods Approaches**: Combining quantitative tools (e.g., actigraphy, screen-time tracking) with qualitative insights (e.g., interviews, focus groups) would yield more nuanced and context-rich understandings of adolescent digital engagement.
- **Longitudinal and Regional Comparisons**: Long-term research comparing urban and rural contexts can reveal environmental, cultural, and infrastructural differences in how digital use affects sleep, supporting more targeted policy interventions.

By implementing these multi-level recommendations, stakeholders can work collectively to reduce the negative consequences of social media on adolescent sleep. These actions can foster healthier digital environments, promote positive sleep hygiene, and support the holistic well-being of young people across the UK.

5.3 Final Reflection

This review contributes to the growing body of public health research concerned with the intersection of digital behavior and adolescent well-being. While social media offers opportunities for connection, self-expression, and education, its unregulated and excessive use poses substantial threats to adolescents' sleep health. The research highlights that these effects are not merely biological or technological, but also social and psychological—requiring multi-level solutions.

Moving forward, a collaborative and proactive approach involving families, schools, healthcare providers, technology developers, and policymakers is vital. Adolescents are not merely passive users of technology; they are also capable of self-regulation and advocacy when empowered with the right knowledge and tools. Promoting a culture of digital responsibility and sleep consciousness is no longer optional but imperative in safeguarding adolescent health in a hyperconnected world.

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Appendix 1: Characteristics of My Selected 10 Articles

Article No.	Author(s) and Year	Title of Study	Journal Name	Volume	Country of Study	Study Design/ Methodology	Aim Of Study	Sample Size and Age Ranges	Results/Outcomes	Strengths	Limitations	Relevance to Research Topic
1	Azhari et al., 2022	Social media use in female adolescents: Associations with anxiety, loneliness, and sleep disturbances	Acta Psychologica	229	United Kingdom	Cross-sectional quantitative study using surveys/questionnaires.	To investigate the associations between social media use (across platforms and frequency) and mental health outcomes—specifically anxiety, loneliness, and sleep disturbances—in female adolescents.	41 female adolescents, aged 16 to 19 (M = 17.83, SD = 0.83).	Participants with Social Media Disorder (SMD) reported significantly higher loneliness and less sleep, especially on weekdays. No significant association between SMD and anxiety. Frequent Facebook posting was associated with poorer sleep quality. 27% had SMD; 73% were poor sleepers.	Focus on platform-specific usage. Use of validated instruments (e.g., Social Media Disorder Scale, PSQI, Beck Anxiety Inventory-Trait). Timely relevance to adolescent health.	Small sample size. Self-reported measures (potential bias). Cross-sectional design limits causal inference. Female-only sample limits generalizability.	Highly relevant. The study directly examines how social media affects sleep (and mental health) in adolescents.
2	Bin Eid et al., 2022	Characteristics of Sleep Patterns in Adolescents: Comparisons between Saudi Arabia and the UK	Healthcare	10	Saudi Arabia and the United Kingdom	Cross-sectional comparative study using validated questionnaires.	To characterise sleep patterns among adolescents in Saudi Arabia and compare them with UK adolescents; and to examine the relationship between sleep and social media usage.	UK: 58 adolescents (12.1–17.1 years).	Mean weekday sleep duration for UK adolescents: 5 hours 42 minutes. Mean weekend sleep duration for UK adolescents: 9 hours 6 minutes. Increased social media use was significantly associated with reduced sleep	First comparative study using age-appropriate validated sleep questionnaires for adolescents in Saudi Arabia and the UK. Included cultural	Relatively small, urban-based sample size; results may not generalize to all adolescents. Reliance on self-reported data may introduce bias. Cross-sectional	Highly relevant. The study directly investigates the impact of social media usage on sleep duration and quality in adolescent

									duration in UK adolescents.	insights and detailed subgroup analyses.	design cannot establish causality.	s from the UK.
3	Hisler, Twenge and Krizan, 2019	Associations between screen time and short sleep duration among adolescents varies by media type: evidence from a cohort study	Sleep Medicine	66	United Kingdom	This study used data from the 2015 wave of the Millennium Cohort Study, a large, nationally representative cohort study.	The study aimed to examine how different uses of screen media are linked to sleep, and whether these associations were accounted for or differed across chronotype.	Data were from 11,361 children aged 13 to 15 from the United Kingdom. The average age was 13.77 years (SD=0.45) and the sample was 50% female.	Heavy use of screen media was associated with shorter sleep duration, longer sleep latency, and more mid-sleep awakenings.The strongest associations emerged for using screen media for social media or internet use. Heavy social media users slept nearly an hour less than non-users and were almost four times more likely to have shortened sleep duration on school nights.	The study utilized a large, nationally representative sample, which enhances the generalizability of the findings.	The study relied on self-reported data for screen media use and sleep patterns, which may introduce recall bias.	This study is highly relevant as it directly investigates the associations between various types of screen media use (social media, internet) and multiple dimensions of sleep impairment (duration, latency, awakenings) among adolescents.
4	Scott and Woods, 2018	Fear of missing out and sleep: Cognitive behavioural factors in adolescents' nighttime social media use.	Journal of Adolescence	68	Scotland, UK	This study used questionnaire measures and path analysis to evaluate a model of	The study aimed to examine links between adolescents' social media habits, fear of missing out, and sleep outcomes, using path analysis to evaluate a model of	101 participants (66% female) completed the self-report online questionnaires. Participants were aged 12-18 years, with a mean age of 14 years. The	Nighttime social media use was associated with later bedtimes, increased pre-sleep cognitive arousal, longer sleep onset latency, and shorter sleep duration. Fear of missing out (FOMO)	The study identified specific cognitive and behavioural mechanisms linking social media use and sleep. It proposes a model that can inform	Small sample size (N=101) precluded more complex model testing, such as including age and gender.	This study is highly relevant as it explores the underlying cognitive and behavioural factors (specifically Fear of Missing

						proposed underlying mechanisms linking social media habits, fear of missing out (FOMO), and sleep outcomes. The research took place at a UK secondary school, with pupils completing an online survey.	proposed underlying mechanisms.	age breakdown was: 46% were 12-13 years; 32% were 14-15 years; 22% were 16-18 years.	predicted shorter sleep duration via two distinct mechanisms: Behavioural level: By driving late night social media use, which delays bedtimes. Cognitive level: By increasing pre-sleep cognitive arousal, thus further delaying sleep onset.	future interventions.		Out) that contribute to adolescents' nighttime social media use and its subsequent negative impact on sleep duration, bedtime, and sleep onset latency.
5	Scott et al., 2019	Social media use and adolescent sleep patterns: cross-sectional findings from the UK millennium cohort study.	BMJ Open	9	United Kingdom	This was a cross-sectional study that used secondary analysis of data from the UK Millennium Cohort Study.	The study aimed to examine the associations between social media use and adolescent sleep patterns using cross-sectional data.	Data from 11,872 adolescents (aged 13–15 years) were used in analyses.	Average social media use was 1 to <3 hours per day (31.6% of the sample). 33.7% were low users (<1 hour), 13.9% were high users (3 to <5 hours), and 20.8% were very high users (5+ hours). Girls reported spending more time on social media than boys.	Provides a current normative profile of social media use and sleep in UK adolescents.	Uses self-reported measures of social media use and sleep patterns.	This study is highly relevant as it provides a comprehensive, data-driven profile of social media use and its association with various

									Overall, heavier social media use was associated with poorer sleep patterns, controlling for covariates.			sleep parameters in a large, representative sample of UK adolescents.
6	Scott et al., 2019	Identifying drivers for bedtime social media use despite sleep costs: The adolescent perspective	Sleep Health	5	United Kingdom (Scotland)	Qualitative study using focus groups and reflexive thematic analysis.	To explore adolescent perspectives on the cognitive, emotional, and social motivations for bedtime social media use and its perceived impact on sleep.	24 adolescents (12 male, 12 female), aged 11–17 years (mean age = 14.3), from a large Scottish secondary school.	Two major themes emerged: 1. Missing Out – Adolescents feared being excluded from online and offline peer interactions, causing bedtime rumination and delayed sleep. 2. Norms and Expectations – Perceived social expectations to stay online and respond promptly led to feelings of obligation and guilt if disengaging, further delaying sleep.	In-depth qualitative insight into adolescents' own experiences.Thematic analysis revealed social and emotional drivers often overlooked in quantitative studies. Highlights the psychosocial context of sleep disruption.	Small sample size from a single school limits generalizability. Subjective self-reported data may be affected by recall or social desirability bias.	Highly relevant. The study provides a deep understanding of why adolescents engage in bedtime social media use, complementing my systematic review's focus on how it impacts sleep quality and duration among UK teenagers.
7	Woods and Scott, 2016	#Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression	Journal of Adolescence	51	United Kingdom (Scotland)	Cross-sectional quantitative study using validated self-report	To examine how overall social media use, nighttime-specific use, and emotional investment in social media relate to	467 Scottish secondary school pupils, aged 11–17 years.	35% were classified as poor sleepers. Nighttime-specific social media use and emotional investment significantly	Large adolescent sample. Used validated tools for sleep (PSQI), anxiety and depression (HADS), and	Cross-sectional design prevents causal conclusions.	Highly relevant. This study directly explores the timing and psychological impact

		and low self-esteem			questionnaires	adolescents' sleep quality, self-esteem, anxiety, and depression.		predicted poorer sleep quality. Emotional investment was strongly associated with higher anxiety and depression and lower self-esteem.	self-esteem (RSES).		of social media use on adolescent sleep quality, which aligns closely with my dissertation.
8	Kelly et al., 2018	Social Media Use and Adolescent Mental Health: Findings From the UK Millennium Cohort Study	EClinicalMedicine	6	United Kingdom	Cross-sectional analysis using data from the UK Millennium Cohort Study; multivariate regression and path analysis were used to explore associations and mediating factors	To assess the relationship between social media use and depressive symptoms in adolescents, and to explore explanatory pathways through sleep, online harassment, self-esteem, and body image.	10,904 adolescents aged 14 years.	Higher social media use was significantly associated with more depressive symptoms, especially in girls.	Large, nationally representative sample.	Cross-sectional design limits causal interpretation. Self-reported data on social media use and sleep may be biased.	Highly relevant. The study provides direct evidence linking high social media use to poor sleep and mental health outcomes in UK adolescents.
9	Orben and Przybylski, 2020	Teenage sleep and technology engagement across the week	PeerJ	8	United Kingdom	Quantitative cross-sectional study using secondary data from the UK Millenniu	To investigate how digital technology use (overall and before bedtime) relates to adolescent sleep onset and duration across weekdays and	11,884 adolescents aged 13–15 years (retrospective self-report); 4,642 completed time-use diaries.	A small negative association between digital engagement and sleep: median β = −0.06 (weekdays), β = −0.03 (weekends). Weekday	Large, nationally representative UK sample. Innovative use of Specification Curve Analysis to	Correlational design, so no causality can be inferred. Measurement limitations (e.g. assumptions in time diary	Highly relevant. This study directly evaluates digital engagement and adolescent sleep in a

						m Cohort Study; employed retrospective self-reports, time-use diaries, and Specification Curve Analysis	weekends, and to compare different measurement approaches.		technology use had a slightly stronger negative effect on sleep than weekend use.	test robustness.	interpretation, coarse sleep timing scales).	UK sample, focusing on screen time, timing, and measurement issues.
10	Mireku et al., 2019	Night-time screen-based media device use and adolescents' sleep and health-related quality of life	Environment International	124	United Kingdom	Cross-sectional study using baseline data from the SCAMP (Study of Cognition Adolescents and Mobile Phones) cohort.	To examine associations between night-time use of screen-based media devices (SBMDs) within one hour of sleep—differentiating use in lit vs. dark rooms—and sleep outcomes and health-related quality of life among adolescents.	6,616 adolescents aged 11–12 years from 39 schools in and around London.	Over 70% reported using at least one SBMD at night.	Large and diverse sample.	Cross-sectional design limits causal inference. Self-reported measures may introduce recall or social desirability bias.	This study provides robust UK-based evidence linking night-time social media/device use to sleep disruption and reduced well-being in adolescents.

Appendix 2: Quality Assessment (CASP)

ID	Author	Outcome Question1	Outcome Question2	Outcome Question 3	Outcome Question4	Outcome Question5	Outcome Question6	Outcome Question 7	Outcome Question 8	Outcome Question9	Outcome Question10
1	Azhari et al., 2022	YES The study clearly states its research aims.	YES The chosen methodology suits the research question, indicating methodological appropriateness.	YES The design effectively supports the aim and data requirements of the study.	YES The recruitment approach was suitable for the target group and well-executed.	YES Data was collected using validated tools and appropriate procedures.	YES The study setting minimized bias and respected the participant–researcher dynamic.	YES Informed consent and confidentiality were handled in line with ethical standards.	YES The analysis was thorough and transparently described.	YES Results are well-explained, supported by data, and easy to interpret.	YES The study offers important insights and has real-world implications for policy and practice.
2	Bin Eid et al., 2022	YES The study clearly states its research aims.	YES The chosen methodology suits the research question, indicating methodological appropriateness.	YES The design effectively supports the aim and data requirements of the study.	YES The recruitment approach was suitable for the target group and well-executed.	YES Data was collected using validated tools and appropriate procedures.	YES The study setting minimized bias and respected the participant–researcher dynamic.	YES Informed consent and confidentiality were handled in line with ethical standards.	YES The analysis was thorough and transparently described.	YES Results are well-explained, supported by data, and easy to interpret.	YES The study offers important insights and has real-world implications for policy and practice.
3	Hisler, Twenge and Krizan, 2019	YES The study clearly states its research aims.	YES The chosen methodology suits the research question, indicating methodological appropriateness.	YES The design effectively supports the aim and data requirements of the study.	YES The recruitment approach was suitable for the target group and well-executed.	YES Data was collected using validated tools and appropriate procedures.	YES The study setting minimized bias and respected the participant–researcher dynamic.	YES Informed consent and confidentiality were handled in line with ethical standards.	YES The analysis was thorough and transparently described.	YES Results are well-explained, supported by data, and easy to interpret.	YES The study offers important insights and has real-world implications for policy and practice.
4	Scott and Woods, 2018	YES The study clearly states its	YES The chosen methodology suits the research question, indicating	YES The design effectively supports the aim and data	YES The recruitment approach was suitable	YES Data was collected using validated tools and	YES The study setting minimized bias and	YES Informed consent and confidentiality were handled in	YES The analysis was thorough and transpare	YES Results are well-explained, supported by	YES The study offers important insights and has

		researc h aims.	methodologi cal appropriaten ess.	requireme nts of the study.	for the target group and well-execute d.	appropri ate procedur es.	respecte d the participa nt–researcher dynamic.	line with ethical standards.	ntly described .	data, and easy to interpret .	real-world implicatio ns for policy and practice.
5	Scott et al., 2019	YES The study clearly states its researc h aims.	YES The chosen methodology suits the research question, indicating methodologi cal appropriaten ess.	YES The design effectively supports the aim and data requireme nts of the study.	YES The recruitm ent approac h was suitable for the target group and well-execute d.	YES Data was collected using validated tools and appropri ate procedur es.	YES The study setting minimize d bias and respecte d the participa nt–researcher dynamic.	YES Informed consent and confidenti ality were handled in line with ethical standards.	YES The analysis was thorough and transpare ntly described .	YES Results are well-explaine d, support ed by data, and easy to interpret .	YES The study offers important insights and has real-world implicatio ns for policy and practice.
6	Scott et al., 2019	YES The study clearly states its researc h aims.	YES The chosen methodology suits the research question, indicating methodologi cal appropriaten ess.	YES The design effectively supports the aim and data requireme nts of the study.	YES The recruitm ent approac h was suitable for the target group and well-execute d.	YES Data was collected using validated tools and appropri ate procedur es.	YES The study setting minimize d bias and respecte d the participa nt–researcher dynamic.	YES Informed consent and confidenti ality were handled in line with ethical standards.	YES The analysis was thorough and transpare ntly described .	YES Results are well-explaine d, support ed by data, and easy to interpret .	YES The study offers important insights and has real-world implicatio ns for policy and practice.
7	Woods and Scott, 2016	YES The study clearly states its researc h aims.	YES The chosen methodology suits the research question, indicating methodologi cal appropriaten ess.	YES The design effectively supports the aim and data requireme nts of the study.	YES The recruitm ent approac h was suitable for the target group and well-execute d.	YES Data was collected using validated tools and appropri ate procedur es.	YES The study setting minimize d bias and respecte d the participa nt–researcher dynamic.	YES Informed consent and confidenti ality were handled in line with ethical standards.	YES The analysis was thorough and transpare ntly described .	YES Results are well-explaine d, support ed by data, and easy to interpret .	YES The study offers important insights and has real-world implicatio ns for policy and practice.
8	Kelly et al., 2018	YES The study clearly states its researc h aims.	YES The chosen methodology suits the research question, indicating methodologi	YES The design effectively supports the aim and data requireme	YES The recruitm ent approac h was suitable for the	YES Data was collected using validated tools and appropri	YES The study setting minimize d bias and respecte	YES Informed consent and confidenti ality were handled in line with	YES The analysis was thorough and transpare ntly	YES Results are well-explaine d, support ed by data,	YES The study offers important insights and has real-

			cal appropriateness.	nts of the study.	target group and well-executed.	ate procedures.	d the participant–researcher dynamic.	ethical standards.	described.	and easy to interpret.	world implications for policy and practice.
9	Orben and Przybylski, 2020	YES The study clearly states its research aims.	YES The chosen methodology suits the research question, indicating methodological appropriateness.	YES The design effectively supports the aim and data requirements of the study.	YES The recruitment approach was suitable for the target group and well-executed.	YES Data was collected using validated tools and appropriate procedures.	YES The study setting minimized bias and respected the participant–researcher dynamic.	YES Informed consent and confidentiality were handled in line with ethical standards.	YES The analysis was thorough and transparently described.	YES Results are well-explained, supported by data, and easy to interpret.	YES The study offers important insights and has real-world implications for policy and practice.
10	Mireku et al., 2019	YES The study clearly states its research aims.	YES The chosen methodology suits the research question, indicating methodological appropriateness.	YES The design effectively supports the aim and data requirements of the study.	YES The recruitment approach was suitable for the target group and well-executed.	YES Data was collected using validated tools and appropriate procedures.	YES The study setting minimized bias and respected the participant–researcher dynamic.	YES Informed consent and confidentiality were handled in line with ethical standards.	YES The analysis was thorough and transparently described.	YES Results are well-explained, supported by data, and easy to interpret.	YES The study offers important insights and has real-world implications for policy and practice.