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Taking interest in versus disregarding sleep information: Qualitative study
exploring the adolescent perspective

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Abstract

Adolescents in Aotearoa New Zealand (AoNZ) face unique biological, societal, and environmental challenges in obtaining sufficient sleep, which is essential for their overall health and well-being. Within AoNZ there is limited qualitative research exploring adolescent perspectives on sleep and their sleep behaviours. This study explored how adolescents engage with sleep-related messaging, aiming to understand their access to, interpretation of, and the impact of such information on their sleep practices. Using a qualitative design, three semi-structured focus groups were conducted with 19 adolescents (13 females, 6 males) from two schools in AoNZ. The analysis constructed two key themes: *Taking interest in sleep information* and *Disregarding sleep information*, which reflect the dynamic and individualised relationship adolescents have with sleep-related messaging.

Participants reported engaging with information from both digital and real-world sources, with personal relevance and source types influencing their engagement with and acceptance of advice. Advice that resonated with their lived realities, particularly around academic and athletic commitments, as well as messaging on formats such as social media platforms were more likely to capture their interest. However, adolescents frequently dismissed messages perceived as impractical, irrelevant, or contradictory. This scepticism usually stemmed from conflicting advice or a lack of actionable strategies. While some participants demonstrated curiosity and trialled sleep advice, these efforts were generally short-lived due to perceived ineffectiveness and barriers such as school schedules, societal norms, and competing priorities.

This study emphasises the interplay between personal agency, societal expectations, and environmental constraints, providing critical insights into the factors that may shape adolescent engagement with sleep health messaging. The small sample size limits the diversity of perspectives captured however this study offers initial insights on the context of

adolescent sleep in AoNZ. It lays a foundation for future work exploring the nuances of engagement across different adolescent sub-groups. The findings have broader implications for the development of targeted, contextually relevant health promotion interventions to better align with adolescents' complex realities. These interventions have the potential to support adolescents navigate the challenges of maintaining healthy sleep practices while addressing structural and systemic barriers, ultimately contributing to improved adolescent sleep health outcomes.

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CHAPTER 1: Introduction

Background

Research demonstrates that sleep plays an essential role in health outcomes and quality of life, and its importance is being increasingly recognised (Knutson, 2022; Wickham & Amarasekara, 2020). Adolescence is a developmental stage of life during which sleep has a vital role in emotional regulation, cognitive development, and overall well-being (Beebe et al., 2010; Owens et al., 2014; Shochat et al., 2014; Short et al., 2020). During this period of life, adolescents face unique biological and social challenges that make it difficult to obtain adequate sleep (Crowley et al., 2007; Hagenauer et al., 2009; Tarokh et al., 2019). Adolescent sleep disturbances have been increasingly reported and explored in academic literature over the last 20 years (Owens et al., 2014). In AoNZ, adolescents frequently get less sleep than the recommended duration for their age group (Dorofaeff & Denny, 2006; Galland et al., 2017; Smith et al., 2020). Additionally, in AoNZ, there are ethnic inequities in adolescent health and well-being (Simon-Kumar et al., 2022; Sutcliffe et al., 2023), including mental health. Adolescents in AoNZ have relatively high suicide rates (UNICEF Innocenti, 2020), which appear to be getting worse over time (Fleming et al., 2020). Research has demonstrated that sleep is an important modifiable feature of mental health in adolescents (Bruce et al., 2017). Therefore, given sleep's association with many health outcomes, supporting healthy sleep in the adolescent population of AoNZ is essential for their overall health and well-being.

Traditionally, sleep research has focused on the chronobiological, physiological, and medical aspects of sleep (Assefa et al., 2015; Dement, 2008). However, the social influencers on sleep are being increasingly recognised across the social sciences and humanities disciplines (Williams & Bendelow, 1998; Wolf-Meyer, 2012). For instance, international sociological research has examined how social structures, practices and cultural contexts influence sleep (Meadows et al., 2018; Williams, 2011; Williams, 2005). Sociological views

on sleep frame it as a 'practice' that is 'negotiated' with oneself, others, and society. This view considers when, where, and with whom we sleep with which influence physiological features of sleep health (Billings et al., 2020; Staton & Smith, 2019; Williams, 2007). Sociological inquiry into sleep highlights the complexities of sleep patterns and the broader social influences on sleep, which has enhanced our understandings of how sleep functions in society (Williams, 2005) (Taylor, 1993).

Framing sleep through a sociological lens has highlighted how different groups of people experience sleep in various ways and has underscored the significance of social norms on sleep practices (Meadows, 2005; Meadows et al., 2018; Wolf-Meyer, 2012). For instance, research has shown that many adolescents stay up late texting, using social media and gaming (Smith et al., 2020; van den Eijnden et al., 2021). Furthermore, research shows that adolescents engaging in these activities before sleep often experience shorter sleep duration and poorer sleep quality (Tarokh et al., 2019), which is partly explained through technology displacing sleep (van den Eijnden et al., 2021). Together, these findings show how social norms in this population can shape sleep behaviours and practices and leading to inadequate sleep.

It is well established that adolescents exhibit unique sleep/wake patterns, behaviours, and demands that can impact their ability to meet their biological sleep needs. Biological changes during this period, which delay the timing of sleep, partially contribute to the inability to meet sleep needs. Alongside this are environmental and social factors such as early school start times, technology use, and cultural expectations (Crowley et al., 2007; Hagenauer et al., 2009; Moore & Meltzer, 2008; Owens et al., 2014; Tarokh et al., 2019). These environmental and social factors can either exacerbate or conflict with adolescent biology and further challenge an adolescents' ability to get enough sleep. The complex

interaction of factors influencing adolescent sleep underscores the importance of understanding such influences on sleep in this population (Tarokh et al., 2019).

In AoNZ, the socio-demographic factors that impact sleep health are increasingly recognised, as are the diversity of sleep practices, beliefs, and attitudes at different life stages (Crestani et al., 2022; Cronin et al., 2017; Elder et al., 2023; Muller et al., 2023; Muller et al., 2017). However, this body of research has focused primarily on infant and children's sleep practices within the family context and variations in perceptions and practices across Māori, Pacific, and Pākehā populations. This literature has less thoroughly represented the adolescent population (Ross et al.) and adolescent sleep behaviours have primarily been explored using quantitative methods (Dorofaeff & Denny, 2006; Galland et al., 2020; Smith et al., 2020). The prominence of quantitative research means there is limited understanding of adolescents' perspectives on their sleep behaviours.

Internationally, qualitative methods have been employed to examine adolescent and young adult sleep behaviours (Godsell & White, 2019; Orzech, 2013; Paterson et al., 2019). Qualitative studies which employed focus groups (Godsell & White, 2019; Paterson et al., 2019) and interviews (Orzech, 2013), found that adolescents and young adults recognise the importance of sleep and want to improve their sleep. However, due to distractions and competing demands, most were unable to get the recommended amount of sleep. Barriers to achieving good sleep included technology, time pressure due to academic demands, extracurricular activities, and social interactions, as well as inconsistent routines due to social and environmental factors. Furthermore, in Godsell and White (2019) gender differences in sleep behaviours were highlighted. The studies stated that the participants were getting information on sleep from sources such as parents, peers, the media, and schools (Godsell & White, 2019; Orzech, 2013; Paterson et al., 2019). In some cases, the participants felt that the information presented to them was not very detailed and strategies around improving sleep

were not practical or appealing, which meant there was limited behaviour change (Orzech, 2013; Paterson et al., 2019). The findings from these studies help to expand the understanding of adolescent sleep behaviours and provide nuanced insights from adolescents themselves. However, as these are international studies, the insights they provide may not always be relevant in AoNZ.

It is evident that there are many factors that influence sleep practices and behaviours. Health beliefs and behaviours are shaped by the information available to use, meaning that media messaging has a role in shaping these perspectives (Dew et al., 2016; Lyons, 2000). There has been an increase in the representation of sleep in the media that has fuelled a growing public interest in sleep in conjunction with the advancements in sleep science (Breheny et al., 2023; Dew et al., 2016) (Wright et al., 2019). International literature investigating how sleep is portrayed in the media has enhanced understanding of beliefs, perceptions, and behaviours around sleep in different populations (Boden et al., 2008; Kroll-Smith, 2003; Seal et al., 2007; Varallo et al., 2022; Williams & Boden, 2004; Williams et al., 2008a, 2008b; Zarhin, 2021). The literature in this field has shown how the media frames sleep as both a personal responsibility and a commodity. Furthermore, how sleep is framed has provided a lens for understanding broader societal pressures around productivity and performance (Barbee et al., 2018; Williams et al., 2008a).

It has been shown that sleep-related media messages are often disconnected from scientific evidence and the realities of individual and social circumstances (Boden et al., 2008; Breheny et al., 2023; Robbins et al., 2019; Williams et al., 2008a). In AoNZ, a study looking at the representation of sleep and ageing in the media showed that messages around sleep for this population often oversimplified sleep solutions, focused on individual responsibility, and neglected to consider social and environmental factors. In line with international research, these findings suggest media representations of sleep in AoNZ are

misaligned with scientific understandings, as well as not representing the complexity of issues, suggesting the need for more nuanced representations (Breheny et al., 2023). The disconnect between sleep-related media messages and the realities of individual and social circumstances could have important implications for populations such as adolescents. This group often spends a significant amount of time engaging with media platforms which could lead to inaccurate information influencing their sleep behaviours (Kruzan et al., 2022; Smith et al., 2020). Furthermore, adolescents may be especially susceptible to messages they encounter online. Research has indicated they are more likely to be influenced by what they see on social media platforms, and are prone to adopting behaviours presented to them without fully understanding the complexities behind these messages (Alpert et al., 2020; Auxier & Anderson, 2021; O'Keeffe & Clarke-Pearson, 2011).

Despite the growing body of research on adolescent sleep, qualitative investigations into adolescent perceptions of sleep, and the sleep-related messages they receive and their sleep behaviours, remain scarce. While research in AoNZ has documented adolescent sleep behaviours through quantitative methods, there is a gap in understanding the subjective experiences and influences on sleep and sleep behaviours from adolescent perspectives. The international research that has explored adolescent sleep practices and behaviours through qualitative methods has given some insights into where adolescents access sleep information, how adolescents feel about this information, and the influence on their behaviours. Therefore, research using similar methods to explore adolescent sleep practices, as well as adolescents' access to and perceptions of sleep-related information that may inform these practices in AoNZ, could enhance our understanding of sleep health in this population. Research such as this could also help address understandings of the social and cultural factors that shape sleep practices in AoNZ and provide a deeper understanding of the barriers and facilitators influencing adolescent sleep health.

Positioning of the research

My approach as a researcher undertaking this work has been informed by a blend of personal and professional experiences. Personally, my interest in health-related topics dates back to my own adolescence, a time when I attempted to navigate through the overwhelming array of health information available. This personal journey has made me particularly aware of the challenges that adolescents face in accessing, understanding and acting upon health-related information.

On a professional level, I have been involved in several projects since 2022 as part of a larger project that aims to expand existing perspectives of sleep in AoNZ. As part of those projects, I have been involved in examining the media's representation of sleep and different populations including older adults and adolescents. I also conducted a scoping review of the literature in AoNZ that considers sleep as socio-culturally variable. These projects have provided me with a prior understanding of sleep as not just a biological phenomenon but as an essential aspect of our daily lives significantly influenced by broader contexts. My professional background has also provided me with a unique and critical lens to examine how sleep is portrayed and understood in various contexts, which is important to consider in the current study as I aim to explore the adolescent perspective.

Acknowledging my positionality is crucial for maintaining the integrity of this research. I am aware that as a researcher with advanced education, there exists a power dynamic between myself and the adolescent participants. This awareness was critical as it influenced how I engaged with the participants, ensuring that I approached the research process with an openness to learn from their experiences. My methodological choices, particularly the use of qualitative focus groups allowed for deeper engagement and enabled participants to express their perspectives in their own words, thus minimising the influence of my own biases and assumptions on the research outcomes. Throughout the completion of this

project, I have tried to respect the voices and experiences of the adolescents involved, and continuously reflected on how my background and assumptions might have shaped the research process and outcomes.

CHAPTER 2: Literature Review

The review of the literature presented in this chapter offers a comprehensive exploration of the complexities of adolescent sleep and the factors impacting adolescent sleep.

The chapter begins by discussing the fundamental physiological and circadian processes that govern sleep, providing the necessary context to understand the distinct changes occurring during adolescence. Building upon this foundation, the review progresses to examine adolescent sleep health, discussing both local and international literature on its status and exploring the relationship between sleep and both physical and mental health outcomes to underscore the importance of sleep during this life stage. It also addresses the broader factors influencing adolescent sleep. The interconnectedness of sleep with society is then explored; considering how social and cultural factors shape sleep practices and attitudes across different populations, with a particular focus on adolescents. This section emphasises the variability in sleep experiences among different groups and the importance of recognising and understanding these differences. The final section discusses how sleep is represented in the media, which plays a critical role in shaping public perceptions and behaviours concerning sleep, underscoring the significance of this influence in the context of adolescence. By integrating insights from diverse disciplines, this literature review characterises the multifaceted nature of sleep and underscores the significance of adolescent sleep research that explores the broader factors that impact sleep at this life stage.

Sleep

Defining sleep

Sleep is identified by looking at physiological and behavioural factors that, in combination, are used to determine if sleep is occurring. There is no single test or metric that can fully define or measure sleep on its own (Krueger et al., 2016). Behaviourally, sleep is a state that is temporary and reversible. During this state, individuals are disengaged from their

environment, show reduced responsiveness, and experience minimal bodily movement (Sejnowski & Destexhe, 2000; Sullivan et al., 2022).

Sleep stages and architecture

Sleep is understood as an active process involving two distinct states. These states are non-rapid eye movement (NREM) sleep and rapid eye movement (REM) sleep, which alternate in cycles throughout the night (McCarley, 2007; Sullivan et al., 2022). During NREM sleep physiological systems remain active, and body movements are possible, but the electroencephalogram (EEG) demonstrate slower levels of brain activity (Berry et al., 2020; Rechtschaffen & Kales, 1968). The EEG is one metric used in polysomnography (PSG), which refers to the gold standard method for recording sleep. Eye movements and muscle tone are also normally recorded using PSG (Kryger et al., 2022). NREM is further divided into three stages: N1-N3. The progression from N1 to N3 sleep is considered the progression from light to deep sleep. N3 is often also referred to as slow wave sleep (SWS) which is the deepest stage (Berry et al., 2020; Rechtschaffen & Kales, 1968).

N1 sleep serves as the transition phase between wakefulness and sleep. N1 is marked by slow rolling eye movements, hypnic jerks, which are sudden involuntary muscle contractions, and a disengagement from the surrounding environment (Mindell & Owens, 2015; Sullivan et al., 2022). During N2 sleep, EEG activity shows sleep spindles during this stage. Sleep spindles are brief high-frequency EEG activity (Berry et al., 2020; De Gennaro & Ferrara, 2003; Sullivan et al., 2022), that are associated with learning and memory processes (Fogel & Smith, 2011). K-complexes are also seen in EEG activity during this sleep stage. K-complexes follow the rhythm of a brief positive voltage spike, which is followed by a large negative deflection. This activity in the brain waves can happen on its own or in response to outside stimuli. K-complexes are also thought to aid the preservation of

sleep and contribute to memory consolidation (Berry et al., 2020; Cash et al., 2009; Sullivan et al., 2022).

N3 sleep is characterised by slower, more regular breathing as well as a further decrease in heart and respiratory rate. As N3 sleep is considered the deepest sleep, individuals are often hard to wake during this stage (Mindell & Owens, 2015; Sullivan et al., 2022), and research shows that this stage of sleep aids in several restorative processes (Krueger et al., 2011; Van Cauter et al., 2000; Xie et al., 2013). REM sleep is characterised by high frequency brain activity, rapid eye movements and muscle atonia. Muscle atonia is the loss of muscle tone that prevents voluntary movement (Berry et al., 2020; Sullivan et al., 2022). Research has shown that REM sleep is also the stage from which dream recall is most likely (Malinowski et al., 2019; Scarpelli et al., 2019).

During sleep, individuals may experience brief awakenings or arousals. These brief awakenings or short periods of increased brain activity are a normal part of the sleep cycle and unless they are very frequent, aren't considered to disrupt sleep or impact overall sleep quality (Sullivan et al., 2022). Awakenings can often be seen to occur in individuals as they transition to light stages of NREM sleep or when they transition to or from REM sleep, and are often forgotten by individuals once awake (Sullivan et al., 2022).

Sleep architecture refers to the organisational structure of sleep, meaning the patterning and cycling between NREM and REM sleep stages. At the start of the sleep cycle, healthy adults often experience NREM sleep, progressively transitioning from N1 to N3 sleep and then progressively transitioning back through to NREM stages to N1 sleep before entering REM sleep. This 'sleep cycle' repeats approximately every 90-110 minutes (Bathory & Tomopoulos, 2017; Mindell & Owens, 2015; Sullivan et al., 2022). During the first third of the night, NREM sleep accounts for about 20% of total sleep time, whereas later in the night

REM sleep increases and accounts for around 25% of the total sleep time (Sullivan et al., 2022).

Changes in sleep with age

Sleep pattern, cycles, and architecture change significantly across the lifespan, with shifts in infancy, adolescence, and adulthood that reflect the developmental needs of each stage (Kocevska et al., 2021; Stolarski & Gorgol, 2022). Across childhood and adolescence, the percentage of REM stabilises, while SWS declines, and lighter sleep stages increase (Tarokh & Carskadon, 2010). Longitudinal studies demonstrate that slow-wave sleep reduces by 40-60% in adolescents as they transition from early to mid-adolescent years (Campbell & Feinberg, 2009; Tarokh & Carskadon, 2010). This transition reflects the maturation of the brain and the change in sleep regulatory systems, including the circadian and homeostatic processes (Miner & Lucey, 2022). Sleep spindles peak in adolescence and begin to decline afterwards, reflecting brain maturation and the development of the thalamocortical system responsible for spindle generation (Purcell et al., 2017; Tarokh & Carskadon, 2010).

Regulation of sleep

Two primary biological mechanisms govern the sleep-wake cycle: the circadian process (Process C) and the homeostatic process (Process S) (Czeisler & Buxton, 2017). The circadian process is regulated by a "master clock" which is located in the suprachiasmatic nuclei (SCN) in the brain. This clock regulates physiological rhythms such as the sleep-wake cycle (Kurth et al., 2015; Vetter, 2018). Research shows that in conditions free of time cues circadian rhythms run on a cycle that is slightly longer than 24 hours. However, time cues (known as zeitgebers) provide information that is used to adjust this cycle to align with the 24-hour day-night cycle. Zeitgebers are external environmental cues that entrain our internal circadian rhythms to the 24-hour cycle (Roenneberg & Merrow, 2016; Vetter, 2018). Light is the strongest zeitgeber, however, social and physical activities are also zeitgebers (Czeisler &

Buxton, 2017; Duffy & Wright Jr, 2005). Circadian misalignment occurs when our internal circadian rhythms do not match the zeitgeber time cues. Circadian misalignment has been found to lead to potential health risks (Boege et al., 2021).

In addition to regulating the sleep-wake cycle, circadian rhythms regulate core body temperature, which follows a daily rhythm, peaking in the late afternoon/early evening and decreasing into the early morning (Sullivan et al., 2022). Furthermore, the circadian system also regulates the secretion of hormones such as melatonin and cortisol. Melatonin and cortisol play a part in maintaining sleep-wake cycles. Melatonin peaks in the evening, which signals sleepiness and helps sleep onset, and then decreases over the night (LeBourgeois et al., 2013; Tähkämö et al., 2019). On the other hand, cortisol exhibits a contrasting trend, reaching its peak in the morning to encourage alertness and subsequently diminishing throughout the day (Oster et al., 2017).

The homeostatic process regulates the body's need for sleep. Sleep pressure builds throughout the day, peaking in the evening, and dissipating during N3 sleep (Achermann, 2004; Borbély & Achermann, 1992). The two-process model of sleep regulation was first proposed by Borbély (1982). The model suggests that sleep is facilitated when Process S reaches the upper threshold of Process C. As sleep progresses, Process S decreases, and the brain is ready for wakefulness when it reaches a lower threshold of Process C (Beersma & Gordijn, 2007; Borbély et al., 2016).

Sleep-wake regulation in adolescents

Adolescence has been defined as the period between ages 10 and 19, as outlined by the World Health Organization (WHO) (Sawyer et al., 2018). This period is characterised by significant physical, psychological, and social changes, and these changes contribute to the unique sleep regulation observed in this developmental stage of life (Crowley et al., 2018). The adolescent period can be further separated into younger adolescence, which is ages 10-

14, and older adolescence, which is ages 15 to 19. These stages reflect distinct developmental milestones (Patton et al., 2016). While younger adolescents begin to experience shifts in sleep patterns due to the onset of puberty (Crowley et al., 2018), older adolescents experience more pronounced changes that result in later sleep onset and reduced sleep duration due to biological and environmental factors (Gradisar et al., 2011).

The later sleep onset seen in older adolescents is marked by the later release of melatonin (Crowley et al., 2018). For instance, a review highlighted that the secretion of melatonin occurred approximately one hour later in older adolescents than younger adolescents and that older adolescents take longer to fall asleep even after extended periods of wakefulness (Malone, 2011). Furthermore, compared to earlier hypotheses, a more recent review suggests that the endogenous circadian period, meaning the circadian period that exists without external cues, does not lengthen during adolescence. This contrasts with earlier work suggesting that during adolescence, the endogenous circadian clock might naturally shift to a longer duration (Tarokh et al., 2019).

At the same time, the homeostatic system accumulates more slowly in response to sleep deprivation in post-pubertal adolescents compared to adults and pre- or early-pubertal adolescents. This slower accumulation of homeostatic sleep pressure throughout the day results in adolescents feeling less sleepy and staying up later, contributing to their delayed sleep/wake cycles (Crowley et al., 2007) (Hagenauer et al., 2009; Tarokh et al., 2019). Sleep latency data indicates that prepubertal adolescents fall asleep faster than postpubertal adolescents, lending further support to the finding that homeostatic sleep pressure builds up more slowly (Crowley et al., 2007). It has been demonstrated that females present the delay in sleep earlier than males, which is thought to be due to the earlier onset of puberty (Crowley et al., 2007; Hagenauer et al., 2009).

The Perfect Storm model was introduced by Carskadon (2011) and updated by Crowley et al. (2018) to illustrate how biological and environmental factors work together to impact adolescent sleep patterns. The model describes the later sleep onset often experienced by adolescents and demonstrates the role of delayed circadian phase and slower buildup of sleep pressure. The model also highlights the external environmental factors that impact adolescent's delayed sleep patterns, such as academic demands, social activities, and exposure to electronic devices. According to the model, the "perfect storm" of poor sleep is caused by both biological and environmental factors. The "perfect storm" refers to adolescents having a biological predisposition to stay awake later, which is exacerbated by external factors, and then factors such as early school start times truncate the opportunity for sleep resulting in shorter sleep (Crowley et al., 2018).

Adolescents sleep needs'

Research shows that despite changes to sleep over the adolescent period the dissipation of this sleep pressure does not change during the adolescent period, indicating that their sleep needs remain consistent during this period (Crowley et al., 2007; Tarokh et al., 2019).

A review of current evidence on adolescent sleep Tarokh et al. (2019) discusses the historical lack of empirical research to support previous recommendations on adolescent sleep duration needs. Early recommendations, such as those by Terman and Hocking (1913), lacked scientific validity due to the absence of data-driven evidence. However, in an attempt to create more accurate guidelines, organisations such as the National Sleep Foundation (Hirshkowitz et al., 2015) and the American Academy of Sleep Medicine (Paruthi et al., 2016) provide more comprehensive guidelines on the recommended sleep duration for adolescence. These guidelines are based on expert opinions and literature reviews and recommend that adolescents aged 13-18 get 8-10 hours of sleep a night.

Despite these recommendations, it is challenging to accurately estimate sleep need in this population due to the widespread prevalence of chronic sleep restriction (Tarokh et al., 2019). Research shows that there is often a difference in sleep duration between weekdays and weekends in adolescents (Olds et al., 2010). This difference can be explained by the concept of ‘sleep debt’ recovery (Gradisar et al., 2011). Sleep debt refers to the cumulative loss of sleep across a number of days, experienced when an individual fails to meet their sleep needs (Van Dongen et al., 2003). In adolescents, there is a pattern of shorter sleep on weekdays and longer sleep on the weekends. This is in part due to adolescents’ delayed sleep onset and early wake times due to environmental impositions such as early school start times, which results in shorter total sleep duration in the weekdays. In contrast, on weekends adolescents’ sleep start times and rise times are often later, shifting the entire sleep episode. They also tend to have a longer total sleep duration on weekends to compensate for the shorter sleep duration on weekdays (Gradisar et al., 2011).

In a recent U.S. study, Thompson et al. (2024) demonstrated an increase in night-to-night variability in sleep duration in adolescence compared to those in childhood. In that study, they noted that night-to-night variability in sleep duration in adolescents is often influenced by social jetlag and irregular schedules. Furthermore, it is demonstrated that night-to-night variability in sleep duration commonly experienced by adolescents is associated with poorer mental health outcomes, such as anxiety and depression, and behaviours, such as aggressive behaviour. Significant ethnic and sex differences were also found, with all African Americans as well as male youth showing more pronounced declines in sleep duration and efficiency over time. These findings point to the complexity of evaluating adolescent sleep needs accurately, as sleep patterns in this population are highly variable and influenced by external factors.

Adolescent sleep health

Several lines of evidence demonstrate that sleep problems are prevalent in the adolescent population. For instance, an international review conducted by Owens et al. (2014) found that adolescents do not get enough sleep, with this problem worsening across the adolescent period. Furthermore, according to a meta-analysis of sleep patterns and problems among adolescents across the globe, daytime sleepiness is prevalent in this population, as is difficulty initiating sleep (Gradisar et al., 2011).

Significant variations in adolescent sleep patterns have been reported internationally (Gradisar et al., 2011; Olds et al., 2010; Owens et al., 2014). For instance, Gradisar et al. (2011) states that there are variations across different regions and age groups in bedtimes on school nights and that younger adolescents often had earlier bedtimes and had longer total sleep durations than older adolescents. Between different ethnic groups, Asian adolescents had later bedtimes and shorter total sleep durations on school nights compared to North American and European adolescents. However, across all regions, adolescents often had shorter total sleep durations on school days compared to weekends, which Gradisar et al. (2011) attributes to social jetlag. Findings from Olds et al. (2010) and Owens et al. (2014) support the observations on adolescent's sleep patterns in Gradisar et al. (2011), but Olds et al. (2010) additionally adds that females tend to sleep more than males.

Research in AoNZ has also explored sleep problems among adolescents. Several studies indicate that adolescents frequently obtain less sleep than recommended for their age group (Dorofaeff & Denny, 2006; Galland et al., 2017; Smith et al., 2020). A study involving 4,192 NZ adolescents revealed that 39% slept less than 8 hours a day and 57% reported poor sleep quality (Galland et al., 2020), a finding consistent with earlier research (Galland et al., 2017). Furthermore, an examination of 1,388 students revealed that 37.2% experienced significant symptoms of sleep problems lasting longer than one month. Sleep problem

symptoms were reported as any sleep disorders or sleep issues significantly affecting an individual's life or sleep (Fernando et al., 2013). Female adolescents in AoNZ report higher rates of insufficient sleep, poorer sleep quality, increased daytime dysfunction, longer sleep latency, and a higher likelihood of experiencing prolonged sleep problems compared to males (Dorofaeff & Denny, 2006; Fernando et al., 2013; Galland et al., 2017). At the same time, a higher prevalence of delayed sleep-phase disorder has been observed among male adolescents compared to female adolescents (Fernando et al., 2013).

In AoNZ, similar trends to the international findings on adolescent sleep patterns have been observed. Adolescents have been found to sleep longer on weekends compared to weeknights, with a study reporting that adolescents slept on average 8 hours and 40 minutes on weeknights compared to an average of 9 hours and 23 minutes on weekends (Dorofaeff & Denny, 2006). Furthermore, this study showed that the older adolescent participants exhibited later bedtimes and less total sleep time than the younger adolescent participants (Dorofaeff & Denny, 2006). Another study in AoNZ, on competitive adolescent athletes demonstrates how early morning trainings contribute to insufficient sleep. In this study, participants often had a significantly reduced total sleep duration on nights before their weekday morning training sessions. On these nights, participants had an average total sleep duration of 6 hours and 44 minutes. In comparison, on weekends when participants did not have training sessions, they slept significantly longer and tended to go to bed and wake up later (Steenekamp et al., 2021). The results from Dorofaeff and Denny (2006) and Steenekamp et al. (2021) show how adolescents in AoNZ sleep. They show how their sleep patterns are similar to those in other countries and how common social jet lag is in this group, especially among older adolescents.

International and local research shows socioeconomic and ethnic inequities in adolescent sleep. Owens et al. (2014) highlights that internationally, adolescents from lower socioeconomic backgrounds or ethnic minorities are at heightened risk of experiencing

insufficient sleep. Similarly, Guglielmo et al. (2018) demonstrates that adolescent minorities in the U.S. are more likely to experience shorter total sleep duration and sleep-related issues, even after considering covariates. In AoNZ, Dorofaeff and Denny (2006) found Māori and European high school students to have the longest total sleep duration, with Asian high school students having the shortest total sleep duration. Galland et al. (2020) had similar findings in relation to Asian adolescents exhibiting the shortest sleep duration but also found Māori and Pacific adolescents to have later bedtimes than European adolescents. A more recent study in AoNZ, illustrates different findings to those of Dorofaeff and Denny (2006) and Galland et al. (2020). In this study, Māori, Pacific, Asian, Middle Eastern, Latin American, and African adolescents were significantly more likely to experience shorter total sleep duration, later bedtimes, and earlier wake times compared to European adolescents. This study discusses that the inequities seen in adolescent sleep health in AoNZ can in part be explained by social determinants such as neighbourhood deprivation, housing insecurity, and exposure to racism (Muller et al., 2024). These findings are similar to other research conducted in AoNZ on adults that showed factors such as socioeconomic position and health status to in part contribute to ethnic inequities in sleep duration (Paine & Gander, 2016).

In summary, the widespread occurrence of sleep problems in adolescents is evident in studies both internationally and in AoNZ (Dorofaeff & Denny, 2006; Fernando et al., 2013; Galland et al., 2017; Gradisar et al., 2011; Muller et al., 2024; Olds et al., 2010; Owens et al., 2014; Smith et al., 2020). International and local studies on adolescent sleep patterns and the differences between weekdays and weekends show the same pattern (Dorofaeff & Denny, 2006; Gradisar et al., 2011; Olds et al., 2010; Owens et al., 2014; Steenekamp et al., 2021). Furthermore, it is evident that ethnic differences and inequities in adolescent sleep exist (Dorofaeff & Denny, 2006; Fernando et al., 2013; Galland et al., 2020; Guglielmo et al., 2018; Muller et al., 2024; Owens et al., 2014). Research underscoring the prevalence of sleep

problems in this population has resulted in increased attention on adolescent sleep, as sleep problems can have severe health and well-being consequences as well as implications for general functioning (Gradisar et al., 2011; Olds et al., 2010).

Sleep, health and functioning

The literature on the consequences of poor adolescent sleep indicates a bidirectional relationship between sleep and health. It is well established that inadequate sleep can cause daytime sleepiness and fatigue in adolescents. However, research also highlights relationships between sleep and mental and emotional well-being, physical health, and cognitive functioning (Brand & Kirov, 2011; Bruce et al., 2017). A cross-sectional survey of 1,111 young adults from AoNZ and the U.S. found that sleep quality and quantity predict mental health and well-being, with sleep quality being more important than physical activity and dietary factors (Wickham & Amarasekara, 2020).

A UK study found that poor sleep quality and habits were associated with higher mental health risks, with gender differences showing that males had a broader range of problems whereas females were more likely to develop mood disorders (Qiu & Morales-Muñoz, 2022). In a meta-analysis, adolescent sleep and mood were linked with shorter sleep durations increasing the risk of mood deficits (Short et al., 2020). Similarly, a U.S. study that used a sleep manipulation protocol showed more irritability and behaviour regulation problems during the periods that participants had shorter sleep duration (Beebe et al., 2008). Insufficient sleep has also been shown to impact emotional processing, as sleep-deprived adolescents have been found to be vulnerable to mood changes and adverse emotional reactions (Shochat et al., 2014; Tempesta et al., 2018). Furthermore, various studies have also illustrated that poor sleep often coexists with psychiatric disorders in adolescents. The relationship between poor sleep and psychiatric disorders is complex, with poor sleep acting both as a risk factor and as a consequence of conditions such as depression and anxiety

disorders (Brand & Kirov, 2011; Moore & Meltzer, 2008; Owens et al., 2014). Sleep quality and quantity have been shown to significantly predict depressive symptoms (Wickham & Amarasekara, 2020). Although a meta-analysis showed sleep disturbances often precede depression, but not the other way around (Lovato & Gradisar, 2014), other research indicates a bi-directional relationship (Moore & Meltzer, 2008; Owens et al., 2014; Roberts & Duong, 2014; Shochat et al., 2014).

The relationship between inadequate sleep and mental health problems is particularly noteworthy in the context of AoNZ. According to Fleming et al. (2020), adolescent emotional and mental health is on the decline, and the mental health gap is widening between Māori and other ethnic groups. Furthermore, sleep loss has been reported to increase the risk of suicidal thoughts in adolescents (Owens et al., 2014), and the adolescent population in AoNZ exhibits a relatively high suicide rate (Shahtahmasebi, 2008; UNICEF Innocenti, 2020).

Fragmented or disrupted sleep has been associated with impaired adolescent cognition (Bruce et al., 2017). Oversleeping on weekends coupled with insufficient sleep during the week, has been found to impact individuals' judgement, motivation, attention, and executive functions (Owens et al., 2014). Furthermore, poor sleep can have significant implications for the academic performance of adolescents. A study in the United States of 16 adolescents who were tested in a simulated classroom after five nights of sleep restriction and compared to after five nights of sufficient sleep showed that chronic sleep restriction leads to inattentive behaviours, poorer learning, and diminished arousal in the classroom (Beebe et al., 2010). The findings from the U.S. study are supported by review articles that also describe the effects of insufficient sleep on academic performance (Moore & Meltzer, 2008) (Shochat et al., 2014), with Shochat et al. (2014) stating that while prospective data is limited, cross-sectional studies consistently find associations between sleep loss and poorer academic performance.

The consequences of inadequate sleep and risk-taking behaviours are also highlighted in sleep and cognitive functioning research. In the literature, risk-taking behaviours as a result of poor sleep include substance use, risky sexual behaviours, delinquency, violence, and drowsy driving (Bruce et al., 2017; Moore & Meltzer, 2008; Shochat et al., 2014). Shochat et al. (2014) highlights that sleep disturbances can predict future risk-taking behaviours, although this relationship is complex and influenced by other factors such as gender, socioeconomic status, and psychosocial factors. Furthermore, Moore and Meltzer (2008) indicates that daytime sleepiness and delayed weekend bedtimes are also linked to a higher likelihood of risk-taking behaviours. Less total sleep time has been associated with increased substance use (Moore & Meltzer, 2008), with sleep loss increasing the risk of alcohol, tobacco, and drug consumption, which in turn leads to worse sleep (Owens et al., 2014). Another risky behaviour of interest in this population is drowsy driving with sleep deprivation and drowsy driving contributing to motor vehicle accidents among young drivers (Bruce et al., 2017; Moore & Meltzer, 2008; Owens et al., 2014). In AoNZ, a report in 2021 showed that 26% of all road fatalities were attributed to drivers aged 15-24 years (Te Manatū Waka [Ministry of Transport, New Zealand], 2023). However, the extent to which sleep or fatigue contributes to these AoNZ statistics is unknown pointing to an area that needs further exploration.

Studies have also linked adolescent sleep to adverse physical health outcomes. Poor sleep has been shown to contribute to and affect somatic conditions like diabetes, cardiovascular disorders, juvenile idiopathic arthritis, headaches, asthma, cancer, and epilepsy (Brand & Kirov, 2011; Bruce et al., 2017). Shochat et al. (2014) showed an association between sleep disturbance and somatic conditions but also found that insufficient sleep duration did not predict any somatic outcomes. The literature also highlights sleep's impact on adolescent obesity risk. A review of 15 studies found inconclusive evidence

(Guidolin & Gradisar, 2012), however, other studies link insufficient sleep to increased obesity risk in this age group (Brand & Kirov, 2011; Bruce et al., 2017; Owens et al., 2014; Shochat et al., 2014). The relationship between sleep and obesity is thought to be bi-directional and influenced by various other health and lifestyle factors (Brand & Kirov, 2011; Shochat et al., 2014). Furthermore, gender differences have been noted in the association between sleep duration and obesity risk in adolescence, with males potentially at higher risk (Owens et al., 2014). A study in AoNZ, found significant relationships between sleep and body composition in males but not females and suggested that more sleep may be linked to a leaner body composition in males (Skidmore et al., 2013). Despite links demonstrated between sleep and physical health outcomes in adolescents, such relationships in AoNZ are yet to be explored from a behavioural or social perspective which could help provide a more in depth understanding of these links.

In summary, this section's extensive body of research highlights the critical importance of good sleep health for adolescents. It is evident that sleep has profound impacts on adolescents' health, well-being, and overall functioning (Brand & Kirov, 2011; Bruce et al., 2017). The relationship between sleep and various aspects of health is often bidirectional, which highlights the interconnectedness of sleep with adolescent development. Recognising the significance of sleep and its links to health and well-being alongside the knowledge that adolescents often struggle to get adequate sleep points to the need to understand the underlying factors contributing to their sleep patterns and behaviours.

Factors influencing adolescents' sleep

There has previously been a physiological and medical approach to exploring adolescent sleep and sleep problems (Assefa et al., 2015; Dement, 2008). For instance, as discussed in an earlier section, the physiological factors that drive the delay in adolescents' sleep and contribute to adolescent sleep deprivation are well documented and understood in the

literature (Crowley et al., 2007; Hagenauer et al., 2009). However, literature also shows that adolescent sleep is deeply intertwined with multi-level contextual factors (Becker et al., 2012; El-Sheikh et al., 2015). Multiple models have explained the complexity of adolescent sleep by highlighting the various factors that influence sleep (Becker et al., 2015; Grandner, 2019; Orzech, 2013). Grandner (2019) proposes a theoretical model based on a social-ecological framework that identifies individual, social, and societal determinants of sleep and their relationship with health outcomes. Individual factors include genetics, beliefs, attitudes, behaviours, and health status; social factors encompass family, work, school, neighbourhood, cultural, ethnic, and social networks; and societal factors comprise globalisation, public policy, technology, economics, and the natural environment (Grandner, 2019).

Orzech (2013) considers adolescent sleep from an anthropological point of view, and consider historical, political-economic contexts, local environmental conditions, and biological and cultural adjustments individuals make in response to these factors. Orzech's model emphasises that both biological and environmental factors influence sleep and are socially prescribed and culturally patterned. Becker et al. (2015) adds that adolescent sleep is intertwined with biological, psychosocial, and contextual factors, stressing the importance of understanding their interplay to understand the influences on adolescent sleep patterns and behaviours. Together, these models underscore the importance of considering more than the biological influences to better understand what informs and influences adolescent sleep.

Two prominent lines of research into the broader factors that influence adolescent sleep include electronic media use and school start times (Tarokh et al., 2019). Excessive screen time in adolescence has been associated with various negative consequences such as night awakenings, daytime sleepiness, anxiety, depression, and musculoskeletal issues (Silva et al., 2022). Furthermore, international reviews have indicated that electronic use before bedtime is associated with disrupted sleep patterns such as later bedtimes, later wake times on

weekends, shorter total sleep times, poor sleep quality, and greater daytime sleepiness (Cain & Gradisar; Moore & Meltzer, 2008; Owens et al., 2014; Silva et al., 2022). Despite the increase of research around electronic use and sleep, the literature would benefit from more nuanced consideration. For instance, investigating the duration and purpose of technology use could yield additional understanding of its influence on adolescent sleep. In AonZ, technology in bedrooms significantly increased from 1999 to 2008 (Borlase et al., 2013). More recently, a study of 4,811 adolescents found that most participants used electronics before bed and reported that they “agreed” they spent too much time on screens, with this perception increasing with age across the adolescent period, however the pressure to communicate with friends was perceived as a barrier to reducing this screen time (Smith et al., 2020). It has also been shown in AonZ that technology use before bed is negatively associated with sleep quantity and quality (Borlase et al., 2013; Galland et al., 2020).

Previously, researchers have indicated several mechanisms behind the adverse impact of electronics on adolescent sleep. These mechanisms include the displacement of sleep, increased arousal, a delayed circadian rhythm due to evening light exposure, and electromagnetic radiation from mobile phones (Cain & Gradisar; Owens et al., 2014; Reid Chassiakos et al., 2016). Research also highlights that during adolescence, the perceived demands of social interactions can result in frequent electronic communication, which can impact their sleep (Moore & Meltzer, 2008). Scott and Woods (2018) and Woods and Scott (2016) highlight that the fear of missing out (“FOMO”) is associated with social media usage and can drive adolescents to engage with social media during the night. Furthermore, these studies have linked feelings of FOMO to self-esteem issues and social anxiety, further impacting adolescents' sleep (Scott & Woods, 2018; Woods & Scott, 2016).

A more recent review published in 2024 provides new insights into the relationship between technology use and sleep (Bauducco et al., 2024). In this review, it is demonstrated

that compared to previous understandings, the effect of bright light from screens, especially blue light, on melatonin suppression and delayed sleep onset is minimal. Furthermore, the impact of highly engaging online content on sleep is also minimal, with only small impacts on arousal and delayed sleep onset seen. However, the review did highlight that technology use, frequent notifications, and alerts can interrupt sleep and displace sleep time, leading to shorter durations. The review goes on to illustrate potential moderators of the associations found between technology use and sleep. These moderators included individual vulnerabilities such as risk-taking behaviour and low self-control, which were stated to exacerbate the adverse effects of technology on sleep. In contrast, protective factors on technology's effects on sleep included self-control and parental rules around technology (Bauducco et al., 2024).

School start times are another prominent line of research on the broader factors influencing adolescents' sleep. Research shows a strong association between early school start times and insufficient sleep, which strengthens as adolescents age (Dahl & Lewin, 2002; Malone, 2011; Moore & Meltzer, 2008; Tarokh et al., 2019). As discussed earlier it has been demonstrated that adolescents often sleep later, wake later and obtain more sleep on weekends compared to weekdays (Gradisar et al., 2011). Richter et al. (2023) conducted a systematic review that showed that during lockdown periods over the COVID-19 pandemic, adolescent sleep quality deteriorated, but that adolescents obtained more sleep and were less sleepy due to the lack of early school start times.

Research has demonstrated that delaying school start times can improve adolescent sleep duration, reduce daytime sleepiness, and enhance academic performance, attendance, and safety (Malone, 2011; Moore & Meltzer, 2008; Owens et al., 2014). Despite the established benefits of delaying school start times for adolescents, there are logistical and financial challenges that exist. Stakeholder support has successfully combated these

challenges, demonstrating positive results in the USA, UK, Canada, and South Korea (Tarokh et al., 2019). In AoNZ, a study showed that by delaying school start times, students obtained more sleep and experienced less sleepiness (Borlase et al., 2013). Furthermore, a viewpoint article expressed the sleep health and well-being benefits of delaying school start times in AoNZ, for senior high school students. This article also states that this could benefit students of all ethnicities and socioeconomic positions (Barber et al., 2022). Therefore, delaying school start times in AoNZ, is particularly important to help address the ethnic inequities in adolescent sleep health noted in research (Muller et al., 2024).

Other overarching factors in the literature that have been identified as influencing adolescent sleep include part-time employment (Dahl & Lewin, 2002; Dorofaeff & Denny, 2006; Moore & Meltzer, 2008), and extracurricular activities (Dahl & Lewin, 2002; Moore & Meltzer, 2008) as they can lead to later bedtimes and reduced sleep time. For instance, early morning trainings imposed on adolescent athletes have been shown to disrupt sleep patterns and reduce sleep duration (Steenekamp et al., 2021). Increasing academic demands and pressures as adolescents age have also been linked to insufficient sleep (Dahl & Lewin, 2002; Malone, 2011). This link can be observed in part when individuals delay the completion of homework until later in the evening, which results in the reduced opportunity to sleep (Moore & Meltzer, 2008). Several studies have also shown that high caffeine intake in adolescents is associated with shorter sleep duration, increased sleep onset latency, daytime sleepiness, and slow-wave and REM sleep disruptions (Moore & Meltzer, 2008; Owens et al., 2014). Moreover, caffeine consumption has been correlated with other behaviours that impact sleep, such as late-night technology use (Owens et al., 2014). The transition from parent-managed bedtimes to personal responsibility is another factor that typically impacts sleep as it can have negative effects on adolescents' sleep habits (Malone, 2011).

Quantitative approaches have been prominent in the international and local research exploring the broader factors that impact adolescent sleep, and therefore there is less qualitative research in this area (Orzech, 2013), especially in Aotearoa New Zealand. Internationally, a few qualitative studies have been published that explore adolescents' perceptions of their sleep behaviours and factors influencing their sleep. For instance, a United Kingdom (UK) study conducted focus groups with 33 adolescents, investigating adolescents' perceptions of their sleep behaviour and the facilitators and barriers to sleep. The participants identified various obstacles to achieving good sleep, such as their bedroom environment, electronic devices, and social pressures. Gender differences were also found in the inhibitors of sleep. Watching videos and gaming were reported to distract the male participants more, while communicating with friends on digital devices were reported to distract the female participants more (Godsell & White, 2019). An Australian study also conducted focus groups to investigate adolescents and young adults' willingness to modify their sleep behaviour and the factors that enable or inhibit change. Participants stated that the barriers to improving their sleep included time demands around social and academic activities, technology use, difficulty switching off, and unpredictable routines. However, participants did express a desire to change their sleep habits by improving sleep timing, consistency, and quality to improve their daytime functioning. However, when they attempted this, they often had limited success (Paterson et al., 2019).

The local and international research reviewed in this section on adolescent sleep has discussed the state of adolescents' sleep and the various factors that impact their sleep and put them at risk of inadequate sleep. The literature focuses on adolescent sleep patterns, especially around sleep timing and duration (Dorofaeff & Denny, 2006; Fernando et al., 2013; Galland et al., 2017; Gradisar et al., 2011); the impact of poor sleep on adolescence health and well-being (Brand & Kirov, 2011; Bruce et al., 2017; Skidmore et al., 2013;

Wickham & Amarasekara, 2020); the bioregulatory changes that occur to adolescents circadian and homeostatic systems (Crowley et al., 2007; Dahl & Lewin, 2002; Hagenauer et al., 2009; Malone, 2011; Moore & Meltzer, 2008; Tarokh et al., 2019); and the environmental and social influences on their sleep (Borlase et al., 2013; Galland et al., 2020; Tarokh et al., 2019).

This body of literature underscores that influences on adolescent sleep are multifaceted and that there is an increasing emphasis on the investigation of the wider environmental, social, and cultural factors that impact sleep. The literature exploring these broader factors aids in providing a comprehensive understanding of adolescent sleep and demonstrates the importance of these understandings in addressing sleep issues in this population. Despite the increasing work in this area, there is a notable gap in qualitative work exploring adolescents' perceptions of their sleep and sleep behaviours. The limited international research in this area has underscored the significance of qualitative inquiry in comprehensively exploring adolescents' sleep and providing more nuanced understandings of adolescents' perceptions of their sleep and influences on their sleep. However, as the research is conducted elsewhere, it is of interest to consider adolescent's perspectives in AoNZ.

Sleep and society

Sleep, a universally experienced state, is not just a biological necessity but a phenomenon deeply intertwined with social, cultural, historical, and political contexts. The intersection of various social science and humanities disciplines has framed sleep as multidimensional, enriching our understanding of sleep (Williams & Bendelow, 1998; Wolf-Meyer, 2012).

'Sleep health' is often considered a public health issue and refers to factors such as the regularity, timing, efficiency, and satisfaction of sleep as well as one's alertness (Hale et al., 2019). Grandner (2019) provides a social-ecological framework of sleep health that demonstrates the interplay between upstream factors, such as social and societal factors, and

downstream individual factors. This framework illustrates the complex relationship between sleep and health outcomes. Furthermore, Hale et al. (2019) explains that a range of factors impact sleep health, such as socio-demographic factors, interpersonal relationships, community environments, and policies. The impact of these factors underscores the necessity for multi-level approaches to effectively address sleep health. For instance, the consideration of socio-demographic factors has demonstrated that these factors can be risk factors for poor sleep as well as consequences of inadequate sleep. Considerations such as this help to illustrate societal inequities and underlying political influences (Billings et al., 2020; Grandner, 2019; Paine & Muller, 2023; Staton & Smith, 2019).

Research shows how sleep science and medicine have been constructed over time and across cultures, underscoring the social and political implications in shaping how sleep is understood and governed (Wolf-Meyer, 2012). Ekirch (2018) explores the historical evolution of sleep patterns, emphasising the influence of cultural, technological, and social factors. In this exploration, the author notes the segmentation of sleep into ‘first sleep’ and ‘second sleep’ in pre-industrial societies. Activities such as prayer would often occur in between these periods of sleep. However, in modern times, sleep patterns have been consolidated into a single sleep period. Ekirch explains this through factors such as the influence of artificial lighting and societal shifts towards efficiency and productivity. Further explorations into sleep and society have provided a lens into broader social dynamics such as time-use priorities, power relations, and disciplinary practices that reflect cultural values and attitudes towards time (Steger, 2017). For instance, in workplaces, expectations and organisational practices can significantly influence an individual’s sleep patterns, which highlights time-use priorities in contemporary society (Barnes & Spreitzer, 2015).

Research exploring how sleep is embedded in social, cultural, historical, and political contexts has revealed cultural variations in the social factors influencing sleep (Glaskin &

Chenhall, 2013). For instance, studies have illustrated distinct differences between Indigenous and Western cultures in the perceptions and experiences around sleep, nighttime, and dreaming (Airhihenbuwa et al., 2016; Brunt & Steger, 2004; Glaskin, 2011). The following sections further explore the need to consider cultural diversity in understandings of sleep, as these findings demonstrate the different experiences of sleep.

Sociological perspectives of sleep

Sociological perspectives of sleep have expanded with the increased interest in sleep within social science and humanities disciplines (Ross et al.). Sociology, as a social science discipline, dedicates itself to the exploration of human society, with a particular focus on group formation, organisation, and their evolution over time (Barry & Yuill, 2011; Crawford, 1971). Sociologists go beyond individual analysis and explore how people interact within groups and the broader environments surrounding them. This field examines how external societal influences shape behaviours and beliefs and encompass both cooperative and conflicting dynamics. Altogether, sociology investigates human groups, their interaction, and their organisational dynamics and covers various aspects of society and their impact, including social relationships, institutions, cultures, and social changes (Barry & Yuill, 2011; Crawford, 1971).

Historically, sociology has tended to focus on waking and conscious concerns, but we have increasingly seen an argument for the sociological significance of sleep (Williams, 2005). Sociologists exploring sociological perspectives of sleep have argued that sleep is not only a biological necessity but also is a social phenomenon, intricately woven into society. Therefore, it is recognised that biological, psychological, environmental, and socio-cultural factors, such as power dynamics, social norms, and economic factors, shape sleep as a behaviour. Sociologists have said that societies organise and regulate both waking and

sleeping life, which shows how important it is to understand sleep in the context of society (Taylor, 1993; Williams, 2002, 2005; Williams & Bendelow, 1998).

During its formative years, there are distinctive sociological areas of sleep that emerged in the literature (Meadows, 2005). One of these areas is the potential for sociological inquiry into the social dimensions of sleep (Taylor, 1993). Another is the sleeper's rights and duties, or the expectations that people have about when, where, and how they sleep, as well as their corresponding freedoms and restrictions, which are shaped by things like social situations (Goldberg-Hiller; Meadows, 2008a; Schwartz, 1970; Williams & Bendelow, 1998). Furthermore, the commodification of sleep, which illustrates the commercialisation of sleep as it has become a marketed consumer product, has been explored, and reflects broader consumerism and capitalism trends (Williams & Boden, 2004).

Williams (2005) proposed three interrelated levels of the sociological exploration of sleep. The first level encompasses the individual phenomenological aspects of sleep, such as the experience of sleep in both non-conscious activities (e.g. snoring) and conscious activities (e.g. the feeling of sleepiness). The second level concerns social and interactional aspects of sleep, focusing on the 'doing' of sleep. This level encompasses aspects such as gendered and life course meanings, methods, motives, and the management of sleep in everyday life, highlighting the negotiation and social dynamics around sleep. The third level highlights the relationship between sleep and societal factors. This third level encompasses the broader sociological issues around the social organisation of sleep in public and private settings, which include the consideration of risk, regulation, medicalisation, and surveillance. Williams (2005) states that these levels are not mutually exclusive or exhaustive but rather that sleep may be seen to operate on these three levels.

Another key area is the medicalisation of sleep, which involves defining and treating sleep-related issues within a medical framework. This approach reflects the influence of

medical institutions and professionals on societal understandings and responses to sleep, as noted by (Williams, 2003a), (Williams, 2003b), and (Hislop & Arber, 2003c). More recently, the sociological inquiry into the medicalisation of sleep has highlighted how sleep has begun to be optimised for performance through practices such as workplace napping and wakefulness-promoting drugs, rather than merely addressing sleep and its health risks through a medicalised approach. The optimisation of sleep for performance has been discussed to be of concern as it may have impacts on societal perceptions of sleep and sleep's role in daily life (Williams et al., 2013).

Furthermore, sociological literature has explored the intersection of sleep practices and gender roles. These explorations have highlighted how societal norms around gender roles can reinforce inequalities in nighttime caregiving and emotional labour, which impacts sleep (Hislop, 2003a) (Hislop & Arber, 2003b, 2003c) (Burgard & Ailshire, 2013) (Venn et al., 2008). Literature in this area has also pointed to how the experience of sleep disorders, symptoms, and help-seeking behaviours differs between genders (Arber et al., 2009; Krishnan & Collop, 2006; Meadows et al., 2008b).

In summary, sociological perspectives of sleep expand the notion of sleep beyond a biological necessity to frame it as a socio-culturally variable phenomenon. Sociologists frame sleep as a 'practice' in which individuals negotiate the how, why, where, and with whom they sleep. Sleep is acknowledged as being influenced by individual needs and beliefs, the sleep of others, and the discourses, schedules, and politics of broader society. The points raised in this section's literature suggest that sleep is a profoundly social and cultural phenomenon. Furthermore, sleep can be seen to reflect and reinforce societal norms, values, and power dynamics. Altogether, this framing of sleep provides a more nuanced understanding of sleep and how it functions within broader social frameworks (Meadows, 2005; Meadows et al., 2018; Williams, 2005, 2007).

Sleep and society in Aotearoa New Zealand

Sleep literature in AoNZ has made significant strides in understanding the socio-demographic influences on sleep health. A scoping review was conducted as a precursory project to the present thesis that synthesised local sleep literature, exploring sleep as a socio-culturally variable practice, and revealed a noticeable scarcity of research directly addressing the social and cultural aspects of sleep compared to elsewhere. Māori and Pacific cultures were explored in the reviewed literature in terms of how these cultures influence sleep-related perspectives, expectations, experiences, and practices (Ross et al.). The literature in this area highlights that Māori and Pacific populations' cultural practices and beliefs around sleep and dreaming differ from Western norms (Crestani et al., 2022; George et al., 2021; Haami et al., 2024). It has further been revealed throughout literature in AoNZ that Māori and Pacific communities face higher risks of poor sleep or sleep disorders due to socioeconomic gaps, substandard living conditions, and limited healthcare access (McLay et al., 2023; Muller et al., 2020; Paine & Gander, 2013; Paine et al., 2004). This work highlights the link between ethnicity and sleep health, highlighting the importance of considering socio-cultural influences on sleep health in AoNZ.

The prior scoping review also revealed that numerous topics and populations are yet to be thoroughly investigated or represented (Ross et al.). For instance, there is some literature on the diverse experiences and perspectives regarding sleep, related issues, and their management across different life stages (Crestani et al., 2022; Cronin et al., 2017; Elder et al., 2023; Muller et al., 2023; Muller et al., 2017), however the focus was on infant and children's sleep, highlighting gaps in the exploration of other life stages. Furthermore, the review showed only a small amount of literature that explored how gender roles and sexuality intersect with sleep practices (Ross et al.). The review indicated that in AoNZ, the adoption of a social science approach to sleep is still in the early stages compared to elsewhere.

Therefore, the need to conduct additional research using qualitative research methodologies to delve deeper into the lived experiences and perspectives of the identified key populations is identified. The review points to the need for broader social considerations in examining how sleep is represented and practised to provide a comprehensive understanding of sleep within the unique socio-cultural context of AoNZ (Ross et al.).

Social perspectives of adolescent sleep

Similarly to the literature on the intersection of sleep and society explored above, research on adolescent sleep shows how sleep is intertwined with various biological, environmental, cultural, and societal factors (Becker et al., 2015; El-Sheikh et al., 2015; Tarokh et al., 2019) underscoring the importance of considering broader influences on sleep practices in this population as discussed previously.

International research shows that time demands and heightened expectations can impact adolescents' sleep patterns, as exemplified by high school students in Japan. In Japanese culture, it is socially accepted for high school students to sacrifice nighttime sleep to meet academic demands and cope with this loss in sleep through 'inemuri'. 'Inemuri' is the practice of napping in public or semi-public places (Steger, 2006). In Mediterranean cultures such as Greece, adolescents often still practice siestas, which are midday naps used to help deal with sleepiness and late bedtimes (Paraskakis et al., 2008). Together, these studies show how different cultures practice sleep according to their unique challenges and contexts. Broader societal expectations around time, work, and rest shape sleep behaviours in both examples. However, within AoNZ literature exploring cultural differences in adolescent sleep practices is limited as demonstrated in Ross et al. (2024).

Hsu's (2013) paper on 'social acceleration' proposes that contemporary society is marked by an increased pace of life. In this paper, sleep is used as a measure or lens for social acceleration, as it is argued that sleep patterns reflect broader societal changes. This idea is

explored through examples of the widespread use of technology before bed and upon waking, which is said to suggest a societal trend toward increased connectivity. This trend, which blurs the boundaries between work and personal time for adults, could also apply to adolescents. As discussed in earlier sections, the use of technology before bed is highly prevalent among adolescents. Adolescents often have digital devices in their bedrooms (Cain & Gradisar, 2010; Smith et al., 2020) and, due to social expectations felt by adolescents, they frequently communicate electronically, which can disrupt their sleep (Moore & Meltzer, 2008).

Another example of the exploration into adolescent sleep and society is research by Wolf-Meyer (2015) which examined how social structures, as well as biological, cultural, and technological factors, shape adolescent sleep practices and attitudes. This literature discusses the challenges adolescents face in managing sleep within social structures, such as school start times, and how these structures contribute to sleep deprivation seen in this population. Furthermore, they explore the pathologisation of adolescent sleep, which refers to how sleepiness during classes is often framed as a behavioural problem rather than considered a consequence of societal demands and individual sleep needs. The authors discuss potential consequences of this pathologisation, which include self-medicating to maintain alertness so that individuals can meet expectations imposed on them. This research demonstrates the profound influence of societal factors on adolescent sleep patterns and the urgent need to address these factors to promote healthier adolescent sleep habits.

The interdisciplinary literature explored in these sections illustrates how sleep transcends its biological necessity by intertwining with social, cultural, and historical contexts. These approaches demonstrate the broader societal influences on sleep, including the socio-demographic factors and cultural practices that have varied over time and can shape aspects such as sleep duration, structure, environment, and quality (Ekirch, 2018; Wolf-

Meyer, 2012) (Meadows et al., 2018; Williams, 2005). In the context of AoNZ, sleep literature has increasingly recognised the diversity of sleep perspectives, experiences, and practices (Crestani et al., 2022; Cronin et al., 2017; Elder et al., 2023; Muller et al., 2023; Muller et al., 2017). However, it is evident that a gap remains in the nuanced understandings of adolescent sleep and the broader influences on their sleep. International research has offered insights into how social and cultural norms shape adolescent sleep practices (Hsu, 2013; Steger, 2006; Wolf-Meyer, 2015), however the AoNZ context is yet to be explored. Therefore, the adoption of various social science disciplines could aid in advancing our understandings of sleep and its nuances within AoNZ. Furthermore, these approaches could inform appropriate support and solutions for sleep health among populations such as adolescents.

Sleep in the media

Health-related topics in the media

When considering sleep in the media, consideration must also be given to the importance of the media and its concentration. The media has considerable influence over public discourse and the perceptions of important issues. Throughout the 21st century, the media has encountered significant growth, transformation, and consolidation. As Dew (2016) discussed, the expansion of the media through globalisation has enabled a global exchange of information, broadening access to knowledge about distant events and cultures. However, a crucial aspect of the 21st century media transformation revolves around media ownership and the concentration of control over media platforms by a few powerful corporations. This concentration of power can raise concerns about the diversity of viewpoints available to the public. Furthermore, it demonstrates how the media is both an informer and a gatekeeper, as it has the power to shape which narratives the public sees, which can influence the public's opinion (Dew et al., 2016).

Abroms and Maibach (2008) highlights how the internet has impacted the distribution and consumption of information. This paper explains how the increasing usage of digital platforms has blurred the lines between mass and interpersonal communication. Furthermore, as digital platforms facilitate easy access to a broad range of audiences, they have transformed media communications, resulting in the hearing of more diverse voices and opinions. An example of this can be seen in how health professionals and other professionals engage with the public more effectively without the traditional gatekeepers such as broadcasters or publishers that earlier media platforms had (Abroms & Maibach, 2008).

The media is recognised as a significant unofficial source of health information that helps shape public understanding and engagement with health-related topics (Abroms & Maibach, 2008; Dew, 2016 #8163). Its broad reach and easy access, position media as a source for health communication that can promote or diminish healthy behaviours and lifestyles (Bunton, 2002; Gabe et al., 2017; Nelkin, 1996). Research has demonstrated that how the media portrays health information is important to understand, as it has an impact on the public's perceptions of issues. For example, how health information is presented can change how people think about health problems, who is responsible for them, and how to solve them, shaping the public discourse of what is considered important (Crawford et al., 2019) (Breheny & Severinsen, 2018; Lyons, 2000). Research shows that the way the media talks about public health issues can change the way politicians talk about and make decisions about policy. This is because it can encourage or discourage people from taking action on complicated policy issues (Breheny & Severinsen, 2018; Crawford et al., 2019). Together, these findings show how the media shapes how the public perceives health issues and responds to them.

In contemporary society, there has been a shift from the previous dominance of medical practitioners primarily conveying health-related information to a greater variety of

voices from sources such as journalists, product advertisers, alternative therapists, and individuals providing real-life accounts (Lyons, 2000). While a wider variety of voices can be found in health-related media communications and on social messaging platforms, Abrams and Maibach (2008) observes that these messages frequently concentrate on individual behaviours. The health-related media messages attempt to influence individual knowledge, beliefs, and self-efficacy and therefore miss the opportunity to use mass media communications to assist in changing community norms and public health policies.

Crawford et al. (2019) discusses how digital media platforms encourage public engagement with the information the public consumes by enabling discussions, opinions, and interactions through features like comment sections. Interactive features such as comment sections show how the media not only delivers information to the public but also engages with them. Individuals interpret, resist, or accept media messages based on their own perspectives, which creates a feedback loop either reinforcing or challenging the message they are engaging with (Breheny & Severinsen, 2018). Furthermore, it has been noted that there is an increased use of social media platforms for the dissemination of health information as well as health promotion activities, which is thought to be partly due to the ability of such platforms to engage audiences directly and interactively, which is less characteristic of traditional news platforms (Wright et al., 2019). Despite the literature highlighting this change, there is a noticeable lack of research comprehensively documenting and evaluating the role of social media in providing health information. This gap points to the challenge of accurately assessing social media's role in providing health-related information.

Through the literature examined above, the role of the media in shaping public discourse and perceptions of health-related topics is demonstrated. The rise of digital platforms, with their distinctive features that facilitate discussion and interaction, has transformed media communication, enhancing its influence and engagement with the public.

This mode of communication enables audiences to be active interpreters who reinforce or inspire new insights based on their own perceptions, experiences and prejudices (Breheny & Severinsen, 2018; Crawford et al., 2019). Therefore, the media's societal impact on health beliefs and behaviours underscores the importance of understanding media portrayals of health topics and audience interpretations (Breheny & Severinsen, 2018; Lyons, 2000).

Sleep's portrayal in the media

As sleep science has rapidly grown, public interest has increased, leading to more sleep-related health messages in the media. International analysis of sleep's portrayal in the media demonstrates that sleep is often framed as adaptable to waking life and is essential for productivity (Barbee et al., 2018; Boden et al., 2008; Williams & Boden, 2004). Furthermore, the media describes good sleep as a crucial factor for optimal performance in a hyper-productive, globalised marketplace. This description of sleep can be seen to reflect neoliberal values of self-optimised and individual responsibility (Barbee et al., 2018). The media often plays a role in fuelling and reacting to moral panic around sleep by pushing solutions like workplace programmes, consumer products, and medical treatments while also stressing the need to balance work and rest (Barbee et al., 2018; Boden et al., 2008).

Qualitative studies that use discursive and content analysis reveal that the media frequently depicts 'sleepiness' as a major public health issue. The media presents sleep as a risky state, encouraging people to be aware of its impact and take personal responsibility for managing it (Kroll-Smith, 2003; Kroll-Smith & Gunter, 2005). This framing often 'medicalises' or 'healthicises' sleep (Williams et al., 2008a). Medicalisation transforms sleep from a biological need into a medical issue by treating sleep problems as diseases or disorders. In contrast, healthicisation presents good sleep as an individual responsibility, promoting self-surveillance and the use of sleep-promoting products, aids, and techniques (Barbee et al., 2018; Seal et al., 2007; Williams et al., 2008a). More recently, an analysis of

magazine articles shows how sleep is often commodified by presenting it as something that can be actively pursued through effort, planning, and financial investment. The analysis goes on to describe this commodification of sleep as often gendered, as for men, sleep is often linked to performance and health. Whereas for women, it is framed to be something that enhances beauty and emotional well-being (Zarhin, 2021). Together, the literature that explores the portrayal of sleep in the media illustrates how sleep is portrayed as a personal responsibility essential for health and well-being, encouraging management through various lifestyle choices and good sleep practices based on gender (Williams et al., 2008a; Zarhin, 2021).

It has been noted that there is a disconnect between media portrayals of sleep, the nuanced understanding within sleep science, and the realities of individual and social circumstances. Although the media claims to promote personalised sleep strategies, it often provides only generic advice (Boden et al., 2008; Robbins et al., 2019; Williams et al., 2008a; Zarhin, 2021). Robbins et al. (2019) points out that the media can perpetuate misinformation about sleep, as they identify through peer and media sources, widely held false beliefs about sleep. These key myths include “being able to fall asleep anytime, anywhere is a sign of a healthy sleep system,” “many adults need only five or fewer hours of sleep for general health,” and “your brain and body can learn to function just as well with less sleep” (p.19). These findings indicate that media messages often don’t align with scientific understandings about sleep.

The literature illustrates how the media disseminates medical knowledge about sleep and its role in promoting consumerist attitudes towards sleep health (Barbee et al., 2018). For instance, the media promotes sleep-tracking devices as ‘must-haves’ for health and well-being through ads and articles stating the benefits of these devices. The benefits stated include better sleep quality, improved health, and increased productivity (Kolla et al., 2016;

Williams et al., 2015). Positive portrayal of these devices drives public demand for them as the media influences which issues gain attention and play a role in shaping public beliefs and behaviours (Roanova, 2010; Seal et al., 2007). Furthermore, the devices are framed to be a part of everyday practices that normalise the use of these devices and can impact perceptions and behaviours around sleep (Kolla et al., 2016; Williams et al., 2015).

In AoNZ, investigations into the portrayal of sleep on popular media sites have begun. For example, two studies examined Stuff.co.nz, focusing on how messages around sleep and ageing and sleep and pregnancy are constructed (Breheny et al., 2023; Ladyman et al., 2022). These studies revealed the tensions and contradictions in how the media presented sleep. The media portrayed good sleep as essential for maintaining health and promoted simplistic solutions as a reasonable goal, emphasising it as an individual responsibility. However, the media also acknowledged the complexities involved in achieving good sleep and the inevitable difficulties with sleep in these populations, a view that contradicts the solution-based messages about achieving good sleep (Breheny et al., 2023; Ladyman et al., 2022). For instance, the research on media representations of sleep and pregnancy found that media narratives often sensationalised the topic and gave conflicting messages, discouraging harmful sleep practices but also asserting that poor sleep is inevitable and will worsen after birth (Ladyman et al., 2022). These studies highlight the need for more nuanced messaging that considers the broader context of sleep practices. Furthermore, they demonstrate that research on audience consumption and interpretation of these messages is needed (Breheny et al., 2023). This could be especially interesting for groups like adolescents who may be exposed to or affected by media messages on a regular basis.

There is limited literature that examines how audiences consume and interpret sleep-related media messages. Research in this area mostly focuses on how the media shapes public perceptions about topics rather than exploring how individuals or groups engage with and

interpret these messages. An example can be found in a UK study that focuses on the public's interpretations of messages around the risks of hypnotic sleeping pills in the media (Gabe et al., 2017). This study demonstrated that audiences actively engaged with the content, interpreting or reacting to the messages according to their personal experiences and social contexts. This active engagement either reinforced existing biases on topics or triggered further scrutiny and discussion (Gabe et al., 2017).

Collectively, this literature underscores the media's role in influencing behaviours around sleep. The research explored in this section demonstrates the diverse ways in which individuals consume and react to messaging, which points to the need to understand how audiences interpret and respond to media messaging about sleep. Furthermore, many of these studies focus on mainstream news media sites, and it is suggested that there is a need to explore sleep issues in other forms of media (Boden et al., 2008). For instance, Seal et al. (2007) and Williams et al. (2008a) highlight how various types of media represent sleep differently by looking at the differences between broadsheet newspapers and tabloid newspapers, which suggests that different sources may represent sleep and sleep problems in different ways.

Adolescence consumption of media and health-related information on media sites

As discussed in previously sections, technology usage among adolescents in AoNZ is widespread with activities such as social media, texting, and instant messaging before bed being common among this population (Smith et al., 2020). Internationally, it has been found that social media is increasingly becoming a central part of young people's lives (Auxier & Anderson, 2021; Kruzan et al., 2022). Reports indicate that adolescents and young adults show higher use of social media platforms compared to older adults (Auxier & Anderson, 2021). These platforms provide spaces for young people to exchange information, connect with peers and communities, and develop their identities, making them an integral part of

their daily lives (Kruzan et al., 2022). Unlike other forms of technology or traditional media platforms, social media is easily accessible via smartphone apps. Their ease of accessibility facilitates engagement throughout the day alongside other activities. It has been reported that adolescents tend to use social media sites multiple times a day (O'Keeffe & Clarke-Pearson, 2011), and engagement with these platforms is heightened as they are specifically designed to keep users engaged with continual notifications (Scott & Woods, 2019).

Health-related messages are increasingly being promoted on social media platforms (Kruzan et al., 2022). For adolescents, the increase in health-related media content on social media can help adolescents manage their own health as it provides an easy, accessible, and anonymous way for them to access health information. However, targeted ads on social media can significantly influence adolescents' buying behaviours and perceptions of normalcy (O'Keeffe & Clarke-Pearson, 2011). Limited literature has investigated the use of media platforms for disseminating health-related information and the potential impact of media messaging on health behaviours. One study examined the portrayal of alcohol consumption in magazines targeting young adults, focusing on the differences between men's and women's magazines. It found that the portrayal of alcohol in magazines contributed to the normalisation of binge drinking among young adults and that men's and women's magazines reinforce distinct narratives around drinking and traditional gender roles. Additionally, the study discusses the potential health risks associated with the glamorisation and normalisation of heavy drinking in the media, as this framing may promote risky behaviours among young adults (Lyons et al., 2006).

Another study explored social media's role in young adult's attitudes and perceptions around e-cigarettes. The study conducted focus groups and found that the participants often saw e-cigarette content on social media platforms. This content was posted on these sites by both news organisations and friends, and the participants expressed that this frequent

exposure to this content contributed to the normalisation of e-cigarette usage (Alpert et al., 2020). Another study examined how social media and real-life interactions influence young adults' dietary and physical activity choices. This study found that information and recommendations on social media often influence real-life choices. This study discussed the promotion of both commercial posts promoting eateries and food trends on social media, as well as government health campaigns. The different types of messaging revealed in this study illustrate how social media serves as a platform for the dissemination of valuable health information that encourages healthy behaviours, as well as commercial messaging that can contradict these healthy behaviours (Leu et al., 2022). Collectively, these studies help to demonstrate social media's role in the dissemination of health-related messaging and its potential ability to shape the public's attitudes and behaviours.

The studies examined above focus on young adults rather than adolescents, however, it is widely known that adolescents are highly active on social media sites (Kruzan et al., 2022). The literatures' focus on young adults highlights a gap in our understanding of how adolescents access and interpret health-related messaging on social media, and whether this influences their behaviours. Ku et al. (2019) examined adolescent social media news consumption, news media literacy, and critical thinking. They found that social media was the most popular news source and that a high proportion regularly shared and discussed news. Participants' awareness of social media algorithms that filter and select news based on user habits and preferences varied, with older adolescents showing more awareness and scepticism towards these algorithms and better critical thinking skills. In terms of understanding and evaluating information, participants understood news content accurately and could distinguish facts from claims but had weaker abilities in evaluating evidence (Ku et al., 2019). The findings from this study show adolescents to be active consumers and sharers of news content on social media. However, it also demonstrates that adolescents' skills in

critically evaluating evidence on these platforms vary, which highlights the need to further explore how they interpret and react to information they see or hear.

In summary, the literature explored in this section underscores the significant role of media in shaping public discourse and perceptions around health-related topics (Crawford et al., 2019) (Breheny & Severinsen, 2018; Lyons, 2000). It is evident that there is more public interest and media representation of sleep, however, the portrayal of sleep is often disconnected from scientific understandings and individual circumstances (Robbins et al., 2019). With the rise of digital platforms, health-related messages are increasingly promoted on media sites such as social media, reaching a broad audience (Kruzan et al., 2022; Wright et al., 2019). Health-related messages have the potential to influence young people's behaviours and perceptions. However, most studies on the effects of health-related media messages have been on young adults rather than adolescents (Alpert et al., 2020; Leu et al., 2022; Lyons et al., 2006), despite adolescents' high activity on these platforms (Kruzan et al., 2022; Smith et al., 2020). Adolescents demonstrate good media literacy but weaker abilities to critically evaluate information on social media and varying levels of critical thinking depending on age (Ku et al., 2019). Additionally, most research has been conducted internationally, with limited studies in AoNZ (Breheny et al., 2023; Ladyman et al., 2022). Together, this exploration of research and evidence points to a gap in understanding how adolescents in AoNZ, consume and interpret sleep-related health messaging, as well as the influence of this messaging on their sleep behaviours. Therefore, this research aims to investigate the factors shaping adolescent sleep practices in AoNZ. It explores adolescents' access to sleep-related messaging, their interpretation of this messaging, and their perceptions on the influence of how these messages affect their beliefs, expectations, and sleep-related practices.

CHAPTER 3: Methods

Design

Through their exploratory nature, qualitative methodologies help in understanding subjective experiences, perspectives, and practices of a specific phenomenon through an 'insider's' perspective (Elliott & Timulak, 2005; Flick, 2018; O'Leary, 2021). Within a phenomenon, qualitative approaches recognise multiple realities (Ryan et al., 2007). Participant perspectives are prioritised as it is essential to place their subjective experiences at the centre of this type of research (Becker et al., 2012). Furthermore, it is essential to carefully consider data collection and interpretation to ensure that they align with research aims (O'Leary, 2021). Therefore, considering the aims of this study it used a qualitative methodological approach and employed focus groups to explore what informs adolescents' sleep practices. Using this approach helped to emphasise individual subjective experiences and allow for diverse, rich descriptions of this phenomenon (O'Leary, 2021).

Sample

Typically, adolescents are defined as individuals between the ages of 10 and 19 years old (WHO, 2023), but research often characterises adolescence as a stage of physical and psychological changes (Billett et al., 2019). The period of adolescence in relation to sleep research often gets characterised by the widely known physiological shifts in their sleep that occur (Gradisar et al., 2011; Shochat et al., 2014). As 16- to 18-year-olds represent an age group who have often experienced the pivotal sleep changes that occur during this period, the present study has focused on this age range. Also, adolescents between these ages often have access to electronic devices and are active on social media platforms, as they met the minimum age requirement to access these sites (O'Keeffe & Clarke-Pearson, 2011; Reid Chassiakos et al., 2016). Therefore, choosing this age range facilitates the collection of rich data, as it encompasses an age group that is likely to interact with and access media platforms

that could potentially promote adolescent sleep-health messages relevant to their life stage, thereby covering the central aspects of the phenomenon of interest (Elliott & Timulak, 2005; Fossey et al., 2002).

Recruitment and data collection for this study occurred from May 2024 to July 2024. A convenience sample of approximately twelve participants aged 16 to 18 years old was sought. The sample was collected from two high schools. Wellington East Girls' College is a public secondary school located in Central Wellington City. This school teaches students in year 9 to 13 and has an enrolment scheme that guarantees automatic admission for students residing within the designated zone, while also accepting out-of-zone students (Wellington East Girls College, 2024). In 2024, the school had an Equity Index (EQI) of 414 (Ministry of Education, 2024a). The EQI is based on the socio-economic factors that have impacted students academic achievement over the past twenty years, as well as the socio-economic characteristics of students enrolled over the last three years. The EQI ranges from 344 to 569, with higher numbers indicating more significant socio-economic challenges faced by the students (Ministry of Education, 2024b). According to the Ministry of Education's 2023 count, Wellington East Girls' College had a student population of 1,031 (Ministry of Education, 2023). The school was chosen for this study based on its convenient location and a pre-existing relationship with L.S. that facilitated recruitment of students. Participants were recruited from a year 13 health science class. According to the school, the health science course participants were recruited from is aimed at students interested in careers in nursing, paramedicine, occupational therapy, sports science, or medical laboratory science (Wellington East Girls College, 2024).

Participants were also recruited from Westlake Boys High School, another public secondary school that is located in Takapuna, Auckland. This school teaches years 9 to 13 and operates a similar enrolment zone scheme as Wellington East Girls' College, but accepts

out-of-zone enrolments through a ballot system (Westlake Boys High School, 2024). In 2024, Westlake Boys High School had an EQI of 398 (Ministry of Education, 2024a). In 2023, the Ministry of Education's student population count was 2,585, making it one of the largest boy's schools in AoNZ (Ministry of Education, 2023). The school had previously expressed an interest in participating in sleep research and therefore was approached about participating in the current study. Participants were recruited from a year 13 biology class at the school. Additionally, Westlake Boys High School is known for its sports and physical education due to the school offering opportunities for participating in various sporting activities (Westlake Boys High School, 2024). The majority of the students recruited from this school participate in various sports programs.

Both Wellington East Girls' College and Westlake Boys High School were approached and invited to be involved in the study. They both responded by agreeing to participate and provided contacts of teachers whose classes may have an interest in being involved in the study. At both schools, the teachers helped to provide forms to the students about the study that included a detailed information sheet (See Appendix A) that included information about the studies, aims, recruitment, consent, data collection, and confidentiality. Furthermore, advertisements (Appendix B) and consent forms (see Appendix C) were provided to the students. Recruitment was also enabled by a presentation I delivered to potential participants in each class about various sleep research projects I had been involved in and about the current study. Subsequently, all participants were identified through expressions of interest via signed written consent forms. Furthermore, potential participants understood that the study would provide them with a \$20 voucher as recognition of their time and contribution to the research.

A total of 19 students participated across three focus groups. The final sample consisted of 13 females and 6 males, all in their last year of school. Qualitative approaches

are able to gain richer understandings of phenomenon through smaller samples (Fossey et al., 2002; O'Leary, 2021), and therefore the final sample for this study was considered satisfactory. Having 19 participants was manageable for the study and allowed for more in-depth conversations during the focus group discussions. Generalisability to a wider population was not the aim of this research, but rather, it aimed to provide an initial window into adolescents' perspectives of sleep health-related messaging.

Focus group format

Face-to-face focus groups were conducted using a structured guide (See Appendix D) to facilitate discussion among the participants. Focus groups are a widely used research tool in qualitative research, that can give rich data and a better understanding of individual and group norms (Freeman, 2006; Kitzinger, 1994; Morgan, 1996). The use of focus groups in this study allowed exploration into human behaviour and motivations behind these behaviours (Kitzinger, 1994; Strauss & Corbin, 1998), aligning with the study objectives.

In order to keep the conversations focused on the study's aims while also encouraging open discussion, a focus group guide was developed (Thomas, 2009). The guide ensured that the participants were reminded of the study's aims and their rights, such as the option to stop the audio recording if they felt uncomfortable, and overall aided in establishing the structure and expectations during the discussions (O'Leary, 2021). Group interactions within focus groups help to promote more nuanced understandings of the phenomenon (Freeman, 2006; Kitzinger, 1994). Therefore, throughout the focus groups, an open space was created to encourage participants to engage in discussion and honest exchanges actively (Freeman, 2006; Kitzinger, 1994).

The focus group guide was based on the study's research questions, literature review, and key adolescent sleep-health messages in academic literature and highly used media platforms. It included questions about participants' knowledge of key topics related to

adolescent sleep, their sources of information, interpretation of messages, and whether these messages influenced their sleep behaviours. Key topics covered electronics and blue light, caffeine, delayed circadian rhythms, schedules, and personal sleep-tracking devices. After the first focus group, the guide was slightly revised to ask questions more effectively and elicit responses that were better aligned with the research aims (See Appendix E). This involved framing questions in a more open-ended and exploratory manner to ensure that key issues were addressed while facilitating rich responses through group discussion (Sprenkle & Piercy, 2005).

During the focus groups, video prompts from TikTok were used to guide discussions (See Appendix E). TikTok is a rapidly growing platform worldwide. Unlike other social media platforms that mainly centre around images and text, TikTok often uses short videos that typically last between 15 seconds and a few minutes (Montag et al., 2021). In 2023 it had around 1.5 billion active users, which is expected to reach 1.8 billion active users by the end of 2024. Notably, a report shows that 51.8% of users were aged 13-24 in 2023 (Iqbal, 2024). Keywords including 'teen', 'adolescent', 'high school student', and 'young adult' were searched alongside 'sleep'. Relevant videos were retrieved using the 'top' sorting process which is based on the highest user engagement. These videos addressed key topics surrounding adolescent sleep, as outlined in the focus group guide.

Procedure

Two of the focus groups included students from the girls' school (with one group consisting of four participants and the other of nine). The third focus group included six students from the boys' school. All focus groups were led by me with a supervisor (L.S.) present during the first two sessions with the female participants. L.S. was absent from the final session with male participants due to practical reasons, as well as my increased confidence in independently managing the focus groups and audio equipment.

The focus groups were conducted at the respective schools, with the timing of the focus groups being based on each school's preference. The focus groups were conducted with the female participants during the school's lunch breaks, while the session with male participants took place during their biology class. All focus groups were recorded using a digital voice recorder to minimise potential bias in data collection (O'Leary, 2021). The information and consent forms provided to the participants informed them of the planned use of the audio recordings as well as details on anonymity and data storage. Prior to the focus groups, written consent was obtained and again confirmed orally at the start of each session. Each focus group lasted approximately 30 minutes, and lunch was shared with the participants as a form of reciprocity. The focus groups were transcribed using ScribeSound™ (a New Zealand based company that provides a secure transcription service). Any identifying information was subsequently removed from the transcriptions. A password-protected computer, accessible only to authorised personnel, securely stored all focus group data, including audio recordings, transcriptions and notes, ensuring participant confidentiality (Brod et al., 2009; O'Leary, 2021).

In this study, respecting participants' decision-making capacities, preventing harm, and balancing benefits and risks was essential in the consideration of potential ethical issues (Munford et al., 2008; O'Leary, 2021). To ensure that these principles were upheld, participants were told of their option to withdraw, ensured their confidentiality, and only participated if they gave informed consent. To mitigate any potential harm and ensure the participants well-being was protected, processes were implemented (Munford & Sanders, 2015). For instance, for some individuals, discussing their health behaviours and practices may be a sensitive or personal topic. For this reason, processes were put in place, such as having details of support services readily available for any participant who expressed distress. Having this process in place helped to ensure no harm came to participants and potential risks

were managed (O'Leary, 2021). Ethical approval was sought and provided from the Massey University Ethics Committee (OM1 24/07) (See Appendix F) and in accordance with the Massey University Code of Ethical Conduct for Research, Teaching, and Evaluation Involving Human Participants (Massey University, 2017).

Data analysis

A thematic analysis was employed to analyse the data collected. This type of analysis allows for the identification, analysis, and reporting of themes from a dataset (O'Leary, 2021). Throughout a thematic analysis, the researcher may be required to transition between inductive and deductive reasoning (Braun & Clarke, 2006). Inductive reasoning revolves around the themes and patterns emerging from the data collected. In contrast, deductive reasoning involves themes being predetermined with the data collected supporting an emerging theory. Within the current study, an inductive method was used to first look at the collected data. This way, the themes that were found were closely related to the data from the focus groups (Green et al., 2007; Patton, 1990). As the process continued the analysis evolved to cycling between inductive and deductive approaches as themes or patterns were identified and were confirmed (O'Leary, 2021).

The analysis followed the 6-stage model of thematic analysis as outlined by Braun and Clarke (2006), which includes familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Familiarisation with the data was initially derived from the transcription process and then through active, repeated reading of the data. The transcripts were then uploaded to NVivo 14 (released March 2023), a qualitative analysis software. In NVivo, the data was inductively coded to develop conceptual categories. The codes were then discussed and reviewed with the wider supervision team (L.S. & R.G.) before being finalised.

Themes were constructed through the codes being collated and organised into initial themes and sub-themes. To validate and review the initial themes, the phases of constructing themes were moved between back and forth, and the themes were compared to the existing literature. This process helped in the creation of meaningful and accurate themes (Braun & Clarke, 2006; O'Leary, 2021). To present the final themes extracts from participants were used, which ensured close alignment with the dataset and helped illustrate the themes' meaning clearly (O'Leary, 2021). A reflective journal of my thoughts and impressions was documented throughout the analysis process to help ensure authenticity and researcher accountability (Rubin & Babbie, 2008).

CHAPTER 4: Findings

Analyses of these focus groups enabled the construction of themes which demonstrate how adolescents in this study interact with sleep-related information. This interaction can be understood through two overarching themes: *Taking interest in sleep information* and *Disregarding sleep information*. Both the broader themes and sub themes are described in more detail below and illustrated with quotes. However, in order to provide context to the main themes, an overview of the adolescents' general sleep experiences is provided first.

Sleep experiences

Discussions throughout the focus group sessions demonstrated that participants' experiences and prioritisation of sleep is complex. When participants compare their sleep experiences from childhood to their current age, they noted both consistencies in habits as well as notable shifts in routines. These shifts reflect an increased awareness of sleep's importance, along with unique challenges in achieving good sleep due to external pressures at this life stage.

Many of the participants reported considering sleep as a positive part of their lives. Some described significant enjoyment around sleeping and noted that sleep was something they “never really had issues with”, with multiple participants agreeing with that they are a ‘good sleeper’. One participant expressed sleep to almost be a hobby that she deeply enjoys:

“I love sleeping.... I would call it, I don't know if you'd call it a hobby. Like, I could sleep, I could lie down on the ground right now and I'll just go to sleep...” (Female Participant).

The female participants noted that they slept a lot more compared to when they were younger. They talked about often extending sleep durations, with one participant explaining that they sleep 12 hours on weekends. This extension of sleep reflects a shift in the

participants priorities as they have gotten older, with one participant describing how they actively seek more sleep now, compared to when they were younger:

“I can't wait to go home and go to bed but when I was younger ... that's like the last thing I want to do.... [I'd] sit on the couch and not say anything until like it's like bedtime.... I'd try to be as quiet as possible to stay up longer.” (Female Participant).

Some participants agreed that their ability to fall asleep early has become more difficult as they have gotten older. A participant explained that throughout the last couple of years they have observed a change in the time they wake, as they have progressively woken up later, which contrasts with them previously being an early riser. Another participant reflected on a similar shift, noting:

“...during the school period like now as we're coming to the end of the term I feel quite like I can wake up early most mornings and I can feel quite rested. As opposed to, like, when we come back for term three after the holidays I'll probably sleep in a bit more; the first few weeks will be quite difficult for me.” (Male Participant).

Alongside the experiences of changes in sleep timing, some participants expressed an accompanying feeling of guilt or laziness, with one participant explaining that she felt that by sleeping in that she was wasting time that she could have spent doing something else.

Another participant highlighted their perspective on the difference in their sleep timing between the holidays and school term:

“... usually [during the holidays] I'm sleeping later and I'm waking up later. I just feel it just doesn't feel as good as sleeping at a reasonably good time for the same amount of hours or a little less.” (Male Participant).

Some of the male participants described sleep habits remaining relatively consistent over time. One participant shared that their routines like showering before bed have persisted since they were a young child, with this routine being essential to their ability to sleep. Another

participant reflects on how his sleep routines and perception evolved over time, describing similar habits despite an increased awareness and appreciation of sleep:

“I think it hasn't changed from when I was younger....I know it's more important now and I do try to aim for that now, but I feel like my habits are pretty similar.” (Male Participant).

This increase in awareness around the importance of sleep is also reflected by several participants mentioning the connection between sleep and daily functioning, particularly in relation to mood and school performance:

“... I always talk about this with my friend.... how ... a bad night's sleep or a short sleep will actually affect you more than like you would realise, you know.” (Female Participant).

This participant's discussion with her friend reflects a growing recognition of the impact of poor sleep on daily life through personal experience. The insight indicates a shift towards understanding the critical role of sleep in functioning and well-being, a perspective that appeared to resonate with many of the participants.

Some participants described being very regimented in their sleep routines and hours of sleep, especially on weekdays, with many participants counting their hours of sleep often making comments such as “I like to have my eight hours”. One boy who swims competitively described the impact that poor sleep has on him:

“Probably more historically as a swimmer, I [think] sleep is massive. Like it's the difference between a good training and bad training or then how the day goes... [it matters] when I went to bed and what time I get up and making sure that that block is the same. You know, if I'm getting up at normal time, like seven to come to school, then I can go to bed a little bit later, but if I'm getting up at five or earlier, then it needs to be, yeah.” (Male Participant).

Another participant explained how her hours of sleep vary between weekdays and weekends:

“...I'm very important about my sleep. I always count my hours like before I go to sleep to aim what time to wake up. But then in the weekends it's like, I've got... a natural body clock, so I always wake up like I don't sleep in very much.” (Female Participant).

Together these quotes demonstrate a disciplined, intentional approach to sleep management. Both quotes emphasise the role of structured routines on weekdays, particularly around sleep duration and timing, showing how participants actively track and adjust sleep to meet their personal demands of waking life. Here it is suggested that sleep is a controllable factor that is prioritised according to what they have on the next day.

While some participants described having regimented sleep routines, others had no routine. One participant explains that he sleeps when he feels like it and explained that he doesn't “bother looking at” the exact number of hours of sleep he may get. Inconsistent routines were also described by other participants that felt that their routines are often dependent on aspects of their waking life such as school or sports schedules:

“It depends on what I have, you know, even if you... know if you've got a ... training that, you know, runs late, then obviously that, you know, that adds on. Come home, have dinner, you know, get my stuff ready for the next day. Whereas when I was younger, I wasn't worried about it as much. It was just, oh, I went to bed at this time, got up at this time. Whereas, you know, week to week it changes or even day to day it's, it's probably never consistent...” (Male Participant).

Here an adaptable, reactive sleep schedule is described shaped by external demands. This flexible approach contrasts with more structured routines that others aim to maintain.

Furthermore, it suggests that as responsibilities increase over time maintaining a consistent sleep routine can become challenging. This description of an inconsistent routine reflects a

broader pattern where participants' sleep patterns are increasingly shaped by external pressures.

Furthermore, the relationship between sleep and the pressures of daily life was further described in terms of how stress impacts sleep. This connection was exemplified through accounts of both academic work as well as sporting performance. For instance, one participant noted that she “gets like stressed out over the week” which results in her not sleeping well, but that her sleep significantly improves on the weekends. Another participant explained the pressure of performing well in sport causes her poor sleep the night before a sports game.

Overall, while many participants expressed a love for sleep, recognise its importance for daily functioning, and aim to maintain good routines, their actual sleep habits can be inconsistent and are often influenced by the pressures and routines of waking life. These experiences lay the foundation for how the participants perceive and respond to the sleep messages they encounter, as explored throughout the main themes.

The first theme, *Taking interest in sleep information*, explores how sleep-related messaging is passively encountered through various sources and how certain sleep-related messages capture adolescents' attention, sparking curiosity and discussion and sometimes leading to temporary behavioural changes. Various sources and types of sleep messages caught the participant's interest including messages encountered on platforms such as social media. Messages on these platforms facilitated dialogue and encouraged experimentation with sleep tools, trends, or advice despite the participants not fully believing or adopting the advice long-term. Furthermore, sleep messages provided through trusted sources like coaches and parents often provided practical and relatable advice which also encouraged engagement and trial.

The second theme, *Disregarding sleep information*, highlights how adolescents tend to dismiss or overlook sleep-related messages that feel irrelevant, contradictory, or poorly aligned with their current lifestyles and priorities. This disengagement often arises from the source of the information (e.g., scepticism around social media or adults who are perceived as out of touch with teenage life), the contradictory nature of advice they encounter, and its inapplicability to their real-world circumstances due to other competing priorities and needs which was especially apparent around messaging about caffeine and technology.

Taking interest in sleep information

The following theme explores how certain sleep-related messages catch participants' attention and lead to curiosity or behavioural changes, even if these are short-lived.

Throughout discussions it was evident that the ability of a sleep-related message to catch the participants' interest depends on the source, its relatability, how engaging it is, and how well it fits into their routines or aligns with their experiences and goals. Through the following sub-themes: *Messages just come out of nowhere*, *Taking on relatable and practical advice*, and *Experimenting with information*, the sources, specific topics and reasons for adolescents in this study to take an interest in specific sleep related messaging is further explored.

Messages just come out of nowhere

The participants highlighted how they felt that messaging is often randomly provided to them on their social media feeds making it hard to pinpoint exactly where they saw sleep-related messaging. They stated things like it "just comes out of nowhere" and "I can't remember. Probably just on like social media. I don't know". The random nature of content encountered on social media platforms is underscored by participants sporadically sharing facts about sleep throughout focus group discussions that didn't always relate to the topic being discussed. For instance, one participant unexpectedly brought up information she had heard

on the best time to wake up depending on the stage of sleep you are in, adding, “I don’t really know, but I’ve seen them”.

The participants noted seeing sleep-related content through video format or adverts on pages such as their ‘for you’ page on TikTok, or ‘reels’ page on Instagram which provide a personalised feed of videos curated by the platform's algorithm. When discussing the types of individuals promoting sleep-related messaging various types and expertise levels were described:

“I think I see it more from experts or people who are who have done their research, their own research, like not necessarily like went to Uni, but they’ve looked it up and all that. So, I don't really get [follow] general members of the public.” (Male Participant).

“I feel like it'll just be people telling their story but like sometimes I'm like not interested. Like a random person just talking on TikTok...” (Female Participant).

These quotes demonstrate the various types of sources encountered on these types of platforms, with other participants additionally describing how they had seen individuals who claim to have “done a degree in sleep”, or parental figures which underscores that there is not necessarily a consistent type of source on these platforms.

The participants specifically identified social media platforms such as TikTok, Instagram, and Snapchat as sources of sleep-related messaging, however between the participants there were varying levels of engagement in health-related content on these types of platforms. Many of the male participants mentioned rarely engaging with health-related content on these platforms, saying that they didn’t “often see things like health benefit things” on their social media feeds. Engagement with health content on social media was more evident among the female participants. However, despite the female participants noting encountering health-related content online, they also noted seeing less messaging on sleep-

related topics compared to other health areas. One participant described the amount of sleep content as “quite small”, adding that she only encountered it “occasionally but not regularly”. One male participant who did encounter health-related content online noted that he often saw nutritional information or informative videos about diseases, while another male participant mentioned previously encountering videos related to Covid during the pandemic.

One participant mentioned that he would be interested in sleep-related information “if it was presented in front of [him], but it's just generally it's not”, which highlighted that despite there being an interest in sleep, sleep-related information is not generally readily available or sought out but rather passively engaged with. Passive engagements with sleep-related information were further described by other participants throughout the focus groups. However, a few participants mentioned actively seeking information about sleep. One participant shared that she has “Googled like why can't [she] sleep” which produced results about sleep environments, such as room temperature and washing sheets “every two weeks”. Another participant noted looking up information about napping, but it was discussed that many of the participants did not actively search for sleep-related information or read long-form information about sleep.

Other than social media platforms; schools, coaches, parents, health specialists, and peers were also identified as sources of sleep-related messaging. For the male participants in particular, schools and coaches were prominent sources. One participant mentioned that the importance of sleep is “thrown at us all the time at school”, which suggests that advice was often unsolicited, unexpected, or something they had to 'catch' and take in. Another participant noted that most of his knowledge about sleep came from his coach and parents. Many participants also recalled parents often telling them to get enough sleep, with additional guidance for some from health specialists, such as general practitioners reinforcing its importance. Peer conversations also played a role, as participants discussed how sharing

personal experiences with friends helped shape their beliefs about the importance of sleep or provided a form of support when discussing shared experiences.

Taking on relatable and practical advice

Sleep-related messaging that the participants often engaged with included advice that they felt was relevant to their daily lives, particularly practical tips that help them manage sleep alongside other daily pressures. Additionally, it was evident that if the messages relate to the participants' personal experiences or beliefs about sleep, they were more willing to adopt the advice. However, the relevance of the advice depended on factors such as the source of the advice, the participants' personal experience, and their feelings after trialling the advice.

Advice that felt practical and relatable came from various sources but most notable was parents, coaches, teachers and in some cases, media platforms. Often participants could not pinpoint hearing a message from one specific source but rather described them as something they felt they had "just heard that [their] whole life". For example, the recommendation to get "enough" sleep, often explained as "eight hours" was widely noted and accepted by the participants. One participant explained that when they were younger the ideal sleep duration was often expressed as "ten to twelve hours", but as they have gotten older it has shifted to "eight hours", aligning with adult recommendations. Another participant had also received advice around the timing of sleep:

"I've heard that like if you go to sleep at like ten o'clock or like twelve o'clock, even if you get eight hours, it's like different because you're getting eight hours, but it's like about the actual time you go to sleep and wake up." (Female Participant).

This quote illustrates advice that adds more nuance to the standard "eight hours" recommendation that participants often received, providing practical guidance on both quantity and timing.

Messages that aligned with participants' own experiences or the experiences of those around them were often deemed as 'relevant'. Throughout the discussions, participants reflected on what it means to get enough sleep and the tangible benefits they experience when they do. One participant, for instance, described taking on repeated advice about sleep duration by aiming for "like eight hours at least", as personal experience has demonstrated to him that this helps maintain his focus and mood. However, he also acknowledged that "even then sometimes that doesn't feel like enough", suggesting that the ideal amount of sleep can feel variable depending on individual contexts. This variability is supported by another participant, who noted that "if the day was really tiring, [he] [wanted] to sleep way more", whereas on less busy days, he requires less sleep. These reflections highlight how participants engage with sleep advice and critically assess it by comparing it with their own experiences, adopting recommendations when they see tangible benefits. One participant explains this approach, noting how inadequate sleep affects his mood and focus the next day:

"Mine's definitely... probably like the difference in ... what I am, how I am the next day, like probably more grumpy or shitty the next day. But also like, I don't drink caffeine, but more like it's always been a hard and fast rule that I can't have my phone in my bedroom. So, I would probably just stay awake all night." (Male Participant).

This quote highlights the participant's experience adopting specific habits that support better rest due to his personal experience of how sleep quality directly impacts his mood and functioning.

Additionally, participants draw on shared experiences within their social circles to shape their understanding of adequate sleep. One participant mentioned discussing sleep with his friends who are "going through the same things", as they are all involved in sports. He noted their collective experience of how long training sessions impact their ability to get

enough sleep, illustrating how personal and group experiences reinforce messaging received about the importance of getting enough sleep.

While messaging about ‘delayed sleep phase’ was not directly referred to or brought up by the participants, a TikTok video shared with the participants during the focus groups about this sleep phenomenon prompted discussion of relevant experiences. Some noted seeing similar messaging around adolescents having a delayed sleep phase and agreed with the concept, reflecting on their own experiences and mentioning that they often feel better when waking up later. For example, one participant described how she personally related to the video prompt, sharing her experience of sleep over the week:

“Actually no, my Monday is Tuesday and my weekend is Monday, so when I come to school on Monday I'm ... tired and I don't do any work, and then on Tuesday that's when my week starts.” (Female Participant).

Here, the participant highlights how her natural rhythm conflicts with early school schedules, affecting her productivity. This reinforces the relevance of delayed sleep phase messaging to the daily experiences of participants.

As participants described increasingly recognising sleep’s importance for health and functioning through their own experiences over time, they noted hearing messaging about sleep that supports these personal experiences. For instance, they heard messages about how stress affects sleep and vice versa, with parents reminding them to “get some good sleep” and “be well rested” for upcoming busy periods. One participant shared her mother’s view on the importance of sleep for health:

“Also, my mum's like, whenever I'm sick, she's like - ‘oh you just need a good night's sleep. You know, it just seems like good sleep will heal everything.’” (Female Participant).

Most of the male participants mentioned frequently receiving practical advice about sleep to enhance athletic performance, as they all spoke about their involvement with some sort of sports program. One participant shared how his coach “drummed” into him the importance of getting enough sleep after evening training sessions and before morning sessions to support his swimming performance, and he noted that it “makes a huge difference”. Examples such as this demonstrated that when practical advice around sleep resonates with participants, aligning with their personal goals it is taken on board. Another participant described similar messaging from his school about the importance of sleep for academic success in response to a TikTok video presented to him:

“Definitely... things like that have been shown to us in school and in assemblies and particularly during study periods and it's something that they like to hammer home about, you know, study and rest, and rest is also sleep.” (Male Participant).

These quotes demonstrate how sleep has been framed as essential for optimal functioning. It was demonstrated through the focus groups that sleep for both males and females in this study was emphasised for academic performance, as well as sleep being emphasised for health and stress management for the female participants and for athletic performance in the male participants. When sleep advice aligns with personal goals it resonated more deeply, leading participants to adopt practices that yield positive results. However, when the advice proved to be ineffective, it was often dismissed. These experiences indicate that, while the participants appear to be open to practical sleep advice that supports their personal goals, they also describe critically assessing its usefulness, which in part determines whether they trial or adopt the advice.

Experimenting with information

Sleep-related messaging that was presented through accessible and engaging platforms such as Instagram and TikTok particularly piqued the participants interest. Sleep-related content

on these platforms sparked animated conversations among participants, especially when referencing well-known trends or tools as seen through back-and-forth exchanges. For instance, one participant's mention of lavender spray to aid sleep generated responses such as "Oh yes. I used to use that actually" and "I've never tried it actually". Similarly, discussions about white noise generated varying responses including "I tried that", "I love it.", and "it distracts me". These exchanges highlight how social media content encourages interaction and personal sharing around sleep experiences, even if participants do not fully endorse or adopt the advice presented.

Some participants mentioned that encountering sleep-related content on platforms like TikTok prompted further exploration due to their curiosity. For instance, one participant described her reaction to sleep-related videos:

"Or the sleep ones. Yeah, it's in the search bar. And it's, like, 'oh my gosh' what happens if I do this." (Female Participant).

This response illustrates how engaging and entertainment-oriented content presented to the participants can result in curiosity and encouragement to investigate further. Specific entertainment-oriented content discussed included portrayals of uncommon features of sleep such as sleep paralysis. For example, one participant described how online content related sleep paralysis to "ghost stories" and individuals "struggling to breathe", demonstrating how features of sleep can be presented through entertainment-based content impacting individuals' views on sleep problems.

The appeal of sleep-related content on social media appeared particularly prominent among the female participants, who noted seeing ads and trends that related to sleep apps, products, supplements, and routines. Many female participants talked about encountering ads for sleep-related apps that tracked various aspects of sleep, and one participant who "paid for it on accident" noted her experience:

“Yeah, well I used ... a recording one... I would just hear what I was saying in my sleep or how many hours I got...and how much was deep and how much was like awake.... But ...[that] wasn't like super informational, it's just like you get to play back ... what you say in your sleep.... It was quite funny.” (Female Participant).

This quote shows how sleep tracking apps were described by participants as entertaining rather than serious solutions to improve sleep. It suggests a casual engagement with sleep information that is not always grounded in the aim to improve sleep.

Other advertisements presented to the participants on social media platforms to aid sleep included product and supplement advertisements for magnesium, bambillo pillows, bedframes, and lavender sprays. Energy drinks were also promoted on these platforms, but rather more often to aid wakefulness. One participant recalled wanting to try sleep drops for when she had difficulty sleeping after hearing an ad on the radio. Another participant noted that social media ads often tempted her to buy products being advertised due to her “shopaholic” tendencies. Melatonin advertisements were also discussed with one participant talking about the effect of these advertisements on her friend:

“Melatonin, yeah. I know one of my friends is like obsessed ... with getting this ... melatonin from overseas because it's been advertised everywhere, even though it's the same as what you can get prescribed here.” (Female Participant).

Sleep-related social media trends also came up among the female participants, with participants mentioning trends such as the “sleepy girl mocktail”, where people mix supplements such as magnesium and tart cherry before bed, with one participant stating that people online claimed “that it made them sleep for twelve hours or something”. The discussion of this trend prompted a participant to share that she had tried the mocktail which was encouraged by her mother, though she did not find it effective. Other trends, like ‘get unready with me’ videos, which showcase personal wind-down routines, such as skincare and

reading, inspired one participant to “get into [her] pyjamas early” as part of her own routine. Participants’ exposure to various sleep related practices, such as using specific sounds to aid sleep, further exemplifies how online sleep trends invite experimentation and exploration:

“I was thinking of this girl, she fell asleep with cow noises.... Yeah, and I pressed the search bar and ... I went into TikTok free page doom thing, and I just kept pressing the search bar and like part two and stuff, and I was just talking about how like everyone finds different noises soothing to fall asleep to.” (Female Participant).

Participants’ engagement with these sleep-related products and trends underscores the commercialisation of sleep as a health commodity, where solutions are often product-based. Social media normalises the sharing sleep routines and tips in accessible formats, encouraging curiosity and engagement despite the advice’s trend-based nature. While some participants were tempted to try new products or routines, others viewed them more as entertainment, reflecting some participants’ casual and selective approach to interacting with the sleep information they encountered. The accessibility of this content makes sleep practices promoted on these platforms feel approachable, even if they are grounded more in popular appeal rather than scientific evidence.

Participants’ acceptance and agreement with sleep-related information varied. Some participants tended to accept advice at face value while others were more sceptical, and used a trial-based approach, guided by personal experience. Some participants openly admitted a susceptibility to believing online information, with a participant expressing that they often “fall for” ads for apps or information that claim to help individuals sleep better:

“I’m really bad. I believe everything I see online...so easily. I’m just so easily convinced and stuff like that.... it's not like oh, I know that will work, but it's like I never think of it being false information at times. But whether I apply it to myself is more of just like am I willing to do that.” (Male Participant).

This participant's admission underscores a susceptibility to online information, where participants may not thoroughly assess the information they are exposed to. Yet, despite the initial trust in the information, hesitations around its effectiveness or actually acting on the advice were apparent.

Several participants acknowledged that messaging about technology use before bed was "quite relevant" to their age group and that these messages were "probably true". Some even mentioned trying to follow the advice, whether voluntarily or due to external pressures. For instance, one participant had to stop his "discord calls with other people at night" because he needed to wake up early for school as he lived out-of-zone. Another participant shared how she actively tried to limit her phone use before bed:

"Yeah, I think it is too. I always make sure I put my phone down by like at latest 11.

So, I'll be asleep by like eleven thirty to twelve-ish because I do find that if I am on my phone right before I go to sleep, I just can't, I just lie there awake for a long time."

(Female Participant).

This quote highlights a participant's effort to implement advice about reducing phone use before bed as she describes a link between phone use before bed and difficulty falling asleep. This example illustrates how some participants engaged with and trialled sleep-related messaging in a way that aligned with their personal observations.

In the male focus groups, participants reported engaging with sleep related messaging from trusted figures like coaches or teachers. Similar to the female's engagements with online content, the messaging from trusted figures prompted curiosity and sometimes trial however advice wasn't always adopted long term. One participant reflected on the lengths to which sleep is emphasised for sports performance, sharing his experience at a sports tournament:

"... with the cricket program here, we hired a breathing coach last year and so down at Nationals, which is like a like a week-long tournament, ...he monitored all of us ...

around like what we're eating and stuff and a lot of to do with what his job was ... making sure we all got well rested and so like we all had to like try magnesium supplements and like mouth tape while you sleep. It's supposed to make you sleep better. I didn't find that it did much for me personally, but some of the other boys said it worked for them so.” (Male Participant).

Another participant discussed sleep-related messaging he received from a sports coach on sleep cycles:

“One of our coaches... says ...[he has] like periods of deep sleep and ... in the middle of like a three-hour cycle of sleep is like your deepest sleep. So, he always used to say if you were to rob a house or something, do it at like 4 am because that's when most people are in their deepest sleep.” (Male Participant).

Other participants also talked about this messaging from the coach and added that the coach used this information to highlight that due to these “three-hour sleep cycles” it is likely an individual would feel worse after waking up after eight hours compared to six hours as they would be “in the middle of a cycle”. Another participant explained his perception of this information he received from the coach:

“...the Mr X one was always really interesting, but like straightaway I pretty much knew that ...[sleep] didn't really work that way. And I think I even tried like because it's something about the three hour those three hours cycles and I think I tried one thing I did. I got six hours instead of ... nine, [nine] was unrealistic for me and I was usually getting maybe seven and a half and I tried getting six and it definitely didn't work.” (Male Participant).

Here it is demonstrated that participants are exposed to misinformation which brings into question the quality of advice they are receiving. The quotes show how the sleep-related advice was approached with a mix of curiosity and scepticism by the participants. These

responses reflect a willingness to explore and trial advice from trusted authority figures, yet also highlights that the participants critically evaluate the information based on personal experience.

The participants reflected on the factors that impacted their willingness to attempt or act on any sleep-related messaging received. They stated factors such as money, their levels of curiosity and their beliefs about whether the advice they received was “a placebo or something”. While some tried melatonin as prescribed by doctors or experimented with magnesium after seeing ads, these behaviour changes were often temporary, as many found the products ineffective and claimed, “I don’t think it really helps” and “I tried it and it didn’t work on me”. One participant reflected on what made her more willing to change her sleep practices and her specific experience with trying magnesium:

“Maybe like test them out and see if they work. Or like...I'm pretty sure I saw on social media like magnesium like helps with ... sleep and like cramps. So then I started taking it every day but then, when I stopped, it just like messed up my sleep so I was oh I’m just gonna completely not use it at all.” (Female Participant).

Here the participant describes an outcome-focused perspective, underscoring how the participant places value on tangible outcomes which is assessed through an experimental approach.

Together, this sub-theme illustrates how accessible and engaging platforms, or advice from trusted figures, can encourage individuals to experiment with sleep-related information, even if their engagement remains selective and often temporary. The type of messaging also appears to influence engagement levels, as product-based solutions and unique trends or advice spark animated discussions and pique interest, particularly among female participants. Participants' responses reveal a nuanced approach, where curiosity or trust may lead to initial engagement and trial, yet critical assessment and personal experience ultimately shape

whether these behaviours endure over time. While participants expressed interest and engagement with sleep-related messaging, their perceptions and the evaluation of such messages based on personal experience also sometimes led them to disregard the information, as explored in the second major theme.

Disregarding sleep information

This theme draws together how the participants dismiss or ignore sleep-related information they encounter, presenting a notable contrast to the previous theme, which highlights active engagement and curiosity toward such messaging. The reasons for disengagement often related to where the information comes from, how contradictory or irrelevant the advice feels, and whether it aligns with their personal contexts. The reasons and how the participants disregard or disengage with sleep-related messaging they access is further explored in detail via the sub-themes: *Don't trust everything you see*, *It doesn't really relate to me* and *Messaging about caffeine and technology*.

Don't trust everything you see

Throughout the discussions it was evident that many of the participants perceived and interpreted online health information, including sleep-related information with distrust. General scepticism of the internet was expressed through comments like “people always say, like, don't trust everything you see”. Some expressed feeling overwhelmed due to the volume of health content they were exposed to online, which was also often contradictory. This sense of uncertainty led some to question the reliability of online health advice. One participant articulated this frustration, saying:

“Because there's like so much ...[advice] and I feel like some of it's quite contradicting that you like don't want to believe.” (Female Participant).

This quote reflects a common perception among participants accessing health-related content online, who reported feeling overwhelmed by the conflicting nature of information. The

nature of this content appears to create a sense of distrust, leaving individuals wary of accepting advice and leaving them feeling uncertain about which guidance to act on.

When it came to online health information specifically about sleep, the most common sleep-related message was about sleep duration, with one participant saying, “it’s all about [needing] to get enough sleep”. However, advice on how to achieve ideal sleep duration and quality was often perceived by participants in a similar nature to other health information in being overwhelming and contradictory, which led to widespread scepticism. Participants expressed uncertainty about sleep-related information found on sites such as TikTok and Instagram. One participant explained that she saw a video that talked about delayed sleep phase but followed up with, “that’s what I saw at least on TikTok. I don’t know if that’s right”, demonstrating caution in accepting content at face value. Another participant mentioned encountering differing advice on sleep duration for males and females:

“I heard this thing and it was like, because ... I feel like stereotypically people like you should get eight hours like for age, but then I saw this thing and it was ... a man who said that ... females should be getting more, but like no one knows.” (Female Participant).

This quote highlights that while most advice on ideal sleep duration was consistent, this individual has encountered conflicting guidance suggesting different requirements for males and females, adding to the participants' scepticism and uncertainty about which guidelines to trust.

Concerns about sleep-related messaging extended to specific products promoted online. For instance, blue light glasses were met with scepticism. One participant admitted, “I find them quite funny...but I don’t know, they might work. I’ve never tried them”. Here the individual demonstrates some doubt about the products potential effectiveness and views the product as more entertaining rather than as a credible solution. Another participant expressed

worry about using sleep aids like white noise, saying “Yeah, and then I think about like how is this going to turn off, like am I going to wake up with it in the morning”. This worry reveals a critical stance toward sleep-related practices promoted online. Feelings of scepticism towards sleep-related messaging was further described by one participant:

“I feel like sometimes I think that it's ... fake. Like when sleep, especially when that's advertised, like anything about sleep. I don't. I skip it because I don't think it's like, '...I don't think it's real.” (Female Participant).

Another participant discussed potential reasoning around why some participants felt distrusting of information presented to them on media platforms:

“I don't know if ... just want, like, views or anything. Like, if they want us to ... send [the information] to our friends and be like, ‘oh, like this is so interesting, like we should try this or something’. I don't know.” (Female Participant).

Together, these quotes help to illustrate the participants' underlying scepticism towards online sleep-related content, especially towards advertising. It is revealed that content can be perceived as “fake”, showing an instinct to disregard sleep advertisements as they can often be viewed as unreliable, feeling they lack credibility. The distrust participants felt is expanded on through the questioning of motives behind content presented to them online, with participants considering that promoters may be aiming to get engagement and views rather than providing educational information, reinforcing participants' hesitancy to take these messages seriously. Overall, the scepticism expressed by the participants underscores a broader pattern of selective engagement, where participants evaluate the credibility and intent behind online health messaging.

It doesn't really relate to me

Participants reported a tendency to ignore sleep advice when they felt that the sources delivering the messages seemed disconnected from their current experiences or

circumstances. Several expressed that advice givers, such as older adults, frequently appeared out of touch with the realities faced by young people today stating things like “they make it sound so easy”. One participant clearly articulated this disconnect:

“I feel like it's usually ...[a] forty year old women being like, ‘oh, do this’. It's like, well, you don't go to school, you don't have homework...and they don't like obviously grow up in a world with social media and with their phone. So, they don't actually know what it is like to grow up with that, and to be addicted to that, from such a young age.” (Female Participant).

This quote highlights the perceived irrelevance of advice coming from people whose life experiences differ significantly from their own, such as older adults who didn’t grow up in a digital age. The participant further explains that adults offering advice are not dealing with the same daily pressures, making it more likely for young people to dismiss their recommendations.

Participants also discussed how the source of the advice influenced their trust and engagement with sleep-related messages, with trustworthiness being closely linked to the source of the information. One participant noted:

“I think it depends where it comes from. Like if it's coming ... nine times out of ten, if it's coming ... [from] the school or we do have a tutor, then you'd like to think it's trustworthy. Some of the stuff you see on TikTok can be quite questionable. And then other times I think probably comes down to do you trust the person ...you know; like the Mr X thing. I trust Mr X, but what he thought about sleep probably didn't align with what happens with me, so yeah.” (Male Participant).

This reflects familiar sources, like schools or trusted teachers, were generally perceived as more reliable, whereas advice from social media platforms was viewed with distrust. Despite familiar figures more often being trusted this participant explains that perspectives shared by

these individuals didn't always align with their personal experiences, leading to selective engagement with the information.

A key example of a source of advice trusted by participants that often influenced their sleep practices was parents. The participants expressed feeling like they were more likely to listen to advice from their own parents or advice that aligned with what their parents were saying compared to other sources such as media sources, one participant stated:

“Because I feel, like, I just do what my parents... tell me to do.... But if an expert also said that, I'd be like, ‘oh, my mum and dad said that too’. So... I trust you, like, what you guys say even more.” (Female Participant).

However, this trust was specific to their own parents rather than parental figures in general. When asked if advice from a parent-like figure on social media would have the same impact, one participant replied, “oh, no”, underscoring a preference for guidance from their own parents.

Participants frequently mentioned not engaging with sleep-related messaging when it did not align with their existing routines or life circumstances. For example, one participant described occasionally trying out sleep advice she encountered on social media but noted that, more often than not, she would “scroll past” recommendations that she felt wouldn't work due to her current habits or external barriers. There were specific barriers that the participants considered out of their control that impacted their ability to prioritise sleep health or their ability to implement things they were seeing or hearing that may improve their sleep. These barriers included aspects of waking life such as school or sports.

Several participants expressed that these barriers made it hard to act on the advice about the ideal sleep duration. One participant reflected on how both sports and academic demands impact his and his teammate's ability to get enough sleep explaining, “when a training runs longer, we all lack sleep the next day” because, once home, they still have to

study and complete homework to which imposes on their time to sleep. Another participant discussed similar challenges in maintaining consistent sleep routines, despite her efforts:

“... I agree. I like the things ... I've tried before. Like ... I've tried to go to sleep at the same time and wake up at the same time. I feel like it also doesn't work because then you have... things on and it just like makes it hard to go to sleep at the same time.” (Female Participant).

Participants also discussed how they negotiate sleep with other responsibilities. For example, one participant described how he adjusts the ideal sleep recommendations to fit his life, balancing advice with practical realities:

“I think probably more personal experience. I've gone okay. Well this works for me and I know that I can achieve this with this amount of sleep, or I know that I probably have.... I've gone, okay, well in theory or ideally. The coach is saying I need eight hours of sleep. I might not be able to get eight hours of sleep, but to work in with everything else, this is how it works best for me.” (Male Participant).

For some participants, there was also a feeling of stress when the barriers out of their control resulted in them not getting enough of sleep. A participant expressed how living “out of zone” means that he has to get up early for school and finds that he often feels stressed about not getting enough sleep:

“...I always just count down right before I sleep. I'm like, only seven hours. And then if I stay up, I'm like, oh, now at six hours.” (Male Participant).

These quotes illustrate how the relevance and perceived applicability of sleep advice significantly impacts whether participants engage with it. For many, if the advice felt misaligned with the demands of their lives, they would dismiss it. Others made efforts to follow the guidance but had to adapt it to fit their schedules. The stress of not achieving enough sleep was a common theme, as participants were aware of the potential negative

outcomes. Nevertheless, there was a clear sense that the ideal sleep duration was difficult to achieve given the competing demands of their current life stage.

Furthermore, some participants shared a broader disinterest in sleep-related advice, reflecting a general disengagement from the messaging they encountered. They expressed a lack of motivation to prioritise sleep changes as seen in comments such as, “Yeah, it sounds like it might help, but like I don't do it”, “I just always skip past them” and “I kinda just looked at it and kept doing what I was doing”. One participant described her indifference to sleep-related content online:

“I feel like it'll just be people telling their story, but... sometimes I'm ... not interested. Like a random person just talking on TikTok, and I'm like oh I don't...[want to listen].” (Female Participant).

Here the participant's indifference reflects a broader disengagement from such messaging, highlighting how the information failed to capture her attention or feel relevant leading to its dismissal.

Overall, this section reveals how the participants often dismissed sleep-related advice due to it feeling irrelevant based on practical barriers, personal preferences and motivation and lack of relevance to their own experiences. While some acknowledged the value of the certain types of advice, many felt that the messaging they accessed was irrelevant to their lives, particularly when it came from sources that seemed disconnected from their experiences, like older adults who did not share the same pressures or habits.

Messaging about caffeine and technology

Key topics that the participants reported seeing and hearing in sleep-related messaging included information around caffeine and technology. Discussion about messages surrounding these topics were key examples of how the participants in this study discussed not relating to, being unwilling to relate to, or not identifying themselves and their

experiences with well known factors that impact adolescent sleep. The participants were aware of messaging around caffeine's impact on sleep and recommendations around caffeine consumption, but many disregarded these messages and consumed caffeine regularly. This disregard to the advice was often due to habitual use or the need for energy to meet the demands of part-time work or sports. As one participant explained:

“Don't drink ... a coffee after three. But I feel ... if I drink a coffee and then I go to my training, ... I work off the caffeine. But if I didn't have training, then I would have a light sleep.” (Female Participant).

Alongside hearing messaging about caffeine's negative affect on sleep, the participants also spoke about seeing messaging on caffeine from a positive viewpoint due to it being considered “good for boosting energy”. One participant explains how caffeine is promoted on social media by other adolescents as a way to keep on top of academic demands:

“I think on the media it's almost the opposite. We've always seen stuff of people pulling crazy all-nighters or drinking so much caffeine to get study done or just talking about how they're functioning on so little sleep. It's this big thing.” (Male Participant).

The caffeinated drinks that the participants reported drinking included drinks such as coffee and energy drinks. Many participants commented that they drank these drinks because they were “yum” and one participant reported that they found it to be “a hot drink [that] is kind of relaxing”. Others claimed that they found the caffeine in these drinks didn't really affect them or that they didn't really feel the effects and that they “don't think that it's a factor in [their] sleep”. One participant explained that messages around caffeine impacting sleep didn't resonate with her due to her attention deficit hyperactivity disorder (ADHD):

“Also, with the whole coffee thing, like, I have ADHD. So, ... sometimes ... that doesn't really ... influence me because ... it's like coffee's not as ... effective on my

kind of brain. So, I'm like, nah... it doesn't really relate to me. So, I kinda just skip through.” (Female Participant).

These reflections suggest that for most participants, the taste and energy-boosting qualities of caffeinated drinks outweighed any concerns about sleep disruption. Consequently, messages warning about caffeine's effects on sleep often failed to resonate, leading to the dismissal of such advice.

Discussions about technology use and sleep revealed a similar dismissal towards such messages despite any awareness and curiosity towards advice received. Sleep tracking devices in particular revealed a mixture of curiosity and scepticism. The participants were aware of sleep-tracking devices as a tool for measuring or gaining information about sleep, but most did not use sleep tracking devices. The use of sleep-tracking devices was not considered a relatable experience to those in their age group with participants noting that their parents were more likely to use the devices rather than themselves. However, there were a couple of participants who had tried these devices and had the following experiences:

“I found it really interesting, because it gives you all, like, the in-depth stuff. I don't know if it's all true, but it's like how ... your ... REM stages, and ... the lighter sleep stages, and when you go into a deep sleep and stuff. And I found that interesting to see ... my sleep pattern” (Female Participant).

“...I quite often ... track my sleep and I find it quite interesting to look and see how I feel the next day based on how much sleep I got; or what type of sleep and how long, how many times I was awake, and how that feels....” (Male Participant).

In both cases using the sleep-tracking devices did not lead to any long-term changes in their sleep practices as described below:

“Not really. I was probably just more conscious of the fact that I would like get up, and I would actually check my sleep, like, I'd actually look back on how I slept more, where now I just don't think about it really.” (Female Participant).

“Not always, cause I probably take it with a grain of salt - like it's ... obviously not the most accurate necessarily. But I think ... it's probably something ...not so good because I'm probably thinking ... I actually didn't have as much sleep today.... there's a body battery thing that's, like, my body battery didn't go up as much as it normally does. And no, I probably don't change much ... it's probably something I do think about.” (Male Participant).

These quotes collectively illustrate both the curiosity and scepticism around these participants' perceptions of sleep-tracking devices. The initial interest in tracking sleep patterns reflects a genuine intrigue and awareness of the detailed information provided. However, this initial fascination does not translate into long-term behaviour change due to the information not necessarily relating or aligning to them and their goals. This pattern underscores that while participants may find the information intriguing, the perceived lack of accuracy and long-term relevance leads to minimal impact on their sleep practices.

Sleep-related messaging on technology use, particularly warnings about screen use close to bedtime was frequently discussed among the participants. Messages like don't use technology “an hour before you go to sleep...because it keeps you up” were commonly reported, with participants hearing these messages from both people in the lives and social media platforms. One participant described encountering this advice on TikTok:

“Just stuff like TikTok. Like, I always see like people who are, like, sleep technicians and stuff, and they're always like: "Oh, it's always ... so bad to be on your phone before you go to sleep", which is probably true. And they talk about ... how much sleep you should be getting and how it's bad to go on social media straight after you

wake up because it doesn't set your mind straight in the morning and stuff.” (Female Participant).

Despite some agreeing with the advice, many participants felt that, in practice, it did not resonate with their own experiences, and as a result for many of the participants the messaging did not lead to changes in their sleep practices. Participants expressed comments such as “I think the device is my way of unwinding” and “I feel like the blue light like helps me”. Others reported that scrolling on social media made them drowsy saying “it makes my eyes like start to close, like I'm scrolling on TikTok, and I just like start to fall asleep. Like I don't understand how it like keeps you awake”. One participant expressed her mixed feelings:

“But ... I feel, like, when I look at my device... and then put it straight down and go to bed... sometimes I can fall asleep straight away. I don't know if it affects me.”
(Female Participant).

These quotes demonstrate that the participants have mixed feelings about sleep-related messaging around technology use before bed. While some agreed the advice seemed relevant and likely true, their personal experiences often contradicted it. Some tried to limit screen time, believing it helped with sleep, but others felt unaffected or even relaxed by using devices. This underscores mixed feelings around the advice with disregarding the advice due to it not aligning with their own experiences.

When discussing the participants' willingness to attempt following advice presented to them there was an overall reluctance to give certain things up, especially around technology. Many emphasised the significance of staying socially connected, often delaying sleep to continue conversations or engage with online content. One participant shared, “I'm constantly talking to people before I go to bed”, explaining how conversations with peers would often “delay going to bed depending on what [they] were talking about”. This highlights the importance the participants placed on social interactions, as this experience

was echoed among other participants. Another participant explained their reluctance to give up technology through the idea of FOMO:

“...I don't know if this is right or not, but [I feel there's] like more of an internal ... FOMO type of thing. Like, I don't go to sleep early because I feel like I'm missing out, like, whatever's going on TikTok, what's going on Instagram.” (Female Participant).

Many participants acknowledged feeling as if it was difficult to give up technology before bed, even when if they agreed with the messages on its impact on sleep. The habit and enjoyment associated with screen time was significant in these groups, with some also admitting to an “addiction to screen”. One participant reflected on why it is hard to put screens down, despite agreeing with the advice:

“I would say it does keep me up, but... it's kind of ... hard to put it down because I'm just ... so excited to see what's going on....and that's ... my wind down time. So, it's the time I can just like go on my phone and ...not be, like, oh, I have to do this.” (Female Participant).

Another participant described how the pressures of daily life and the desire for personal time contributed to the cycle of late-night "doom scrolling":

“I've heard of like doom scrolling...[that] people talk about.... It's like you just keep on scrolling on TikTok or Instagram because it's ... your only escape. I guess ... I don't know ... because during the day you're, like, real busy or, like, you have your parents on you or ...you have a lot of pressure, but then at night it's like the only time ... you have time for yourself. So even though you should be ... asleep, you kind of just stay up. Like, self-sabotage. I don't know.” (Female Participant).

The participants' reluctance to give up technology before bed reflects a deeper tension between the desire for social connection and the struggle to prioritise sleep. This suggests that, despite being aware of the messaging on the negative impact of screen time, the want to

stay connected or have personal time through the use of devices means that this messaging is dismissed or feels challenging to follow.

Participants also described practical barriers, such as schoolwork, part-time jobs and changing routines which felt out of their control or made it harder to give up using technology before bed. One participant explained that during the holiday period he would often stay up late on devices which led to challenges in reverting back to his school term sleep routine as he expressed that he started “waking up later so that by the time school starts and [he would] have to go back into [his] old schedule staying focused basically [he found] it difficult to transition back to that”. Another participant discussed using technology after late work shifts as a way to relax:

“Especially if it ends ... late. Like, when I'd end at ... 11... at home, ... I'm not about to ... wind down and read a book. I'm gonna go on my phone. I'm here on my phone.”

(Female Participant).

School-related responsibilities were reported to make it challenging to follow advice about reducing screen time before bed as explained by one participant:

“Around that, like the device thing, most of the time before I go to bed I'll be working on ... schoolwork or something; so it's difficult for me to ... then spend ... an hour off devices before I go to sleep. Because I'll be working on an internal ...[until] some stupid hour in the morning and then it's, like: ‘well, I'm just gonna go to bed now.’”

(Male Participant).

In these quotes, the participants’ struggles to reduce screen time before bed appear to arise from external pressures and practical barriers beyond their control. These challenges make technology use before bed either a necessary tool to manage daily demands or a means of relaxation, which complicates disengaging from screens, even when they acknowledge the potential negative effects on sleep.

Throughout the focus group discussions it became clear that some participants were simply not willing to change their sleep practices, particularly around technology use despite acknowledging technologies relationship with sleep. One participant explicitly stated that although she had heard advice about not using phone before bed that she simply didn't follow the advice. Similarly, another participant expressed a strong reluctance to put his phone away before bed, despite acknowledging the potential benefits:

“For me, the barriers is just what am I willing to change? Is it something that I think I would be okay with changing. So, the device thing, I've never budged on that. No, I can't put away my phone for an hour before I sleep. I would not be willing to do that. Even if I didn't know that it would give me a little bit of a sleep. The caffeine: I got into a bad habit of often drinking coffee before I sleep, like, literally just before I get in bed.” (Male Participant).

This quote reflects a sense of resistance toward sleep health advice, suggesting that for some participants, even relevant or helpful information may not drive behavioural change if it does not resonate with their current attitudes, needs, or goals or if they do not feel that their sleep need improving.

This sub-theme highlights participants' reluctance to change sleep practices, particularly around technology and caffeine. This reluctance was influenced by external demands such as school and work, as well as personal priorities like social connection and relaxation. For many, late-night screen time was seen as a necessary form of relaxation or an essential part of their social lives, making it harder to prioritise sleep. This highlights that the resistance to change stemmed not only from logistical barriers but also from a deeper need for engagement and self-care, which led participants to disregard advice they felt didn't align with their lifestyle or immediate needs.

Summary

Adolescents in this study encountered sleep-related messaging through both digital and real-world sources, but this exposure was often unsolicited rather than actively sought out.

Digital platforms such as Instagram, TikTok, and Snapchat played a particularly prominent role, especially among the female participants. These platforms were reported to promote products and trends rather than in-depth sleep information. This content, often from self-identified ‘experts’, influencers, promoters, and members of the general public, contrasted with the health-focused advice from real-world sources such as parents, teachers, and coaches, who were reported to emphasise the health and performance benefits of adequate sleep as well as behavioural recommendations such as reducing screen time and caffeine intake.

The adolescents in this study critically evaluated the relevance and credibility of sleep-related messages, showing a preference for trusted sources like parents or coaches over digital platforms, which they often viewed sceptically. They valued advice that resonates with their personal experiences and circumstances, particularly regarding the benefits of sleep on mood and performance. The male participants in particular tended to value sleep messages when linked to performance in academics or sports, underscoring a broader implication around the reasons sleep was prioritised among different adolescent groups.

The participants generally agreed on the importance of sufficient sleep, but the advice on how to achieve good sleep was often seen as varied and contradictory, leading to feelings of being overwhelmed. They reported dismissing recommendations that seem to not fit their lifestyle or are seen as impractical or irrelevant, such as limits on screen time or caffeine intake, especially if these came from sources they cannot relate to. These findings suggest that adolescents in this study engage with sleep-related messages through a lens of pragmatism and prioritise advice that aligns with competing priorities.

The findings indicated that while sleep-related messaging can generate initial curiosity and may lead to short-term experimentation with apps, supplements, or new routines, these changes were rarely sustained. Often these efforts were abandoned due to a lack of noticeable improvement or conflict with daily priorities such as academics, athletics, and social activities. Furthermore, a notable finding was the inevitability of technology use due to the digital world we live in, compounded by the ‘fear of missing out’ (FOMO) and the need for social connection, which further impeded long-term adherence to sleep-related advice around screen use before bed. Adolescents in this study appeared to prioritise other aspects of their lives over sleep, suggesting that for behavioural changes to be adopted in this group sleep messaging must demonstrate broader benefits beyond intrinsic sleep benefits, such as improved academic or athletic performance or enhanced mood.

CHAPTER 5: Discussion

Research objectives and key findings

This research aimed to explore the perspectives and experiences of adolescents in AoNZ regarding the sleep-related messages they encounter, an area that is yet to be explored in AoNZ. To achieve this, three focus groups were conducted with adolescents from two different schools across AoNZ. The focus groups examined the participants' access to sleep-related messaging, including the sources through which they accessed these messages and the types of messages they encountered. Additionally, the participants' interpretations and perceptions of these sources and messages were discussed. Finally, the focus groups explored participants' engagement with sleep-related messaging to determine whether such engagement influenced their sleep practices or led to behavioural changes in how they approach sleep.

The results illustrate that the participants' engagement with sleep information is far more complex than simple indifference or attention. Rather, their interaction with sleep messages is highly contextual, shaped by both the sources of information and the circumstances in which it is encountered. The adolescents in this study were acutely aware of the importance of sleep, acknowledging its direct impact on their mood, performance, and daily functioning. However, their receptiveness to sleep advice is intricately linked to how relevant that information feels within their everyday lives.

The themes constructed show that adolescents in this study are drawn in by information that feels accessible, engaging, and relevant. The format of the message plays a critical role, with digital platforms, which are integrated into the participants' daily lives, often prompting more engagement, even if that engagement is superficial or short-lived. The informal and interactive nature of these platforms allowed the participants to explore sleep advice with curiosity, fostering moments of conversation and experimentation. Even if they

did not adopt the advice in the long term, the fact that it catches their attention reflects a desire to make sense of their sleep and explore ways to improve it. It is evident that while sleep is valued, the pathway to engaging with advice about it is selective and influenced by how well the advice aligns with their existing realities. Information that comes across as generic or prescriptive, particularly when it is delivered by people who are perceived to lack an understanding of modern teenage life, was reportedly ignored or met with scepticism.

Overarching was a sense that, even though adolescents may initially passively encounter sleep-related messages, they do not appear to be passive recipients of this information but rather active navigators who engage with or disregard messages based on how well those messages fit into their complex, multifaceted lives. Their engagement with sleep advice is guided more by intentional filtering than by disinterest. The participants here reported instinctively or deliberately assessing whether the sleep advice deserves their attention, taking into account its relevance, reliability, and how it aligns with their own life experiences. These accounts of navigating sleep information reveal a deeper awareness among adolescents. They appear to understand the importance of sleep but are also negotiating which parts of the information feel realistic or actionable within the context of their lives.

The key areas and concepts that came up across the themes are used in the discussion chapter to discuss the findings and interpret them within the context of existing academic literature. Key areas addressed include the sources of sleep-related information, the nature of engagement with these sources, the types of messaging received, and observed gender differences. Additionally, the evaluation of the messaging by adolescents, their selective engagement based on the messaging's practical relevance, and the overall lack of sustained behaviour change are examined. The discussion also explores the influence of technology

'addiction,' FOMO, the concept of reclaiming time, and the impact of external daily life pressures on the acceptance and adoption of sleep-related messaging.

Sources of information

Authority figures such as parents, schools, and coaches were identified as key sources of sleep-related messaging and were often seen as trusted sources. This is similar to the findings of Orzech (2013) and Godsell and White (2019) who looked at adolescents' perceptions and behaviours related to sleep and also identified authority figures as key sleep messengers. In both studies parents' roles are emphasised in promoting healthy sleep practices (Godsell & White, 2019; Orzech, 2013), with Orzech (2013) further highlighting that parents with medical knowledge, for instance nurses, were often viewed as more credible by adolescents. Godsell and White (2019) noted schools as potential sources of sleep information while participants in the current study and in Orzech (2013) both identified schools as active sources of sleep information. Furthermore, the male participants in this study underscored the significant role of sports coaches in sleep-related messaging as they emphasised the importance of sleep for recovery and athletic performance. Similarly, Kokko et al. (2015), who explored youth sports coaches' self-reported evaluations of their health promotion activities and young male athlete's perceptions of the coaches' activities, found that 74% of youth sports coaches in their study were reported to discuss sleep and rest with their athletes.

Peer communication was another source of sleep-related information for the participants in this study, which is consistent with Orzech (2013) who noted that 45% of their participants mentioned peers as sources. In both the current study and Orzech (2013), peer discussions about sleep focused on shared experiences, such as expressing tiredness or challenges with sleep, rather than offering practical advice. Furthermore, participants in the current study noted bonding over shared sleep challenges, such as the impact of late sports practices on sleep schedules. Findings from this study and Orzech (2013) demonstrate how

peer interactions about sleep may provide a form of social bonding and emotional support through shared experiences.

In the current study, media sources were also identified by participants as a key source of sleep-related messaging, with social media platforms often noted as promoting sleep-related messaging through engaging formats that encouraged exploration. This finding aligns with multiple studies which have identified and explored media platforms as key sources of health information for adolescents (Armstrong et al., 2021; Gazibara et al., 2024; Kruzan et al., 2022; Martinović et al., 2023). A study that examined Australian adolescents' use of digital platforms for healthy lifestyle information, evaluating their perceived helpfulness and content quality, reported that 77% of adolescents in their study used social media for health information, favouring its interactive and engaging features (Armstrong et al., 2021), which is a perspective shared by participants in the current study. In another study that investigated the health information needs, perceptions, and sources of adolescents in Croatia, found that their participants more frequently used search engines rather than social media for health information (Martinović et al., 2023), highlighting differences in platform preferences when compared to the current study. In contrast to the current study, participants in the study by Orzech (2013) identified other media sources of sleep-related messaging not frequently mentioned by participants in the current study, such as TV shows, books, and magazines, which likely reflects shifts in media consumption patterns over time or differing cultures. The sources of information identified in the current study, and their alignment with previous research, have implications for health promotion strategies targeting adolescents. The findings point to the need for ongoing engagement with adolescents as knowledge sharing and technology evolve.

Engagement with sources

Compared to other health-related topics, participants in this research noted that they accessed sleep-related information far less frequently, which aligns with the findings of Godsell and White (2019) whose participants noted a lack of widespread information on sleep compared to other health issues. The sleep-related advice that the participants did encounter was often through passive exposure rather than actively seeking it out. When discussing sleep-related messaging presented to them on social media platforms such as TikTok and Instagram the participants were often unable to recall the specific messengers on these sites. Being unable to recall messengers may be due to the way in which information is presented on these sites in which content appears on their 'For You' pages and is 'scrolled' through with participants often not noting the sources and relying on the and the algorithm-driven content. A study conducted in Belgrade, Serbia examined how online health information influences the health decisions of high school students, highlighting the role of algorithmically curated feeds in shaping adolescents' exposure to health information. Similarly, they found that adolescents often passively engage with health information delivered on social media platforms such as YouTube, accessing content that is often recommended or liked. This study also noted how these platforms often deliver visually appealing, easily digestible, and relatable content, making it particularly effective for adolescents (Gazibara et al., 2024). Both the findings from previous research and the present study, which highlight how adolescents engage with and access health content, indicate a potential need to reinvent the delivery of sleep-related content in relation to this population.

Swart (2021) review of literature on young people's engagement with news and information through algorithmically curated feeds, identified the 'news-finds-me' phenomenon, where content is passively discovered rather than actively sought. The review emphasises the reliance on algorithms as a defining feature of how young people encounter

information in this digital age. This phenomenon aligns with the experiences of participants in this study, who describe sleep-related messaging as often appearing randomly on their feeds. While Gazibara et al. (2024) focuses on general health-related information and Swart (2021) addresses news consumption, both studies demonstrate a shared reliance on algorithms in shaping young people's interactions with information, a finding consistent with the passive engagement observed in this study.

Types of messaging

The types of sleep-related messages adolescents in this study reported seeing or hearing aligns with observations in previous research. For instance, Orzech (2013) found that parents and teachers often emphasised the general importance of sleep for health and academic performance which was also reported by the participants in the current study. (Orzech, 2013) additionally highlights that adolescents often received fragmented and sometimes conflicting messages about sleep from various sources, and that sources such as parents and teachers as well as the media often lacked providing practical advice on how to achieve good sleep. Cusack et al. (2017) who explored Australian high school students' understanding of and attitudes towards health information, highlighted adolescents' frustrations with general health messaging that lacked actionable strategies accounting for adolescent context. Furthermore, Kokko et al. (2015) found that adolescents perceived health-related messaging such as advice on sleep from coaches, as also lacking depth and practicality. In the present study participants stated that the messages they received often failed to consider other challenges around managing competing priorities. The adolescent's perceptions from all three studies (Cusack et al., 2017; Kokko et al., 2015; Orzech, 2013) touches on points highlighted by the adolescents in the current study, where participants noted the inadequacy of actionable support in the sleep advice they received, further contributing to feelings of confusion and disengagement.

Social media platforms were a specific source of sleep-related messaging highlighted as giving advice that did not resonate with the participants' circumstances and experiences, often making it feel unrelatable. This type of messaging underscored a simplification of online messaging that doesn't consider the complexity of individual's issues. Similar trends in the media's oversimplification have been observed elsewhere in other populations. Breheny et al. (2023) who analysed New Zealand media messages about sleep and ageing, found that sleep-related health advice was often presented through overly simplistic narratives. This study focused specifically on the media articles rather than audience interpretations, but the parallels between the findings suggest a broader pattern in public health messaging, where the complexity of health issues are not recognised in the advice given, which in turn may impact the engagement and applicability of the advice. This aligns with the experiences of adolescents in the current study, who expressed confusion and frustration over contradictory or impractical advice, further emphasising the need for more nuanced and actionable sleep messaging tailored to different demographics and life stages.

There was a range of specific sleep-related messages discussed by participants, however advice about sleep duration was consistently reported. Adolescents were often told that for their age they needed eight hours of sleep per night, with this recommendation widely recognised and accepted throughout the focus groups. This sleep duration recommendation contrasts with consensus guidelines developed by sleep scientists (Hirshkowitz et al. (2015), which recommends that adolescents aged 14–17 years obtain 8–10 hours of sleep per night. Participants felt they were receiving the recommendation of obtaining eight hours of sleep due to their age, however the distinction between scientific guidelines versus what is accessed from people around them and online media platforms raises concerns about the accuracy of information accessible to them.

Gender differences

Despite the current study's small sample which had fewer male participants, nuanced differences were observed between the male and female participants. For instance, the way in which sleep-related messaging was engaged with by the participants in this study, as well as the types of messages, differed between genders. The female participants in this study more often reported encountering and engaging with sleep-related messaging on social media platforms. The messages on these platforms that prompted animated discussion often revolved around trends or products, such as the 'sleepy girl mocktail' or magnesium. Martinović et al. (2023) similarly found that female adolescents used online platforms, including search engines, social networking sites, and forums, more frequently for health information compared to males and additionally found that the females attributed greater importance to health-related content compared to males. Hislop and Arber (2003c) and Zarhin (2021) provide additional insights into how sleep messaging is often framed for women, which aligns with types of messages the female participants in this study reported seeing. The papers discuss how sleep is commodified for women, with a focus on how sleep is portrayed as essential for beauty, relaxation, and self-care routines. Both studies highlight examples such as the promotion of herbal teas, sleep-enhancing products, and health-focused messaging in magazines, which emphasise the healthicised narratives of sleep and reinforce gendered expectations.

In contrast, the male participants in this study accessed sleep-related messaging more often from authority figures, especially through schools, sports coaches and parents, rather than media platforms. The findings of how male adolescents in this study access sleep-related information partially align with Martinović et al. (2023) who found that male adolescents were less likely than females to engage with digital platforms for health information, preferring informal sources such as parents or friends for certain health topics. While the

current study and Martinović et al. (2023) suggest that the males participants are less engaged with digital health messaging, there is a unique role for authority figures, especially schools or sports coaches who are presented through the current study's findings in promoting sleep.

Furthermore, the male participants' engagement with sleep-related messaging was often goal-oriented, focusing on sleep for athletic and academic performance. The framing of sleep for performance also aligns with insights from Meadows et al. (2008b) and Zarhin (2021). These papers highlight how sleep messaging for men emphasises productivity and performance over relaxation or general health. For instance, Meadows et al. (2008b) illustrates that men often view sleep as a functional necessity tied to work and athletic goals, influenced by cultural norms of masculinity. Similarly, Zarhin (2021) highlights how magazines frame sleep as a tool for building 'bodily capital', linking it to athletic success, efficiency, and self-optimisation, reinforcing performance-driven narratives. These findings align with the types of messages the male participants in this study reported receiving about sleep. However, unlike Meadows et al. (2008b), who note that men may downplay the importance of sleep due to cultural norms around masculinity, the male participants in this study appeared to acknowledge the importance of sleep both through personal experiences and in how sleep impacted their personal goals especially around sports and academic performance. Such differences in findings may reflect generational shifts, with younger generations potentially being more open to discussing health-related issues.

Evaluation of messaging

Critical appraisal of sleep-related messaging was demonstrated by participants in this study. It was clear throughout the discussions that the participants often evaluated advice based on its practicality and alignment with their personal circumstances as well as through the credibility of the source. The participants often expressed scepticism towards the messages presented to them on social media platforms, particularly those encountered on platforms like

TikTok and Instagram, reflecting broader concerns about the overwhelming and contradictory nature of online health information. Similar themes of scepticism towards online health information were observed in Cusack et al. (2017) whose participants expressed scepticism about the reliability of online health information, raising concerns about misinformation, conflicts of interest, and the unregulated nature of digital content. Participants often relied on substitute indicators such as corroboration from multiple sources, the quality of presentation, or alignment with personal experiences to evaluate the credibility of health claims (Cusack et al., 2017). The evaluation strategies reported by Cusack et al. (2017) show both similarities and differences to the current study. In the present study, participants relied on personal experience, and experimentation to validate or dismiss sleep-related advice. For instance, advice that aligned with their routines or goals, such as improving athletic or academic performance, was more likely to be selectively adopted, demonstrating a practical, goal-oriented evaluative approach.

An interesting finding was that the participants' scepticism towards certain sleep-related messaging did not always prevent engagement with this messaging. Gazibara et al. (2024) similarly found that adolescents often engage with online health information even when they express limited trust in the sources, with their familiarity with platforms like Google, YouTube, and other websites playing a crucial role in shaping their engagement. Additionally, Freeman et al. (2023) who explored how adolescents evaluate and develop trust in health information on social media, highlight that even when adolescents express distrust towards social media health content, they are more likely to engage with information that is interactive, visually engaging, and easy to navigate. This aligns with participants' tendency to still engage with sleep-related information that is trending on social media platforms despite their doubts about their credibility. Furthermore, Turuba et al. (2024), who examined how youth in British Columbia used TikTok for mental health information and support during the

COVID-19 pandemic, provides further insights. This study found scepticism regarding misinformation on TikTok prompted adolescents to assess credibility through personal judgment, corroboration from comments, and experimentation. In the current study the participants also assessed the credibility of sleep-related advice through experimentation. These findings collectively illustrate a dynamic engagement process where scepticism may act as a barrier as well as a motivator for deeper exploration of digital health information, which may pose a challenge for those attempting to deliver valid and useful advice to adolescents.

In the current study the participants media literacy abilities were not assessed, however Ku et al. (2019) provide insights into adolescent critical thinking abilities when engaging with social media content. They examined the relationship between social media news consumption, news media literacy, and adolescents' critical thinking abilities and found that while adolescents were aware of algorithmic biases in news feeds, many struggled to critically evaluate the trustworthiness of the content, particularly without sufficient media literacy skills. Throughout the discussions in the current study an awareness of social media algorithms was raised aligning with the findings of Ku et al. (2019). However as critical thinking was not explicitly assessed it would be of interest to understand the critical thinking skills of adolescents in AoNZ in relation to online sleep-related information, especially given that the information they receive appears to not always be accurate when compared to scientific findings.

Selective engagement with messaging

Participants in this study reported selectively engaging with sleep-related messaging depending on if the advice aligned with their pre-existing routines, goals, and circumstances. This is consistent with previous findings demonstrating that adolescents' interactions with health-related content on digital platforms are influenced by personalised messaging

(Armstrong et al., 2021). Relatable and tailored health information, particularly on social media, has been shown to promote greater engagement (Armstrong et al., 2021), a dynamic reflected in this study where participants were more likely to trial advice that aligned with their personal routines. Similarly, Freeman et al. (2023) found that adolescents are more likely to trust and engage with health information that has personal relevance and aligns with their immediate concerns. These findings resonate with this study's emphasis on personal relevance as critical drivers of engagement and willingness to trial advice, reinforcing the idea that advice must feel directly applicable to adolescents' daily lives, including managing academic and extracurricular pressures.

Notable examples of key messages being dismissed due to the participants feeling as if it was irrelevant to their circumstances or experiences included messages on the impacts of technology and caffeine on sleep. Many participants reported that technology use had little impact on their ability to get to sleep, with some even finding it helpful for relaxation or unwinding before bed. Interestingly, a recent review which synthesised existing evidence has challenged the traditional unidirectional assumptions about technology impacting sleep onset (Bauducco et al., 2024). The paper emphasises that mechanisms like bright light exposure and arousal have shown minimal and inconsistent effects on sleep latency across studies. Additionally, it highlights significant individual differences in the effects of technology before sleep, and proposes that technology can actually serve as a neutral or even positive tool for emotional regulation or filling time before sleep (Bauducco et al., 2024). These findings may help to contextualise the experiences of the participants in the current study many of whom perceived no impact from using technology before bed. The participants would often dismiss generic recommendations to avoid screens as unrealistic, particularly in the context of factors such as academic demands. These findings emphasise the need for

health messaging to acknowledge individual differences and practical challenges, as blanket recommendations around screen use may not align with adolescents' lived experiences.

Regarding the messaging around caffeine, the participants frequently dismissed its potential impact on their sleep, perceiving it to have minimal or no effects. Gardiner et al. (2023) conducted a systematic review that provides robust evidence that caffeine reduces total sleep time, delays sleep onset and lowers sleep efficiency. However, the review highlights that caffeine effects vary significantly across individuals due to factors such as genetic differences, metabolism rates, and habitual use. The current study provides a small snapshot of adolescent's experiences, and the participants report of minimal caffeine effects may reflect some variability in individual factors mentioned in the review as well as could be due to the participants sleep drive. The review also highlights the need for personalised caffeine guidance, as general recommendations may not be equally applicable to all (Gardiner et al., 2023), which aligns with the findings of the current study. Furthermore, these findings highlight a potential disconnect between participants' subjective perceptions and objective evidence, as other lines of evidence have specifically demonstrated caffeine consumption to impact adolescent sleep (Moore & Meltzer, 2008; Owens et al., 2014), pointing to a potential need to further understand this discrepancy.

The participants' tendency to engage more readily with advice that aligns with their beliefs and experiences while disregarding conflicting guidance reflects broader patterns of selective information processing, as seen in research on 'confirmation bias' (Baltezarević et al., 2023; Ling, 2020) and 'selective exposure' (Banks & Brannon, 2023; Yeo et al., 2024). Confirmation bias, as described by Ling (2020) and Baltezarević et al. (2023), operates as both a cognitive mechanism and a socially embedded process, particularly in digital environments where personalised content feeds and selective engagement reinforce pre-existing beliefs. Ling (2020) highlights how digital news consumption often amplifies

exposure to affirming content while limiting contradictory views, creating a feedback loop that solidifies existing perspectives. Baltezarević et al. (2023) emphasise the unconscious nature of this bias, driven by individuals' tendency to favour information that aligns with their beliefs to avoid cognitive discomfort. These dynamics resonate with participants' experiences in this study, who selectively engage with sleep advice aligned with their personal goals and social realities, such as using technology for relaxation or managing academic demands, while dismissing advice they perceive as irrelevant or impractical.

Selective exposure complements confirmation bias by emphasising the active role individuals play in filtering information to align with their existing attitudes while avoiding contradictory content. Banks and Brannon (2023) argue that selective exposure stems from a desire to protect one's worldview and avoid the discomfort of conflicting information. This was evident in participants' tendencies to rationalise dismissing sleep-related messaging about technology and sleep as unrealistic or irrelevant, despite any potential evidence of its benefits. Similarly, advice on caffeine's negative impact on sleep was often downplayed or ignored, with participants reporting minimal personal impact as validation for their choices. Banks and Brannon (2023) further highlight that making messages personally relevant can encourage individuals to engage with information that challenges their current perspectives. Together the findings from the current study with the support of the phenomenon of confirmation bias and perspectives around selective exposure, again point to the need to tailor sleep related messaging to resonate with adolescents' existing routines and social contexts to bridge the gap between objective evidence and subjective experiences, potentially fostering greater engagement with sleep-related advice.

Lack of behaviour change

The findings from this study reveal a complex tension between adolescents' recognition of sleep's importance and their ability or willingness to change their sleep practices based on

sleep-related advice they encounter. Through personal experiences, adolescents in this study consistently recognised the benefits of sleep for mood, academic performance, and well-being, with many expressing an appreciation for sleep. Despite this, the sleep-related guidance they encountered did not often lead to long term behaviour changes. Similar findings were reported by Paterson et al. (2019), who found that adolescents and young adults valued sleep and expressed wanting to improve their habits but struggled to sustain changes, due to barriers, including time constraints, academic and social pressures, and difficulties unwinding before bed. Similarly, Yeo et al. (2024), in their systematic review of adolescents' perspectives on sleep, observed that while adolescents recognised the importance of sleep, their understanding often lacked depth and actionable strategies to foster meaningful behavioural change. Internal challenges such as stress and overthinking, coupled with external pressures like academic demands, further impeded their ability to adopt healthier sleep practices (Yeo et al., 2024). While previous research and the current study highlight a disconnect between adolescents' awareness of sleep's importance and their ability to implement lasting changes, the current study uniquely emphasises how adolescents selectively take on sleep advice, prioritising guidance that aligns with their immediate realities and dismissing recommendations perceived as impractical or misaligned with their lived experiences.

The gap between adolescents' acknowledgment of the importance of sleep and their failure to translate advice into sustained behavioural change in this study may in part relate to the phenomena of message fatigue and information overload. Kim and So (2018) define message fatigue as a state of exhaustion stemming from prolonged exposure to repetitive health messages. Their study highlights how this overexposure fosters two forms of resistance. The first is reactance, which is characterised by active opposition to messages, and the second is inattention, which is marked by disengagement. In the current study the

participants, particularly the female participants noted feeling overwhelmed by the volume of health-related advice presented. The persistent exposure to these messages, often delivered through various platforms, likely contributes the sense of redundancy and dismissal they expressed about the sleep-related advice.

Trunnell (2023) extend this discussion by exploring how the overwhelming volume of information in the post-truth world, an environment where objective facts are often overshadowed by emotional appeals, personal beliefs, and widespread misinformation, challenges individuals' ability to critically evaluate and prioritise messages. Furthermore, Skinner et al. (2003) discuss the cognitive burden adolescents face when navigating excessive health information online, noting that the overwhelming volume and inconsistent quality of information often leaves individuals struggling to identify relevant and actionable guidance. These findings, together with the current study, highlight how feeling overwhelmed with health-related advice contributes to the disengagement and dismissal of sleep-related advice due to the cognitive and emotional toll of navigating excessive, repetitive, and often conflicting information. This underscores the need for clear, actionable, and contextually relevant messaging to support meaningful behavioural change.

In addition participants' resistance to seeking and adopting sleep-related advice long-term could partly stem from their perception of not being 'problem sleepers' or having significant sleep issues that require solutions. These self-perceptions contrast with findings from broader research on adolescent sleep in New Zealand, which may be due to the study's ability to only provide a small window into adolescents experiences. For instance, Dorofaeff and Denny (2006) conducted a large-scale survey of New Zealand secondary school students, finding that 21% reported inadequate sleep, with insufficient sleep often linked to older age, extracurricular commitments, and employment pressures. Similarly, Galland et al. (2017) reported that 56% of New Zealand adolescents in their sample experienced poor sleep

quality, with girls disproportionately affected. Their study highlighted the role of poor sleep health practices, such as evening technology use and caffeine consumption, in worsening sleep difficulties. While participants in the current study frequently dismissed advice on reducing caffeine and screen time as irrelevant or impractical, these behaviours align with known predictors of poorer sleep outcomes among New Zealand adolescents. Given that the current study did not capture the perspectives of those who may identify as 'problem sleepers,' future research should target this group to explore whether their perspectives differ.

Furthermore Quaye et al. (2024) emphasise the significant role of health self-identity in behaviour adoption, suggesting that individuals are more likely to engage with health-promoting behaviours when these align with their self-perceptions and perceived relevance to their circumstances. In the current study, participants' perceptions of not being 'problem sleepers' may have reduced their motivation to view sleep-related advice as personally necessary or actionable. This perception likely diminished the perceived urgency of implementing changes, even among participants who acknowledged the general benefits of sleep.

'Addiction', FOMO, and reclaiming time

The participants reported and acknowledged frequent sleep-related messaging that discourages pre-bedtime screen use, however the impacts of their 'addiction' to technology, the need to reclaim personal time, and FOMO were identified as significant barriers to taking on such advice. Smith et al. (2020) found that New Zealand adolescents, while aware of the effects of excessive screen use on sleep, struggled to reduce screen time due to its integration into their social and personal routines. The study identified barriers such as the inability to communicate with friends and boredom, emphasising that these factors often outweighed concerns about sleep disruption. These findings align with the current study, where

participants frequently viewed screen use as essential for relaxation or social connection despite recognising its potential negative impacts on sleep.

Furthermore, Adorjan and Ricciardelli (2021) who explored how Canadian adolescents interpret and navigate their relationship with smartphones and social media platforms, highlighted that their participants resisted the framing of them being ‘addicted’ to technology despite external discourses. Instead, the participants pointed to social pressures and peer dynamics, as significant factors influencing their screen time. This slightly differs from the current study’s findings as, while the participants also pointed to social pressures for their screen usage, many also self-identified as being ‘addicted’ to technology stating that this was a barrier to their reducing their usage.

FOMO was another key driver reported to contribute to participants' late-night technology use, as they described a reluctance to disconnect due to a perceived need to stay updated on social trends and peer activities. This aligns with Scott and Woods (2018), who found that adolescents with high FOMO were more likely to sacrifice sleep to remain socially connected, driven by emotional and social pressures. Similarly, Woods and Scott (2016) identified nighttime social media use and emotional investment in online interactions as predictors of poor sleep quality, underscoring the difficulty adolescents face in disengaging from technology. Both studies resonate with the current study’s findings, as participants reported challenges in disconnecting due to the immediacy of social interactions and the pervasive nature of technology in their lives.

In addition to a feeling of being ‘addicted’ to technology and experiencing FOMO, participants in this study often viewed late-night screen use as a form of escapism or relaxation, helping them unwind from daily pressures, which contributed to their dismissal of sleep-related messages. This finding partially aligns with Yeo et al. (2024), who emphasised that adolescents often use technology not only as a distraction but also as a strategy for

emotional regulation, particularly to manage stress associated with academic demands and social pressures. Their meta-synthesis highlighted the dual role of technology as both a coping mechanism and a contributor to sleep disruptions, reflecting adolescents' complex relationship with screen use.

The participants' experience of 'reclaiming' time through technology use before bed closely aligns with the phenomenon of 'bedtime procrastination,' as categorised by Nauts et al. (2019) and further categorised into deliberate procrastination, mindless procrastination, and strategic delay. The findings from the current study particularly resonate with deliberate procrastination, where individuals consciously delay bedtime to unwind or reclaim personal time. While Nauts et al. (2019) highlight the negative consequences of bedtime procrastination, including insufficient sleep and its impacts on well-being, the current study illustrates how adolescents may justify these delays as necessary for relaxation.

The findings of this study underscore the significant role social and cultural factors play in shaping adolescents' behaviours, particularly in their prioritisation of social demands over sleep. Zhang and Qin (2023) explored the development of adolescent identity and emphasised how peer relationships and social norms strongly influence adolescents' decision-making and priorities. Adolescents often strive to fit into peer groups, seeking validation and acceptance, which reinforces behaviours aligned with group expectations. This aligns with the current study's participants, who framed late-night screen use as a way to maintain social connections and stay informed about peer activities and trends. These behaviours are reflective of both their social identities and the pervasive influence of digital culture. Collectively these findings emphasise how adolescents' social and cultural contexts shape their priorities, with social connectivity often taking precedence over health-related considerations like adequate sleep. This underscores the need for further research into how these factors shape adolescents' perceptions and health behaviours.

Impact of waking life

A major consideration for the participants in this study when considering the messaging they received about sleep was external pressures and societal demands which significantly influenced their sleep practices, particularly in balancing academic, athletic, and social commitments. This aligns with Orzech (2013) findings, which emphasise the variability of adolescent sleep routines due to fluctuating daily demands, often disrupting consistent sleep patterns. This study's participants similarly described shifts in routines stemming from factors beyond their control, reflecting a broader tension between external obligations and the need for rest. Grandners (2019) social-ecological model situates sleep within broader societal systems, identifying external barriers such as school schedules and community norms, which participants in this study also experienced. For example, those living 'out of zone' described early wake-ups as structural factors limiting their ability to achieve recommendations around adequate sleep. The variability of adolescent's sleep patterns is also supported by objective research demonstrating night-to-night variability in adolescents' sleep durations, as noted by Thompson et al. (2024).

Steger (2006) examines how societal expectations shape adolescents' time use, particularly in the prioritisation of academic demands over sleep. Their exploration of Japanese high school students, who sacrifice sleep to meet academic expectations, aligns with the participants' experiences in this study who often are forced to deprioritise sleep to meet academic and extracurricular expectations. The male participants particularly discussed the challenges of balancing athletic and academic commitments with sleep, describing how shifting schedules for training sessions disrupted their sleep routines similar to Steenekamp et al. (2021) findings. These findings also resonate with O'Neill et al. (2013), who examine high-performance school-age athletes and describe the fragmented sleep patterns that result from balancing training schedules with educational demands. They also highlight how

societal and institutional expectations of success often override physiological needs for rest. Similarly, male participants in this study adapted their sleep schedules around training sessions and academic demands, illustrating the significant impact of societal demands on their ability to prioritise sleep.

The findings from Wolf-Meyer (2015) discuss the complex interplay between societal structures, technology, and individual behaviour in shaping modern sleep practices. Wolf-Meyer critiques the tendency to pathologise individual behaviours while overlooking the broader societal and institutional structures, like school schedules, that significantly shape young people's sleep patterns. This aligns with the experiences of participants in this study, who reported external pressures, including academic, athletic, and social commitments, as significant barriers to maintaining consistent sleep routines. Wolf-Meyer's (2015) exploration of how institutional structures often escape criticism while individual behaviours are blamed resonates with participants' frustrations with sleep-related messaging that doesn't consider their circumstances, such as finding it difficult to balance early school start times or extracurricular demands with sufficient rest. Together, these insights reinforce the complexities of adolescents' sleep and the need to view it not just as an individual behaviour but as deeply embedded within and shaped by sociocultural and institutional systems, especially when considering messaging that aims to support healthy sleep practices in this population.

Considerations

Methodological constraints

While the use of focus groups is valuable for generating rich, qualitative data (O'Leary, 2021; Ryan et al., 2007), they may introduce social desirability bias, meaning that the participants' may have provided responses they perceive as acceptable to the group rather than reflecting their true experiences or opinions (Althubaiti, 2016). Additionally, the

qualitative approach used limits the capacity to quantify the prevalence of components within the observed themes. The qualitative findings offer depth and exploration but not statistical generalisability (O'Leary, 2021). Despite these limitations, the data collected provides valuable insights into adolescents' exposure to and engagement with sleep-related messaging in AoNZ. The findings lay the foundation for future research, which could include strategic recruitment and broader collaboration to deepen understanding in this area. Employing quantitative surveys could also expand the scope of data collection, enhancing the generalisability of the findings to the broader adolescent population in AoNZ.

Participants self-reported experiences were relied on in this study to generate the themes constructed. The use of self-reported data introduces the possibility of recall bias (Althubaiti, 2016), as participants may not accurately remember or interpret their experiences around encountering sleep-related messaging or how this impacts their sleep practices. Moreover, perceptions of sleep practices may differ from actual practices due to subjective interpretations. The absence of objective measures, such as actigraphy, further limits the ability to accurately validate participants' accounts, and points to areas in need of further investigation.

The findings from this study reveal that while adolescents may initially engage with and trial certain types of sleep-related messaging, this engagement often does not translate into sustained behavioural change. These findings may highlight a gap in the effectiveness of sleep messaging in fostering long-term changes in sleep practices. Although these insights are underscored in the current study, it did not track behaviours over time. The cross-sectional nature limits understanding of how behaviours and attitudes may evolve in response to sleep-related messaging. Longitudinal research could provide deeper insights into the sustained impact of sleep advice on adolescent behaviour (O'Leary, 2021).

Furthermore, future research should investigate which types of sleep-related advice are more likely to result in sustained behavioural changes among adolescents and the factors that contribute to the adoption or rejection of certain advice. Additionally, these studies could evaluate the role of delivery formats, such as social media campaigns versus in-person education, in enhancing the effectiveness of sleep interventions. Ultimately, the findings of the current study reveal challenges adolescents face in improving sleep behaviours. Therefore, future research could enhance adolescent sleep health by identifying and promoting practical, relatable, and evidence-based strategies that address barriers adolescents face in sustaining health behaviour changes.

Subpopulations and unique contexts

A key limitation of this study is the small sample size which limits the diversity of perspectives captured in this study, meaning that it does not encompass the full spectrum of adolescent experiences. The demographic composition of the sample has a limited range of ethnicities, socioeconomic statuses as indicated by the schools EQI index, and regional diversity, which further constrains the transferability of the findings. Previous research on sleep experiences in AoNZ have demonstrated the diversity of experiences at different life stages (Crestani et al., 2022; Cronin et al., 2017; Elder et al., 2023; Muller et al., 2023; Muller et al., 2017). Muller et al. (2024) highlights significant socioeconomic and ethnic inequities in sleep experiences in AoNZ, with Māori, Pacific, and Asian adolescents disproportionately experiencing shorter sleep durations and disrupted sleep patterns. Adolescents from different socioeconomic backgrounds may engage with sleep-related messaging differently, particularly if they identify as having different challenges associated with sleep, such as poorer sleep environments, and more disruptive households. Therefore, this limitation underscores the importance of broadening future research to understand how

contextual factors may influence adolescent access and interpretation of sleep advice and how it influences their behaviours.

Future research should focus on Māori and Pacific adolescents, as these groups are disproportionately affected by restricted or disordered sleep, as noted in prior research (McLay et al., 2023; Muller et al., 2020; Paine & Gander, 2013; Paine et al., 2004). These inequities have been closely tied to socioeconomic factors, including housing conditions and access to healthcare. Furthermore, interpretations of sleep messaging may differ for different groups such as Māori and Pacific populations as their beliefs and practices around night and dreaming often differ from Western cultures (Crestani et al., 2022; George et al., 2021; Haami et al., 2024; Lindsay et al., 2022). Future research could also explore how cultural differences shape adolescents' perceptions and prioritisation of sleep. By addressing these gaps, future research could yield critical insights into how socioeconomic and cultural factors shape sleep practices, enabling the development of tailored and effective interventions. Such research could inform policies and programs aimed at reducing sleep inequities and improving the overall health and well-being of adolescents in Aotearoa.

Only two participants reported having had issues with sleep, meaning the findings may primarily reflect the experiences of those who perceive their sleep as sufficient. This potentially limited representation may have influenced findings around the adoption of sleep advice, as participants who perceive their sleep as adequate may lack motivation to seek or implement changes. By contrast, adolescents with chronic sleep difficulties or conditions that may impact sleep such as those with neurodiversity, mental and chronic health concerns might be more engaged with or responsive to sleep-related messaging, potentially yielding different outcomes.

Future research should address this limitation by targeting adolescents who identify as 'problem sleepers' or those with conditions that may impact sleep to further understand their

engagement with sleep-related messaging and if this differs with non-problem sleepers. Research such as this could help uncover critical differences in how these groups engage with and interpret sleep-related messaging. These inquiries may be particularly relevant given previous research has underscored the significant portion of adolescents in AoNZ reporting issues with sleep (Dorofaeff & Denny, 2006; Fernando et al., 2013; Galland et al., 2017), so representing these groups may be of interest. By understanding the differences between problem sleepers' experiences and the broader adolescent population, future research can ensure that sleep health messaging and interventions are inclusive and designed to enhance the well-being of those most in need of support.

Gender differences in sleep messaging

Findings from this study point to notable gender differences in how adolescents engage with and access sleep-related messaging, as well as the types of messages encountered, despite it's small sample size. These patterns align with existing international literature, that underscored the gendered nature of understandings of sleep and sleep's representation in the media (Hislop & Arber, 2003c; Meadows et al., 2008b; Zarhin, 2021). However, within an AoNZ context these potential differences are yet to be explored. Future research should investigate how adolescents of different genders including gender diverse groups engage with sleep-related trends and products on popular platforms like TikTok and Instagram, which are integral to their daily lives. Furthermore, a detailed examination of gender differences in the sources of sleep-related messaging would provide a nuanced understanding of how adolescents are influenced by digital and real-life interactions and could help in pointing to key sources that could be used to effectively promote sleep health.

An important consideration is that all the male participants in this study attended a sports-focused school and were actively involved in sports, which shaped their priorities and demands, such as optimising sleep for athletic performance. This unique context may have

influenced their engagement with sleep-related messaging differently compared to adolescents with other priorities and extracurricular demands. This consideration points to the need for future research to examine how individuals with differing waking demands engage with sleep related messages.

Furthermore, there is a need for further exploration into the gendered nature of sleep messaging accessed by those in AoNZ that builds on previous international findings (Hislop & Arber, 2003c; Meadows et al., 2008b; Zarhin, 2021). Future investigations should consider the broader societal implications of these gendered narratives, particularly how they influence adolescents' sleep behaviours and perceptions. Understanding these dynamics could extend international findings by incorporating a localised perspective that reflects the cultural and social frameworks of AoNZ. Such insights are critical to help mitigate the influence of potentially harmful gendered sleep discourses.

Analysis of social media messaging

As reported by the participants in this study, social media is identified as a significant source of sleep-related messaging for adolescents. Previous research in AoNZ examining how sleep is represented in the media has focus on traditional media outlets produced in AoNZ, such as Stuff (Breheny et al., 2023; Ladyman et al., 2022) and The Spinoff (Gibson et al., 2024).

This previous research of these platforms may not be as relevant to the adolescent population as they are not as commonly accessed by this group, as reported in the current study.

Considering this it may be of interest to examine how sleep is represented on platforms integral to adolescent's daily lives (Auxier & Anderson, 2021; Kruzan et al., 2022) such as Instagram, TikTok and Snapchat, which was out of the scope of the current study. Future research could analyse the types of sleep advice disseminated on social media, identifying common sources, themes, and exploring engagement formats. Such investigations could

provide valuable insights into how sleep is portrayed on these platforms and have implications in understand how they may influence sleep-related health behaviours.

Additionally, international research highlights the role of algorithms in shaping the exposure to information on these platforms (Gazibara et al., 2024; Swart, 2021). Investigating the algorithmic influences on adolescents' exposure to sleep-related content could help uncover how algorithms shape the dissemination of sleep messaging and identify biases or patterns that reinforce specific behaviours or narratives. Together, these research directions could demonstrate the nuanced interplay between adolescents, social media, and health messaging. Insights from such studies could guide the development of targeted, evidence-based interventions that resonate with where and how adolescents' access sleep health messaging.

Technology and sleep

Participants in this study reported often hearing sleep-related messaging that discouraged pre-bedtime screen use. However, several barriers were noted that resulted in them dismissing the advice including, the addictive nature of technology, the need to reclaim personal time, and FOMO. Additionally, throughout the discussions there was a feeling that the participants had a sense of detachment from the responsibility for resolving the impact of digital distractions, due to being born into a digital world. Previous research has explored the negative effects of the reported barriers on sleep (Nauts et al., 2019; Scott & Woods, 2018; Woods & Scott, 2016). However, the current study highlights the adolescent's perceptions on the positive aspects of technology use before bed.

Future research could explore adolescents perceptions on the role of FOMO in bedtime procrastination and its implications for sleep interventions. Furthermore, investigating strategies to mitigate FOMO's impact from adolescent's perspectives, could address the barriers to adopting technology-related sleep advice, by advancing the

understandings of the unique challenges faced by adolescents in a digital age. Such research could provide insights into the psychological and social dynamics influencing adolescents' pre-sleep behaviours and help develop targeted strategies that consider the realities and priorities of adolescent's lives.

Structural and environmental barriers

The findings of this study highlighted that while participants acknowledged the importance of sleep, systemic factors, societal expectations, and personal priorities often inhibited its prioritisation. Many participants demanding extracurricular schedules, and broader societal norms were reported as significant barriers to adopting healthier sleep practices. These findings suggest a complex interplay between individual behaviours and structural challenges, pointing to the need for further investigation. Within an AoNZ context there has been some exploration of the impact of factors such as early morning training schedules and school start times (Barber et al., 2022; Borlase et al., 2013; Steenekamp et al., 2021). However, to date, international research has been prominent in the exploration and discussion of how societal structures, norms and cultural expectations shape adolescent sleep practices, illustrating the broader influences on adolescent sleep (Wolf-Meyer, 2015).

Future research could further delve into how adolescents in AoNZ navigate competing priorities, such as balancing academics, sports, and social obligations with their sleep routines. Additionally, studies could assess the broader impact of systemic barriers, such as school start times, on the relatability and applicability of sleep-related health advice. By understanding the ways adolescents navigate competing priorities and adapting sleep advice to align with their unique circumstances, future interventions could better align with this population's challenges they face in the prioritisation of sleep. Systemic changes, such as adjustments to school schedules, could alleviate structural barriers and promote healthier sleep behaviours. These advancements would not only enhance adolescent well-being but

also foster improved academic, athletic, and social functioning, underscoring the importance of continued research in this area.

Theoretical implications

This research has potential implications for health psychology frameworks by expanding thinking beyond an individual-focused understanding of health behaviours to an integrated perspective that incorporates societal, cultural, and structural influences. The findings underscore how external factors, such as societal norms, digital media environments, and systemic barriers, play a role in adolescents' engagement with sleep-related health advice. This aligns with the ongoing shift in health psychology toward ecological and systems-based approaches, which recognise the dynamic interplay between personal agency and environmental contexts (Inauen et al., 2021; Montgomery, 2004).

For instance, recognising social media's dual role as both an enabler and barrier to sleep health underscores the importance of viewing health behaviours within broader health ecosystems. This perspective is advocated by Inauen et al. (2021), who highlights the interconnected influences of media, culture, and societal expectations. Similarly, Montgomery (2004) emphasises the necessity of integrating cognitive and behavioural frameworks with an understanding of environmental factors, a focus that resonates with this study's findings on adolescents' selective engagement with health messaging based on its relevance to their lived realities. By demonstrating the multi-faceted nature of adolescents' engagement with sleep-related information, this research encourages the development of interventions and further studies that account for the complexity of adolescent health behaviours within broader socio-cultural systems.

Moreover, within sleep research specifically, there has been a shift to recognise the broader factors that influence sleep health (Hale et al., 2019). This shift includes examining socio-demographic factors impacting sleep and identifying risk factors and adverse health

outcomes of poor sleep. This broadening of research has underscored societal inequities and the role of underlying political influences on sleep (Billings et al., 2020; Grandner, 2019; Paine & Muller, 2023; Staton & Smith, 2019). The current findings align with this evolving understanding of sleep health by revealing how adolescents' engagement with sleep-related messaging is shaped not only by individual behaviours but also by systemic and societal factors, underscoring the role of institutional and societal expectations on sleep. These insights further enrich theoretical frameworks of sleep health by integrating structural considerations, thereby advancing a more holistic understanding of adolescent sleep behaviours and their determinants.

The findings from the current study also offer potential theoretical implications for advancing health promotion strategies. The study's findings advocate for contextually nuanced interventions that account for adolescents' lived realities, such as systemic barriers to prioritising sleep. This reflects principles outlined by authors in Korin (2016), who emphasise the significance of upstream determinants like policy and community norms in fostering environments conducive to healthier behaviours. Such an approach encourages the development of interventions that not only target individual behaviours but also address systemic inequities.

Overall, this research contributes to advancing theoretical frameworks in health promotion by highlighting the necessity of integrating broader perspectives and addressing both individual and systemic factors that influence adolescent health behaviours. By emphasising the importance of addressing upstream determinants and barriers, the findings underscore the need for tailored, multifaceted health promotion strategies. These strategies should be designed to resonate with adolescents' lived realities through designing messages with adolescent input, ultimately fostering environments that support adolescents sleep health.

Practical implications

The findings from this study highlight the importance of tailoring health communication and systemic strategies to promote healthy sleep practices among adolescents. The insights from the study offer practical entry points for improving how sleep-related messaging is delivered and how structural and policy-level changes can support adolescents in prioritising sleep.

A notable implication revolves around the need to improve sleep health communication strategies for adolescents. Adolescents in this study responded positively to messages that were credible, engaging, and relevant to their daily lives and experiences. Communication strategies should involve sources, such as parents, teachers, and sports coaches, who were identified as trusted messengers. However, they should also involve relatable sources who resonate with adolescent's unique circumstances. Furthermore, the study underscores the need for sleep-related messaging to be both practical and relatable, acknowledging the competing demands adolescents face from factors such as academic, social, and athletic commitments. Such messaging could be achieved through designing messaging with the perspectives of adolescent themselves. Effective messaging should also emphasise that meaningful change takes time, providing clear expectations for when improvements might be noticeable and addressing common barriers with actionable strategies.

Furthermore, the findings underscore a complex relationship with digital media in engaging with sleep-health messaging. While digital media serves as a facilitator for promoting sleep-related messaging, it's effectiveness for long-term behaviour change was often limited, and it can act as a barrier to implementing advice. The findings emphasise the importance of leveraging digital media for the dissemination of health promotion information while addressing its potential limitations in achieving sustained behavioural change.

Platforms such as TikTok and Instagram could be used to deliver engaging, accessible, and

visually appealing content that resonates with adolescent audiences. Collaborations with influencers who are perceived as credible and relatable could enhance the reach and impact of these messages. To ensure credibility, partnerships should involve influencers who share consistent, accurate information backed by health professionals. Additionally, integrating sleep advice into current social media trends, such as wellness challenges or athletic performance tips, could further engage adolescents by connecting sleep to their existing interests and priorities.

Sustained behaviour change may be enhanced through a focus on the broader benefits of good sleep. Emphasising improvements in factors such mood, academic performance, and athletic success could motivate adolescents to adopt healthier sleep practices. Engaging adolescents in the design of interventions can also enhance their effectiveness, as it allows for the identification of perceived barriers and ensures that proposed solutions align with adolescents' lived realities.

It was clear through the participants' experiences that structural demands often inhibited being able to prioritise sleep health. Therefore, at a policy level, systemic changes are necessary to create environments that support adolescent sleep health. For instance, delaying school start times could significantly reduce sleep deprivation by better aligning school schedules with adolescents' natural sleep rhythms (Barber et al., 2022). Later school start times have shown beneficial results in places such as the U.S., UK, Canada, and South Korea (Tarokh et al., 2019), however there are logical and financial constraints such as the ability to align school start times with adults working times that need to be addressed. Incorporating sleep health education into school curriculums offers another avenue to equip adolescents with practical knowledge and strategies for improving their sleep. These policies and programs should account for the challenges adolescents face in balancing sleep with other priorities, focusing on advice that is realistic and actionable within their contexts.

Conclusion

This study has provided valuable insights into adolescents' engagement with sleep-related messaging. By exploring adolescents' access to and interpretations of sleep messaging, the research highlighted a dynamic and individualised relationship with sleep-related information and its influence on sleep practices. Adolescents reported encountering messaging from both digital and real-world sources and critically evaluating its relevance based on their personal experiences and circumstances. The participants reported frequently dismissing messaging they perceived as irrelevant, impractical, or misaligned with their lived realities. This dismissal often stemmed from scepticism toward the sources, contradictory advice, and the perceived lack of actionable or realistic strategies. Furthermore, while some demonstrated curiosity and a willingness to experiment with advice, these efforts were often short-lived due to various barriers, including structural and systemic factors such as societal norms, school schedules, and competing demands like academic and athletic commitments that limited the prioritisation of sleep. The findings underscore the interplay between personal agency and external influences, highlighting the need to consider adolescents' diverse lived experiences and the broader context within which health behaviours occur. These insights offer a foundation for further exploration of how tailored and context-sensitive interventions can better resonate with the unique challenges adolescents face in achieving healthy sleep practices.

The study's findings carry significant practical implications, particularly for designing more relatable and actionable health interventions. Relatability and credibility emerged in this study as crucial factors in adolescents' engagement, suggesting the value of leveraging trusted sources, such as parents and coaches, and using digital platforms to deliver tailored sleep-related messages. However, the dual role of digital media, as both a resource for disseminating health information and a barrier to implementing advice, highlights the need

for strategies that address its limitations. Systemic interventions, such as revisiting school start times and creating supportive policies, are equally vital to enabling behavioural change. The research also contributes to advancing theoretical frameworks in health promotion by emphasising the importance of addressing systemic inequities and macrosocial influences that shape health behaviours, advocating for a shift toward socioecological and systems-based approaches.

While the study offered important insights, limitations such as the sample size, demographic representation, and reliance on self-reported data highlight several directions for future research. Inclusion of underrepresented socioeconomic and ethnic groups could provide a more comprehensive understanding of how contextual factors, such as cultural norms and systemic inequities, influence adolescents' engagement with sleep-related messaging in AoNZ. Additionally, future studies could focus on adolescents who identify as 'problem sleepers' or have health conditions that impact their sleep to examine how their unique challenges and motivations shape their interactions with health messaging. Investigating gender differences in gender diverse groups in the types of messages accessed, the sources trusted, and the platforms preferred could also uncover nuanced engagement patterns that inform tailored interventions.

Furthermore, longitudinal research could track adolescents' engagement with sleep health messaging over time to better understand the factors that lead to sustained behavioural changes versus temporary experimentation. Expanding the scope to explore social media and the role of algorithms in curating health messaging could additionally reveal critical insights into the digital health information impacts. The broader significance of this research lies in its role as a foundational study providing initial insights into how adolescents in AoNZ engage with sleep-related health messaging. To date in AoNZ research that relates to adolescent sleep health, their practices and interpretations of advice is limited. This study offers valuable

initial insights for understanding the interplay of individual, societal, and systemic factors that shape adolescent sleep behaviours in AoNZ and underscores the potential for future research to build on these insights. Furthermore, by advancing this understanding, subsequent efforts can inform the development of targeted interventions and policies that create health promotion strategies tailored to the unique needs and realities of adolescents in AoNZ.

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Appendices

Appendix A – Original Study Invitation



Exploring the Influence of Media Messaging on Adolescent Sleep Practices in New Zealand

Information Sheet

Kia ora, my name is Isabelle Ross. I am a Master's student at Massey University. This information sheet is to help you decide if you'd like to take part in an upcoming focus group I will be conducting as part of my research thesis. The aim of these focus groups is to explore the type of messaging adolescents in Aotearoa New Zealand receive around sleep-health. This will involve some group conversations around sleep health messages in the media and how they are accessed and shared, as well as how sleep-related information might impact actual sleep.

Project Description

Sleep plays a vital role in our health and well-being, especially for adolescents, where it is essential for healthy growth and development. In Aotearoa New Zealand, adolescents often face challenges in getting enough sleep during the week due to things like school schedules, homework, sporting commitments, use of digital devices and consuming caffeine. Information about sleep and the factors that affect our sleep are increasingly being seen on media platforms and can impact our beliefs and practices around sleep. Therefore, as media messaging and sharing rises, it is important to consider its influence on adolescent's sleep.

You are invited to take part in a focus group. If you are interested, please consider the information below You may want to talk about the study with other people, such as family, whānau, or friends. You can also contact me or another member of the team if you have any questions (details below) before agreeing to take part.

Who can take part?

- We are recruiting people for the study via schools in the Wellington region.
- To be eligible you need to be aged 16-18 years.

What will happen if I take part?

- Before we schedule a time for you to take part in a focus group, **you will be asked to sign a consent form.**
- **Focus group times will be scheduled** during May or June at your school during a lunch break, study break or after school.
- **The discussions will last about one hour**, which will include time for introductions, briefing, debriefing, and sharing of refreshments.
- **During the focus group** you will be asked to share your knowledge of key sleep-health messages for your age group, where you access information about sleep and if these messages influence your sleep practices. The interviewer will have some example content for discussion as well a list of general questions, but you do not have to answer everything. Equally, you can add information of your own.
- **After the focus group** we ask if you can please refrain from talking about what other participants may have said in the focus groups to ensure everyone's privacy is respected.

What are the possible benefits and risks in participating?

Taking part in a focus group is voluntary. If you decide to participate, you will be contributing to a better understanding of adolescent's sleep in Aotearoa New Zealand and could contribute to your own learning about sleep. It will also be valuable in informing appropriate approaches to adolescent sleep research, resources, and health promotion. You may find some of the topics of a personal or sensitive nature (e.g. discussing sleep-related behaviours). You are not obliged to answer all questions if you do not feel comfortable. Focus groups will be conducted by myself (Isabelle Ross) with the support of my supervisors (Leigh Signal & Rosie Gibson). To thank you for your time, we will provide you with a \$20 gift voucher.

You are under no obligation to accept this invitation. If you decide to participate you have the right to:

- decline to answer any particular question;
- ask for the recorder to be turned off at any time during the focus group;
- withdraw from the study at any time during the focus group and up to one week after the focus group takes place; ask questions about the study at any time during participation;
- provide information on the understanding that your name will not be used in the outputs;
- be given access to a summary of the project findings when it is concluded.

What will happen to your information?

All of your information will be kept strictly confidential and any identifying information will be removed. Focus groups will be digitally recorded and audio recordings will be transcribed. A summary of the findings will be available to you. Summaries will also be

presented at conferences as well as published in a scientific journal. All digital information will be stored under password protection only accessible by the researchers managing and analysing the data. All paper information will be stored in a locked filing cabinet at Massey University. The consent forms will be stored separately from the other data in order to preserve confidentiality and protect identity. All data will be destroyed five years after collection.

Thank you for taking the time to consider being involved in this research.

Please take the time to consider this research. If you are interested in participating, please contact me to find out more about focus groups taking place in your school.

Kind regards,

Isabelle Ross (Lead Investigator)

Email: teensleepmediastudy@gmail.com **Research Team**

Professor Leigh Signal: Supervisor, School of Health, Massey University, Wellington, New Zealand

Email: T.L.Signal@massey.ac.nz

Dr Rosie Gibson: Supervisor, School of Psychology, Massey University, Palmerston North, New Zealand

Email: R.Gibson@massey.ac.nz

This project has been reviewed and approved by the Massey University Human Ethics Ohu Matatika 1, Application OM1 24/07. If you have any concerns about the conduct of this research, please contact the Chairperson, Massey University Human Ethics Ohu Matatika 1, email humanethics1@massey.ac.nz.

ADOLESCENT SLEEP STUDY



**Are you a student aged 16-18?
We want to hear from you!**

We are investigating the type of messaging adolescents in Aotearoa New Zealand receive around sleep health and how this might influence their beliefs and practices around their sleep.

Join our focus groups session where we'll explore:

- Where and how you access sleep health messaging
- Your overall awareness of these messages
- How sleep-related information influences your sleep practices



What's in it for you?

- A lively discussion during a lunch break, study break or after school.
- An opportunity to learn more about sleep health messaging for your age group.
- Delicious kai and refreshments provided
- Plus, a \$20 voucher as a token of our appreciation for your time

Your participation will contribute to a better understanding of adolescent sleep in Aotearoa New Zealand. Together, we can help improve approaches to promoting better sleep health among adolescents.

Interested? You can find out more about this study by contacting Isabelle Ross on:



**Email:
teensleepmediastudy@gmail.com**



This project has been reviewed and approved by Massey University Ethics Oahu Mataika 1, Application OM1 24/07. If you have any concerns about the conduct of this research, please contact the Chairperson, Massey University Human Ethics Oahu Mataika 1, email humanethics1@massey.ac.nz

Appendix C – Original Study Consent Form



Isabelle Ross

College of Health
Massey University, Wellington
Email: teensleepmediastudy@gmail.com

Participant Consent Form

Exploring the Influence of Media Messaging on Adolescent Sleep Practices in New Zealand

I have read or have had read to me in my first language, and I understand the Information Sheet provided. I have had the details of the study explained to me, any questions I had have been answered to my satisfaction, and I understand that I may ask further questions at any time. I have been given sufficient time to consider whether to participate in this study and I understand participation is voluntary and that I may withdraw from the study at any time during the focus group and up to one week after the focus group takes place.

Please tick

Yes No

- 1) I agree to participate in this study under the conditions set out in the Information Sheet
- 2) I agree to the focus group being sound recorded
- 3) I understand that participation in this study is confidential. Direct quotes may be used, but no material which could identify me/us or my family will be used in any reports
- 4) I wish to receive a summary of the results from the study

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

Declaration by Participant

I _____ hereby consent to take part in this study.

Signature: _____

Date: _____

If you ticked 'yes' to item 4 please provide your contact details below

Address:

Email:

Phone Number:

Appendix D – Original Focus Group Guide

Exploring the Influence of Media Messaging on Adolescent Sleep Practices in New Zealand

Focus group guide

Briefing, acknowledgements, and introductions to the research team. Refreshments provided?

Aims of the focus group

- ❖ For you to share your knowledge around sleep health for your age group
- ❖ To explore where and how you access sleep-related information
- ❖ To understand how these messages influence your sleep

Broad questions and related/optional prompts that aim to capture the areas above.

- Use of Electronics/ Blue Light
 - Are you familiar with these kinds of messages around use of technology and how bright or blue light can affect teenagers sleep?
 - If so, where have you come across this information?
 - Do you think this kind of information had influenced the way you sleep or behaviours around sleeping?
- Caffeine
 - Are you familiar with these kinds of messages around caffeine and sleep?
 - If so, where have you come across this information?
 - Do you think this kind of information had influenced the way you sleep or behaviours around sleeping?
- Delayed Circadian Rhythms
 - Are you familiar with information around circadian rhythms and how they differ with adolescence?
 - If so, where have you come across this information?

- Do you think this kind of information had influenced the way you sleep or behaviours around sleeping?
- School, Work and Social Schedules
 - Are you familiar with information around school start times and how they can affect adolescents sleep?
 - If so, where have you come across this information?
 - Do you think this kind of information had influenced the way you sleep or behaviours around sleeping?
- Personal Sleep Tracking
 - how else do you get your information on sleep - do any of you use a sleep tracker on phone or watch?
 - What do you do with this information? (is it shared between friends or online...or just kept private...? - do you let it dictate what you do around sleep the following day/s?)
 - Do you think this kind of information had influenced the way you sleep or behaviours around sleeping?
- Is there anything we have missed?
 - Is there anything else you want to share before I turn the recorder off?

Debrief – thanks, Koha and refreshments

Appendix E – Altered Focus Group Guide

Focus group guide

Briefing, acknowledgements, and introductions to the research team.

Aims of the focus group

This focus group is about the messages you have seen about sleep in the media. I am specifically interested in what sort of messages you might be seeing on media sites, where you see them, and how they may influence your own sleep-related behaviour or beliefs.

During the focus group, I will show you some examples of videos I have seen about sleep for your age group, but you are also welcome to share some of your own. The purpose of this discussion is to discuss your experiences and the messaging you are aware of, so the idea is to have more of a conversation to hear about your experiences.

Questions before we start?

Comfortable to start recording? Happy to turn it off at any point if needed.

Broad questions and related/optional prompts that aim to capture the areas above.

- Questions about sleep - Can you describe what a typical night of sleep looks like for you?
 - *What role or importance does sleep play in your life right now?*
 - *Have your sleep patterns and experiences changed as you have gotten older?*
 - *How do you feel about your sleep? (e.g quality, quantity)*

- Questions about where they get information about sleep - Where do you find that you get information about sleep?
 - *Have you noticed any particular messages come up about sleep on media platforms?*
 - *Do you actively seek out information about sleep from media sources?*
 - *Who else do you talk about sleep with?*

- Questions about the type of messaging they are seeing/ hearing - What sort of information or messages are you seeing or hearing? Do you see information or messages around:
 - *Tracking apps/ Personal trackers*
 - *Supplements*
 - *Use of Electronics/ Blue Light*
 - *Caffeine*
 - *School, Work and Social Schedules*
 - *General tips for getting better sleep*

- Questions after video prompts
 - *Have you seen anything like this?*
 - *What do you think about these sorts of messages in relation to your own sleep and life?*
 - *Do you feel like it accurately reflects your own experiences of sleep?*

- Questions about who is promoting sleep messages on media platforms - What are the backgrounds of the people who are promoting sleep messages on media platforms?

- *Are you seeing messages from people claiming to have some sort of expertise in the sleep area?*
- *Or is it mainly information from other people in the general public do you think?*
- Questions about how they perceive the messages they see - how do you feel about the messages you see on media platforms?
 - *Do you trust the information you see or hear?*
 - *Do you feel like it relates to your guy's personal circumstances?*
 - *Do you feel like the information is contradicting or do you feel like it all is saying the same sorts of things?*
 - *Do you find that information you hear elsewhere about sleep (friends, family etc.) more helpful than what you see on media platforms?*
- Questions about how the impact of messages - Have you made any changes to your sleep habits based on the information or advice you have seen or heard on media platforms?
 - *Have you seen or heard anything that has made you change anything about how you sleep?*
 - *Do you feel like the messages you see are easy to implement in your own lives or are there barriers to implementing the advice?*
- Time to show examples of videos/ posts seen.
 - *Do you have any examples of your own of videos or posts that you have seen about sleep?*
 - *Are there any key promoters on media platforms?*
 - *Alternatively, participants could send them through to teensleepmediastudy@gmail.com*
- Is there anything we have missed?
 - *Is there anything else you want to share before I turn the recorder off?*

Debrief – thanks, Koha and refreshments

- TikTok videos
 - https://www.tiktok.com/@thementorhouse/video/7316898855763660065?is_from_webapp=1&web_id=7359363598923613713
 - https://www.tiktok.com/@a_biology_teacher/video/7152477973621312810?is_from_webapp=1&web_id=7359363598923613713
 - Sleep habits: environment, routines/ schedules, environments, caffeine, technology
https://www.tiktok.com/@niky_mamamd/video/7088791845639146794?is_from_webapp=1&web_id=7359363598923613713
 - Delayed circadian rhythm/ school start times –
https://www.tiktok.com/@drsermedmezher/video/7312172869151182113?is_from_webapp=1&web_id=7359363598923613713
 - Delayed circadian rhythms and strategies to combat outcomes -
https://www.tiktok.com/@jesschomd/video/7190503146484059438?is_from_webapp=1&web_id=7359363598923613713

Appendix F – Ethical Approval

[HE014] - Human Ethics Application OM1 24/07 Approved Masters x



humanethics@massey.ac.nz
to me, Deanna.Haami.1, R.Gibson, T.L.Signal, humanethics ▾

Tue, May 7, 2024, 2:33 PM ☆ 😊 ← ⋮

[Link to the application](#)

HoU Review Group:

ReviewerGroup:
Dr Rosie Gibson and Prof Leigh Signal

Researcher: Izzy Ross
Project Title: What informs adolescents' sleep practices and the influence of media messaging: exploring the Aotearoa New Zealand context

Dear Izzy,

Thank you for the above application that was considered by the Massey University Ohu Matatika 1 at their meeting held on 07/05/2024.

On behalf of the Committee I am pleased to advise you that ethical approval has been granted for your research.

Approval is valid for three years. If this project has not been completed within three years from the date of this letter, an amendment to extend the approval must be requested by contacting the Research Ethics Office at humanethics@massey.ac.nz.

If the nature, content, location, procedures or personnel of your approved application change, please contact the Research Ethics Office at humanethics@massey.ac.nz to request an amendment form.

If you wish to print an official copy of this letter:

1. Please login to the RIMS system (<https://rme.massey.ac.nz>).
2. In the Ethics menu, select Ethics Applications.
3. Using the Advanced option, select Ethics Applications (Area), Application ID (Search On), enter the ethics notification number in the Value area and select Find on the toolbar.
4. With the application the Results Tab, tick the empty box on the far left of the application and select Reports from the toolbar.
5. Select the "Human Ethics - Full Application Notification Letter" link, this will open the report viewer.
6. Select the application code from the Report Parameters dropdown and submit. You can then select an export option from the top toolbar (Print, Save).

Yours sincerely

Professor Tracy Riley
Acting Chair, Research Ethics Chairs' Committee

Massey University Human Ethics Committees

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Ohu Matatika 3 (formerly Human Ethics Southern B Committee)