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“Sleep and stay thin” Discourses of sleep and body weight in the media

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Ehara taku toa I te toa takitahi, ēngari he toa takitini.

Success is not the work of one, but the work of many.

Abstract

Background: Despite the ever-growing public interest in the topics of "sleep" and "weight", there is decidedly a limited amount of literature and research into the role that media plays in the representation of shaping the public's understanding into the singular topic of "sleep and weight." This research is intending to investigate how sleep and weight, specifically, are related and how those messages are delivered and consumed by the public in general. It is the aim of this 'snap-shot' investigate to help provide some new theories on sleep as a social practice and its relation to some wider social narratives around aspects such as sleep and weight.

Method: Texts from New Zealand's free online news source Stuff.co.nz were collated using the key words "sleep AND weight" between the dates of 2010 and 2022. A total of 30 relevant articles were collated for this study. A critical discourse analysis was used to describe the texts and then interpret them with regards to discursive practices and wider social explanations.

Findings: Four key discourse themes were then composed: "The importance of good sleep for health and weight loss;" "The role that sleep plays in contributing towards weight-gain issues;" The role that excess weight has in the likelihood of individuals having sleep issues;" and "The use of healthy diets and exercise to address and fix any sleeping issues.

Conclusion: Social discourses of sleep and weight within the mainstream New Zealand media were predominantly presented as sleep-positive in nature by promoting the potential health benefits of getting enough quality sleep for the ability to lose/maintain body weight goals; while at the same time highlighting the effect that excess weight can have as a risk factor in contributing to sleep issues. The cautionary-messages within the articles have the

ability to inform the public towards the importance for striving to healthier life-styles however they also have the potential to drive unhealthy/unrealistic expectations for individuals. The findings for this study have implications for sleep health promotion within the media as well as inform future research in the field of sleep.

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List of Abbreviations

APA	American Psychiatric Association
BMI	Body Mass Index
CDA	Critical Discourse Analysis
CPAP	Continuous Positive Airway Pressure
DSM – 5	Diagnostic and Statistical Manual of Mental Disorders Fifth Edition
EDI	Equivalent Daytime Illuminance
EDS	Experiences of Daytime Sleepiness
NREM	Non-Rapid Eye Movement
OECD	The Organisation for Economic Cooperation and Development
OSA	Obstructive Sleep Apnoea
REM	Rapid Eye Movement
SDB	Sleep Disordered Breathing
STA	Sleep Tracking Applications
SWS	Slow Wave Sleep

Chapter One

Introduction

Sleep is a universally required behavioural function, however the details and exact regulatory functions are far from being fully understood by science (Vyazovskiy , 2015). There is an impressive amount of data and current theories available that supports the understanding that sleep plays an active role in the processes of emotional regulation, metabolic function, macromolecule biosynthesis and the removal of toxins and metabolic waste (Vyazovskiy, 2015). It is important to note that while the negative effects of inadequate sleep are known for individuals suffering from diagnosed sleep disorders, there is a growing body of evidence to support the understanding that those associated health burdens with sleep issues is also found within those within the full-spectrum of 'poor' (e.g. insufficient, irregular, subpar quality) sleep (Metse et al, 2023).

The ability, or conversely, inability to get adequate sleep can be impacted by several key factors: psychological, physiological, cultural, and environmental (Sheehan, 2023). Despite knowing the importance of getting adequate quality sleep, due to contemporary changes with the modern 24-hour society, chronic sleep deprivation is increasing and individuals sleep-debt is growing due to: lifestyle choices; work demands; family responsibilities; technological distractions; and physical or psychological conditions (Zamore & Veasey, 2022; Sheehan, 2023). While not a focus of this thesis project, one must consider that the culture of modern day society and lifestyles can/may not only have a negative effect on adults but

also children, therefore cultural factors may also need to be considered when it comes to sleep practices and ideology could be the idea around child development. There are cross-cultural research available which examines the idea around where parents put their children to sleep, how parents are putting their children to sleep and about what parents have concerns about regarding their children's sleeping patterns which provides some insight into how there are culturally embedded practices, values and ideals that can shape the development of individual's sleeping habits (Giannotti & Cortesi, 2009). Family and cultural attitudes and beliefs can strongly influence whether or not someone may perceived a sleeping pattern or behaviour as problematic (Giannotti & Cortesi, 2009).

One study found that compared to a few decades ago, there has been a significant shift in the global sleep culture where the general public often undervalues the significance of chronic insufficient sleep, and where in the larger scheme of life's issues, 'not getting enough sleep' generally rates fairly low on the list of one's personal health concerns (Chattu et al, 2018). It is interesting to note that some studies have shown that over the past five decades the sleep times for adults and adolescents may have decreased, and around 30% of the adult population of Americans are sleeping less than 6 hours every night (van Cauter et al, 2008). According to the New Zealand Ministry of Health (2021), seven out of ten adults (15 years old and over), 69.1%, surveyed in 2020/2021 usually got the recommended hours of sleep – 7 to 9 hours – per 24-hour, with the percentage of children (15 years and younger) being higher at 78.3%. Recent studies have also that having 'catch-up weekend sleep' where individuals believe that sleeping for longer periods over the weekend or non-scheduled days may make up for the prior days of chronic sleep debt is a false-hood (Zamore & Veasey, 2022). The research suggests that the negative effects that chronic sleep deprivation can have on the body cannot be mitigated by sleeping longer over a couple of

nights, and that sleep debt is not something that can be ‘paid-back’ or lessened by sleeping longer other nights, when in actual fact the 'damage’ will still be present (Zamore & Veasey, 2022).

Beauty has historically always been a focus in society and humanity, and several social and psychologic studies exploring the importance of how beauty is perceived in society found that possessing beautiful faces and bodies are rated of high importance in our society and social life (Dimitrov & Kroumpouzos, 2023). It is believed that beautiful people are considered to be more successful both within their personal lives as well as their professional lives, to where beautiful individuals tend to marry other beautiful people, are more frequently hired and then promoted within their jobs; and also that beauty is associated with overall well-being and health (Dimitrov & Kroumpouzos, 2023). This belief of beauty extends over the whole body, not just a beautiful face. A beautiful body is measured by “a number on a scale” or perhaps the size of one’s waist (Kassir, 2021). For women the dominant western ideal of a beautiful body is one which has a slim waist, an “hourglass figure, a thigh gap and a flat stomach,” for men is needs to be a muscular figure with broad shoulders and a narrow waist (Kassir, 2021; Mazurkiewicz et al, 2021). There is a growing “diet culture” in society which has become increasingly popular where extreme weight loss, restrictive food intakes and calorie cutting have been promoted and where over-exercising has become more and more common (Kassir, 2021). Fear of being seen as unattractive or not fitting into the social norm for physical looks can affect one’s sense of body image satisfaction and self-esteem (Mazurkiewicz et al, 2021); and there is literature to support the belief that a higher body mass index is related to a higher level of body dissatisfaction, body weight dissatisfaction, possible disordered eating and lower levels of

body esteem (Ålgars et al, 2009). Mass media plays a critical role in the self-image of individuals by reflecting and 'setting-the-tone' of what people consider to be beautiful or attractive (Mills et al, 2017). Being exposed to images and content of the idealised bodies through the media can lead people to evaluate their own bodies in comparison to the unobtainable and unrealistically "thin" bodies, and body dissatisfaction will be experienced when one perceives their body to fall short of those images (Mills et al, 2017).

The topic of 'sleep' is increasingly gaining public media attention over the past few decades where the growing agenda regarding sleep is the concept of 'sleep-positive' perspective (Zarhin, 2021). Sleep-positive promotes the benefits of 'good' sleep and people are consistently encouraged to sleep well; all while problematising the effects of 'poor' sleep can have and to seek medical help if you are suffering from consistent poor sleep (Zarhin, 2021). There is a fairly large amount of health information stemming from nearly every direction, providing loud suggestions that the topic of 'health' itself must become ubiquitous and central in everyone's everyday lives (Preston, 2019). This social fixation with health is exhibited by some as an unremitting, for others it is an unattainable goal, and for some it is an invisible yet oppressive influence (Preston, 2019). This continuous flow of health information is not simply limited to stay in the realm of mass communication, but has also bled into dialogues between families and friends cementing the topic of health as a feature of modern identity at both the macro and micro levels of discourse (Preston, 2019).

Mass media has a long history of being an important and significant resource and influence within contemporary society, where cultural common-senses are constructed, social realities are provided with a wide-spread setting to shape and reflect mainstream ideologies

and viewpoints (Boden et al, 2008). There is decidedly few empirical studies that have explored whether and to what extent particular sleep agendas are promoted by the media, however what has been recognised is that between medical research reports and 'popular commentary' within the media on the research findings, people are more likely to 'absorb' the information from the popular source rather from the scientific source (Krautkramer, 2008). There are a few studies that have examined media representations of sleep and it is these studies that have provided very important insight into this study, and they have served as a strong foundation into this current investigation.

Mainstream media provides an invaluable platform and avenue for a wide-reaching social discourse and health promotion and as such shaping our beliefs and attitudes on the topics presented. This research is intending to investigate how specifically sleep and weight related topics and messages are delivered and consumed by the public in general. It is the aim of this investigate to help provide some new theories on sleep as a social practice and its relation to some wider social narratives around aspects such as sleep-time, gender, and the physical body.

Literature Review

The importance and basic science behind sleep

Having a 'good' night's sleep regularly is stated to be one of the major necessities for the maintenance of good health in children and adults (WHO, 2005). Without sleep, humans are not able to function as well when awake (Pacheco & Singh, 2023). The basic structural organisation of normal sleep is referred to as 'sleep architecture'. Sleep architecture allows for clinicians to quantify the characteristics of and individuals sleep – often measure during a sleep study or polysomnogram which charts the brain waves, oxygen levels in the blood and heart rate and breathing during sleep (Lefler, 2022) - which allows for an accurate diagnosis for any sleep disturbances or related medical or psychological conditions (Guion & Avis, 2011). This sleep-awake cycle is essentially governed by three important processes: circadian rhythm, homeostasis and ultradian rhythm, which all interact independently as well as interdependently to influence the amount, timing and the quality of sleep functioning (Sheehan, 2023). The circadian rhythm process can be explained as is the 'internal body-clock' which helps to regulate the awake-sleep cycle and one of the most influential environmental prompts that sets this internal body-clock is light and darkness (Sheehan, 2023). The circadian rhythm process is what regulates the timing of an individual's sleep, and while light/darkness is the most influential, there are a number of other cues which can affect this rhythm such as hunger, room temperature, medications as well as the individual's bedtime routines (Sheehan, 2023). Homeostasis is the sleep process where the brain essentially 'drives' the individual to sleep through pressure and can determine how restorative the sleep is for the individual (Sheehan, 2023). It has been described that the pressure on the brain to sleep gets stronger the longer the individual's is

awake, and when the individual has had a sufficient amount and quality of sleep the pressure is at its lowest amount (Sheehan, 2023). Much like the circadian rhythm, homeostasis can be interrupted by some medication, changes to or no routine bedtime as well as sleeping to much or too little (Sheehan, 2023). Finally, the ultradian rhythm process is what determines the timing and duration of sleep, commonly referred to as the "sleep architecture" (Deatherage et al, 2009). This sleep state is known as the NREM and REM sleep phases (Deatherage et al, 2009).

Stages of Sleep

While the research in the field of sleep is constantly developing and growing, there are several functions of sleep affecting the central nervous system as well as other more general impact which have already been greatly clarified which will be summarised here (Miletínová & Bušková, 2021). Prior to the 1950s, most believed sleep was a passive event where the body and brain passed through time in a dormant state, however now it is understood that "Sleep is an active state, with typical neuronal activity across particular sleep stages, which is an important part of life" (Miletínová & Bušková, 2021). Once sleep takes place, the body will follow a sleep cycle which is divided into four stages, where the first three stages are known as non-rapid eye movement (NREM) sleep and the final stage is known as rapid eye movement (REM) sleep (Pacheco & Singh, 2023). The first part of the NREM sleep cycle is composed of three stages:

Stage 1 NREM: the first stage comes between the transition between being awake and asleep, which consists of light sleep. Here muscles begin to relax and the heart rate,

breathing rate and eye movements all begin to slow down. This stage will typically last for several minutes (Pacheco & Singh, 2023).

Stage 2 NREM**:** the second stage is a deeper sleep state, where the heart rate and breathing rate continue to regulate and slow down, muscle tone continues to decrease and become even more relaxed, and the body temperature begins to drop. All eye movements will cease and apart from a few brief flickers of higher frequency, the electrical activity and brain waves will remain low. This is typically the longest of the four sleep stages (Pacheco & Singh, 2023).

Stage 3 NREM: It was initially believed that REM sleep was the "most important sleep phase" for the brain, however newer sleep study findings suggest that it is NREM sleep which is important for new learning and memory tasks, as well as being overall more restful and restorative for the body ("The Science of Sleep", 2023). During REM sleep, the eyes begin to move rapidly behind the eyelids and the brain waves recorded are similar to those during awake states, the breathing rate also increases (Pacheco & Singh, 2023). The brain also sends signals to the body to temporarily paralyse while the brain in dreaming (Pacheco & Singh, 2023) as to prevent us from 'acting-out' our dreams. This cycle of different sleep states repeats itself about four to five times during the typical night, with each cycle the time spent in the deeper stages of NREM sleep gets less and less and the time spent in REM sleep increases (Pacheco & Singh, 2023). NREM sleep can also be characterised by the presence of what is known as slow wave activity or slow wave sleep (SWS), which is thought by some to play a very important role in the recovery process and cerebral restoration which sleep brings, as well as be involved in the maintenance and consolidation of sleep (Roth, 2009).

The final stage of sleep is that of rapid eye movement sleep. REM sleep is thought to be important for neurogenesis and also the productions of progenitor cells into neurons. REM sleep has also been connected to supporting "with external epigenetic stimulation" (Miletínová & Bušková, 2021). There have been quite a few studies which describe the many positive effects of sleep on people's mental health and psychological well-being; where the lack of sleep may contribute to the development of, or exacerbate some psychiatric conditions such as depression or anxiety (Miletínová & Bušková, 2021). Studies looking into the process of memory consolidation with sleep have found that there are positive effects on memory, particularly short-term memory when paired with a good night's sleep; this effect was found to be most prominent in healthy young adults (Miletínová & Bušková, 2021). The role of sleep in relation to aging and memory impairment in connection to aging and neurodegeneration is ongoing (Miletínová & Bušková, 2021).

These four stages will repeat on cycle throughout the night until the sleep period is over, with for most people, the duration for each cycle will be between 90 – 120 minutes (Schwab, 2020). In normal sleep cycles, NREM sleep will constitute between 75% - 80% of the total cycle (Schwab, 2020). It is also normal for individuals to wake up very briefly during the night in-between sleep cycles, however these episodes known as 'W' stages are not remembered the next day (Schwab, 2020).

Another area where sleep is thought to play a vital role in is metabolic functions. There is literature available to support the belief that sleep aids in the lowering of the metabolic rate – by promoting NREM sleep which slow waves eventually reduce the body's glucose demands - as well as body temperature (when at sleep) which might help in restoring any

energy losses occurred during the awake-periods (Miletínová & Bušková, 2021). NREM sleep has also been found to be vital within the body's ability to maintain the immune system by positively effecting the production of antibody titers (Miletínová & Bušková, 2021).

Sleep recommendations for health and general wellbeing

Healthy adults will usually sleep on average between 8 – 8.5 hours a night if left undisturbed, but studies have found that while the sleep needs of people are quite variable from person to person, most results have shown that with a minimum of 7 hours of sleep, the problems associated with tiredness are avoided (National Sleep Foundation, 2015). Sleep is a vital human need that experiences some changes throughout a life-span, where new-borns need to sleep between 16-18 hours, which then decreases to 11-12 hours for pre-schoolers and young children, to where older children and adolescents need at least 10 hours of sleep each night (National Sleep Foundation, 2015). Numerous studies have found that with the fluctuating or changing hormonal levels that comes with puberty, teenagers tend to go to sleep at a later time of night than that of adults or young children, and therefore tend to need to sleep in longer in the morning to get the 9-10 hours of sleep per day that they need to efficiently function (National Sleep Foundation, 2015). One study in particular reported that the sleep-wake behaviours in adolescents were in part due to the maturation of biological and neuroendocrine systems which include sleep-wake changes such as delayed bedtimes and shortened sleep durations on school nights and then a shift to a later bedtime as well as a later wake time on the weekends (Foley et al, 2018). This natural process is at odds with the early morning start time that most schooling institutions have, which then leads to the common effect of most teenagers getting an average of 7-7.5

hours of sleep a night which is not ideal for healthy functioning and growth (National Sleep Foundation, 2015).

What are sleep disorders? When sleep 'goes wrong' that is when problems can arise mentally, emotionally and physically. Typically sleep disorders (also known as sleep-wake disorders) will involve problems with the quality, timing and amount of sleep which can therefore result in daytime distress and impaired functioning (Torres, 2020). There are several types of sleep-wake disorders that are listed with the APA, insomnia being the most common, and other disorders that are also included are obstructive sleep apnoea, parasomnias, narcolepsy and restless leg syndrome (Torres, 2020).

Insomnia, which effects on average one-third of adults, is the most common of the sleep-wake disorders which involves difficulties with successfully falling asleep, and or then staying asleep for an acceptable length of time. To be diagnosed with insomnia disorder, the individual must have sleep difficulties that occur at least three times or nights a week and must persist for at least three months; there must also be a significant level of day-time distress cause by the sleep problems affecting work, school or other areas of the individual's daily functioning – however it should be noted that the daytime distress or daytime functioning is subjective to the person's own feelings and functioning standards (Torres, 2020; Alhola & Polo-Kantola, 2022). This can occur at any age, but is most commonly seen to start in young adulthood, with problems getting to sleep being more common among the younger individuals and then problems staying asleep more common among middle-aged and older adults (Torres, 2020; Alhola & Polo-Kantola, 2022). To be diagnosed with insomnia, a comprehensive assessment is usually carried out included patient history, physical exam and a clinical sleep study or sleep diary record of sleep habits and times; also

other sleep disorders, medication side-effects, substance misuse, depression and other physical and mental illnesses which may affect sleep are ruled out (Torres, 2020).

Obstructive sleep apnoea, involves breathing interruptions during sleep where a person with sleep apnoea will have repeated episodes of an obstructed airway during different phases of sleep causing snoring, gasping for air, and noticeable breathing pauses, all of which lead to very broken sleep (Torres, 2020). This interrupted sleep can have significant impact on the person's daytime sleepiness levels and experiences of fatigue, sometime regardless of how many overall hours of sleep they may have over night (Torres, 2020). Sleep apnoea is believed to affect an estimated 2 to 15 percent of middle-aged adults and more than 20 percent of older aged adults (Torres, 2020).

Other sleep disorders listed amongst the key chronic sleep disorders of the American Psychiatric Association are: central sleep apnoea (issues with the brain not properly controlling breathing functions during sleep causing breathing to start and stop for significant lengths of time); sleep-related hypoventilation (where there are extended episodes of shallow breathing, elevated blood carbon dioxide levels and low oxygen levels during sleep); non-rapid eye movement sleep arousal disorders (involving episodes of incomplete awakening from sleep, accompanied by either sleepwalking or sleep terrors); nightmare disorder (involves repeated occurrences of lengthy, distressing and well-remembered dreams); rapid eye movement sleep behaviour disorder (involves episodes of arousal during sleep associated with speaking and or movement, often in response to events in the person's dreams); hypersomnolence disorder (when a person is excessively sleep even when getting at least 7 hours of sleep per night); narcolepsy (involving experiences of irrepressible needs to sleep or falling asleep multiple times a day); and

restless legs syndrome (where there is strong feelings of creeping, crawling, tingling burning or itching in a person's legs where they have the need to move their legs causing difficulty getting to sleep and frequently waking up from sleep due to the sensations) (Torres, 2020).

While not quite a sleep disorder, it is important to note here that there is epidemiological evidence that supports the opinion that there are ethnic inequities where indigenous Māori, according to a New Zealand national sleep timing survey, reported 'short' sleep times for working/commitment-filled days (aka 'scheduled days') at a rate of 28.6% compared to 22.1% for non-Māori (Paine & Gander, 2016). This study's data was contributing to a larger body of evidence base which was addressing the inequities in health between Māori and non-Māori across a wide range of indicators (Pain & Gander, 2016). What was found was that as it is with other health concerns, the ethnic inequities in regards to sleep duration times were thought to reflect the differences in socioeconomic positions with Māori being over-represented in the most deprived socioeconomic groups compared to non-Māori (Pain & Gander, 2016). The sleep timing survey's results showed that short sleep (under seven hours per night) was more commonly reported by Māori than non-Māori on scheduled days, adults over the age of 40 years, individuals living in more deprived area, and interestingly, those whom were unemployed at the time of the survey; also individuals working night-time based jobs were twice as likely to report short sleep on their scheduled days (Pain & Gander, 2016).

The New Zealand sleep timing survey's unexpected finding of a higher likelihood of short sleep amongst those whom are unemployed - given the data from other sleep studies showing a strong relationship between work schedules and daily sleep patterns – was

thought to be due to some of the following hypotheses: a) the higher likelihood for poorer mental and physical health among the unemployed; b) the absence of a work schedule which according to available chronobiology literature suggests that the effects of sleep timing and an un-checked 'body-clock'; or, c) the unemployed are exposed to greater chronic stressors associated with their lower socioeconomic situation as well as having more limited ability to access the resources required to be able to achieve the ideal sleep times (Pain & Gander, 2016). Another study from the United States looking at sleep of adolescents found similar findings for the adolescents of disproportionate over-representation for the sleep times and quality as well as adverse mental health outcomes for non-white adolescents compared to the white study sample in relation to the population size (So et al, 2021).

The relationship between sleep and weight

According to the World Health Organisation, the definition of a person who is classified as overweight if the body mass index (the weight of a person in kilograms divided by their heigh in meters squared) is greater than or equal to 25, and classified as one of the three categories of obese: if it is greater than or equal to 30 but less than 40 then that is moderate obesity, severe obesity if the BMI is between 40 – 50, and finally morbidly obese if it is over 50 (Jelassi et al, 2015). As already stated, being overweight, obese particularly, is a condition which can have several comorbidities such as: coronary heart disease, hypertension and stroke, certain types of cancer, diabetes, gallbladder disease, dyslipidaemia, osteoarthritis and gout, and pulmonary disease, including sleep apnoea

(Jelassi et al, 2015). The World Health Organisation has gone as far to state that obesity is a social disease and also an environmental disaster as well as being a global epidemic (Jelassi et al, 2015). In a review examining the economic impact that excess weight condition and comorbidities had in Aotearoa carried out in 2021 (Barton & Love, 2021) averaged that the direct health care costs (medical treatment and rehabilitation) attributable to excess weight was approximately $2 billion per year. When looking further into the indirect (economic productivity losses) and intangible costs (the human cost of disability and premature mortality), it was estimated that the number would actually be between the range of $4 billion to $9 billion per year, roughly $800 to $1800 per person per year (Barton & Love, 2021).

The importance of sleep is increasingly being recognised for its contribution to body weight regulation (Kline, et al, 2021). This is a fairly large topic and has components to it which includes areas such as the relationship between sleep and several metabolic and physical systems and conditions within the body as well as the emotional responses influenced by sleep. Sleep which is perhaps the period of the day when we are at our most inactive, 'unproductive' state is believed by some to be possibly one of the most important activities in the 24-hours of day for vital functions such as conservation of energy, adjustment of brain activities, and the consideration and reorganisation of our brain's cognition as well as mood (Leger et al, 2015). There is sufficient evidence from numerous past sleep studies that has also shown that having too little sleep can severely affect memory capabilities, lower immunity and can also greatly endangers ones survival chances (Leger et al, 2015).

Sleep and the body's metabolism While the literature in this topic is still growing, there is sufficient evidence indicating that too little sleep has negative implications on one's health

such as the impact to metabolism thereby increasing the risk of developing diabetes, becoming overweight or obese (Leger et al, 2015). Metabolism defines a range of biochemical processes occurring within the body consisting of two processes, anabolism (build up) and catabolism (break down); simply put, metabolism is the amount of energy (calories) the body burns to maintain itself and sustain normal functions (Sharma & Kavuru, 2010). Insulin is a hormone which is secreted by the β cells of the pancreas which has the key role of maintaining normal blood glucose levels to facilitate effective cellular glucose uptake (Garcia-Aviles et al, 2021). Sleep studies have found that sleep loss reduces the insulin sensitivity in healthy individuals, where a single night of less than four hours of sleep will significantly raise the blood glucose levels while at the same time significantly reducing the insulin sensitivity (Garcia-Aviles et al, 2021). One article noted that various metabolic processes, including glucose tolerance, was higher during the morning and lower in the evening, and also fluctuated during the different sleep stages (Koren & Mokhlesi, 2015). They saw that any disruption to the circadian rhythm was shown to alter the neuroendocrine physiology, thus contributing to negative metabolic consequences such as obesity and diabetes (Koren & Mokhlesi, 2015). These adverse metabolic consequences were regularly seen in night-shift workers, who regularly keep work schedules which are outside the natural human circadian rhythm by seeing them being active and eating during the night and then sleeping during the day; these workers were found to have a higher risk of insulin resistance as well as type-2 diabetes (Koren & Mokhlesi, 2015). As previously stated, sleep had been shown to be an important factor in the role of blood glucose levels and chronic sleep deprivation has been seen to have a harmful effect of the body's ability to metabolise carbohydrates as well as other endocrine function (Knutson & van Cauter, 2008). Other studies also suggest that together with changes in the glucose/carbohydrate

metabolism function, there is also a relationship between chronic sleep debt and the upregulation of appetite together with a decrease in energy expenditure, both contributing factors to obesity and therefore also diabetes (Knutson & van Cauter, 2008). One study in particular which was examining the effects of recurrent partial sleep deprivation on the glucose metabolism of a group of healthy young men, exposed the participants to six nights of four hours in bed – the 'sleep debt' – following by seven nights of 12 hours in bed – the 'sleep recovery' (Knutson & van Cauter, 2008). The participants were fed an identical carbohydrate-rich meals and during each bedtime condition intravenous glucose tolerance tests were taken and using a mathematical model of glucose homeostasis measured the plasma glucose and insulin levels (Knutson & van Cauter, 2008). The values that were observed after five days of the sleep restriction were similar to those that are observed in older adults with impaired glucose tolerance, and insulin resistance is a well-recognised risk factor for type-2 diabetes (Knutson & van Cauter, 2008).

Sleep and the process of fat burning While there are a number of studies investigating the effects that insulin resistance has on the body, one study in particular was examining the role that fatty acids played in insulin resistance (Sears & Perry, 2015). What they found was that once insulin resistance starts (such as in the case of sleep deprivation) in the hypothalamus, it causes a disruption in the delicate homeostasis of satiety and hunger ques (Sears & Perry, 2015). This over production of hunger signals from the brain can then lead to an overconsumption of calories, which while in theory, excess calories can be safely stored in adipose tissue, as there is already an insulin resistance condition, the body's ability to safely store excess fat is compromised (Sears & Perry, 2015). A consequence of insulin resistance within the adipose tissue is that the un-stored excess fat is then released into the

blood stream and is then absorbed by other organs (for example the liver) which are not equipped or designed to safely store this excess fat (Sears & Perry, 2015). A 'fatty liver' can then start off a condition of lipotoxicity which itself then further compromises the body's metabolism and ability to effectively generate energy thus potentially leading to the development of other chronic conditions such as diabetes, hypertension and cardiovascular disease concerns (Sears & Perry, 2015; Leger et al, 2015).

Sleep and appetite While there is still much scope for further studies, there is an understanding that the phase of sleep known as the SWS is believed to be the most restorative sleep stage of the cycle where there is a decrease in the heart rate, blood pressure, sympathetic nervous activities as well as cerebral glucose utilization (Cauter et al, 2008). These same studies have shown that it is during the SWS phase that the anabolic growth hormone is released while then the stress hormone cortisol is inhibited, where it was evidence demonstrating that it is the effect that sleep loss had on the hormone regulation that then effected the control of appetites and energy expenditure correlating in increased hunger and a risk factor for obesity and type-2 diabetes (Cauter et al, 2008). In a study specifically looking into the impact that sleep deprivation had on the food desire in the human brain found that compared to a sleep-rested state, during a sleep-deprivation state, there was a significant increase in the proportion of 'wanted' food items (the foods that the study participants 'craved') were foods of higher-caloric content (Greer et al, 2013). This study also found that as the sleep-depravation increased and continued, so did the self-reported feeling of day-time sleepiness, which then also saw an increase in the percentage of 'wanted' high-caloric snack foods (Greer et al, 2013). This particular study concluded that the findings supported the belief that a sleep deprived state negatively affected the brains

‘food-decision centres,’ and these neural changes triggered a significant increase in the appetitive desire for weigh-gaining food items (high-caloric snacks), “the magnitude of which was proportional to the subjective severity of sleep loss across participants” (Greer et al, 2013).

Sleep and emotions There is also an interesting, complex interplay between sleep, eating, emotion which can interact to effect risk factors for weight gain (Riedy, et al, 2022). In an interesting archival analysis carried out in the United Sates, consisting on 489 middle-aged women (aged 40 – 64 years of age) found that 33-51% of those midlife-aged-women report problems with sleep (with a prevalence associated with vasomotor symptoms, changes in hormone levels, mood, stress and perceived health) which are all considered risk factors for poor weight outcomes (Riedy, et al, 2022). These same studies have shown that in particular, short sleep duration can increase the urge or desire to consume high-energy, high caloric foods; increases the levels of hormones responsible for appetite; and has also shown to interfere with individuals’ emotional cognitive-reasoning responses when it comes to healthier food choices, all of which are considered to be substantial contributors to weight gain (Riedy, et al, 2022). In a systematic review study examining the relationship between emotional eating and inadequate sleep and obesity reported that there is emerging evidence to suggest that inadequate sleep can interfere with the individual emotionally regulating and therefore affect their ability to effectively manage and appropriately respond to stressful and emotional experiences (Zerón-Rugerio et al, 2023). This study found that when sleep deprived, individuals unable to manage the negative emotions such as sadness, anger, anxiety, and nervousness felt during emotional situations turn to food as a source of comfort; and it was noted that eating sweetened fatty foods is a

known behavioural alleviator for emotional distress (Zerón-Rugerio et al, 2023). This study also referenced other studies which showed a relationship between the need to eat in the "presence of disinhibited stimuli, such as emotional stress" and this "obesogenic eating behaviours' plays a significant role in the relationship between sleep and obesity (Zerón-Rugerio et al, 2023, p2286). It was explained that the studies had shown that within the context of inadequate sleep, "there is a greater drive for exciting rewards" which are usually in highly palatable foods that are predominantly higher in calories (Zerón-Rugerio et al, 2023, p2286). It is important to note that this study did find that emotional eating is a highly maladaptive behaviour and is quite unlikely to result in any longer-term improvements of mood, instead emotional eating is more likely to be followed by more negative emotions, such as feelings of guilt over the eating, which may lead back to more emotional eating continuing the destructive cycle (Zerón-Rugerio et al, 2023). Finally, it is interesting to note that there are two longitudinal studies available (Konttinen et al, 2019; van Strien & Koenders, 2014) and one other short-term study (Richards & Specker, 2021) which observed that gender played a significant role in the relationship between sleep and emotional eating and therefore was a "determinant in the sleep-obesity relationship" (Zerón-Rugerio et al, 2023, p2286). The studies revealed that it was women, but not men, that showed a "two-way emotional interaction between emotional eating and sleep duration," however men with poor sleep quality did show greater levels of hunger (Zerón-Rugerio et al, 2023, p2286).

The Medicalisation, Healthicisation and personalisation of Sleep

Sociologists have attributed three main factors to the idea of contemporary society mediated practice when it comes to sleep and sleep disorders (Seale et al, 2007). The first two have been identified by Williams (2002) as medicalisation and healthicisation; and the third area which has been labelled by Hislop and Arber (2003) as a 'personalised approach' which will be examined further in the following section.

Williams (2002) has described these as culturally presented discourses which are used to provide the unrestricted explanatory frameworks regarding sleep practices and techniques to either influence or educated individuals to manage or understand their own sleeping habits.

The professional agendas of doctors as well as the commercialisation interests of pharmaceutical companies is the driving force behind the medicalisation of sleep information and social discourse (Conrad, 2005). For those parties, sleep disorders and the need to control or manipulate individuals sleep patterns is qualified as a medical issue and as such is explained with science and treated with medical solutions (Conrad, 2005).

This qualification also extents somewhat to over-the-counter drug and 'complementary' health supplement manufacturers, who also benefit from the medicalisation of sleep (Conrad, 2005).

Medicalisation has been explained as the phenomenon of when a previously non-medical problem - in this instance the ability or inability to sleep and sleep well – are then defined and subsequently treated as a medical problem with medical interventions (Conrad & Leiter,

2004). Conrad and Leiter (2004) explained that medicalisation can take place at different areas of society; through the interactions of a doctor and patient; through conceptual means by using medical language to describe the issues; or at and institutional level where organisations "adopts a medical approach" for dealing with the specific 'problem':

The potential for the medicalisation of sleep emanated firstly from a rise in our understanding of sleep problems and sleep disorders through an increased understanding of the physiological mechanisms of sleep from experts in sleep medicine and sleep science; and secondly via an increasing portrayal in the media of the potential dangers of poor sleep, which led to a growth of public interest in sleep issues and problems (Venn et al, 2013, p117).

Pharmaceutical manufacturers and distributors have also been identified as being a contributing factor in the medicalisation of sleep through the increased availability and variety of pharma logical sleep aids, prescribed medications (such as benzodiazepines which are a depressant that have a sedative and hypnotic effect) as well as over the counter sleep aids (such as diphenhydramine which is a type of antihistamine medicine that causes people to feel drowsy) (Williams, 2013). Conrad (2005) also explored the idea that there has been a change in the traditional doctor-patient relationship, where there has been a distancing between the patient and the doctor, where the doctors are no longer being seen as the 'sole drivers' for health (Venn et al, 2013). This breakdown in the doctor-patient relationship is believed to be primary reason individuals may be self-treating their issues through personal online research and direct access to a wide-range of treatment options and therefore not

reporting insomnia-like symptoms through the 'official channels' by visiting their doctor (Venn et al, 2013).

Healthicisation of sleep refers to the viewpoint that it is the responsibility of the conscientious citizen or community members to maintain or oversee their own healthy normal sleep habits (Armstrong, 1995). Modern society has become increasingly inconducive to enabling healthy sleep patterns with available technology, growing work commitments and the never ceasing connectivity to online sources (Armstrong, 1995). Under the knowledge of psychologists and other clinical and non-clinical advisers as well as those within the pharmaceutical industry; a vast array of products that are commercialised and marketed as sleep-promoting that individuals can administer themselves (Armstrong, 1995). Recent years have seen the topic of sleep attract the interest of many technology developers and app creators, where consumer-driven sleep tracking applications (STAs) have become one of the most downloaded applications for both iOS and Android users (Müller et al, 2023). Using built-in sensors and other additional computerised external sensing devices, along with sophisticated computer algorithms, these apps claim to be able to sense, analyse then score the recorded sleep data (taken over the course of the logged sleep period) for users to be able to review their assessment reports on the quality of their sleep as well as other specific (according to the algorithms) sleep parameters (Müller et al, 2023). These STA applications can provide a large range of functions such as smart alarms, sleep aids (white noise sounds), sound recordings during sleep as well as an analysis of the sleep (Karasneh et al, 2022). Some of the parameters that are assessed and monitored for in the STAs include sleep onset latency, the total sleep time, snoring, sleep stages and sleep quality, all with the aim of providing the user with sleep awareness to assist with self-

management of sleeping habits and improvement of any sleep issues (Karasneh et al, 2022). The issues with STAs is that as to date, most currently available STAs cannot operate without the external sensors physical contact with the body of the users, and also the computer algorithms and sleep-program parameters are not able to distinguish if it is the monitored users themselves snoring or rolling around in the bed or a significant-bed-sharing other (Müller et al, 2023). This then could confuse the user when reviewing the recorded information feedback (Müller et al, 2023). Also some studies reported that while there is reliability of sleep results within heathy users, there are issues with accuracy with individuals with known clinical conditions and issues (Karasneh et al, 2022). Another identified potential drawback from the usage of smartphone applications as a tool for the self-monitoring of sleep is that individuals may become overtly preoccupied with 'self-optimisation' and may over-rely on potentially dubious (as the literature available to conclusively validate the externally monitored sleep app measurement) recorded feedback (Jakowski, 2022). This may be especially true if the sleep complaints or issues of the individual are quite subjective - such as being asleep for seven hours but still feeling tired - may end up being misguided from the self-tracking consumer technology apps (Jakowski, 2022). More research is needed to fully assess and examine the validity and reliability for the self-tacked provided sleep feedback, as well as the full limitations of the self-monitoring technology tools available to individual consumers.

Personal responsibility **Much** of the literature available has a stance where sleep is a personal responsibility, and it is up to the individual to properly manage their own sleep habits (Zarhin, 2021). It is recognised that the area of sleep science and medicine is a relatively modern field of knowledge after some innovative study in the 1950s and 1960s,

where the relationships between the quality and length of sleep has on the overall health and wellbeing of on humans (Zarhin, 2021). There is a fundamental idea of the sociology of sleep in that sleep is not just an individual, biological concept but rather that it is embedded into and influenced by the everyday social interactions people have and with everyday life activities (Meadows et al, 2018). The sociology of sleep is viewing sleep as a 'practice,' that is 'carried out' and 'negotiated' with others; where sleep is in a complex relationship between individual and society (Meadows et al, 2018). Sociological research presented by Meadows et al (2018) shows that sleep, even the meaning of sleep, is greatly influenced by a number of social factors such as marriage/cohabitation, parenthood, work, etc. It was interesting that Meadows et al (2018) discussed the issue of medicalising sleep through medications and how it is a topic which is "highly moralised" within modern day societies:

> With people on the one hand, reluctant to 'give in' to sleeping medication, feeling that they *should* be able to manage problems such as sleeplessness or insomnia themselves without recourse to doctors and prescription sleeping pills, and on the other, those with diagnosed sleep disorders campaigning for wider access to medications they believe will be beneficial to them. Sleep, therefore, can be considered a complex, if not contradictory, case of medicalisation; a more or less medicalised matter, depending on which particular dimensions of sleep we are considering. (Meadows et al, 2018, chapter 19)

There are examples of countries and organisations that have transferred the responsibility of health from the state to the individuals themselves and their families; thus, framing health within the context that it is relational to the individuals' own lifestyle choices (Zarhin,

2020). Examples of initiatives which are meant to promote personal responsibility are the World Health Organisation will no longer hire individuals who smoke or consume any tobacco product, and there are some American companies whose health insurance benefits will cost less for non-smokers or for people who successfully complete recommended weight-loss programs, and some companies will offer their employees financial incentives to participate in health screenings, fitness programs, or tobacco-cessation programs (Steinbrook, 2006). It is interesting to note that an American national survey carried out in 2006 reported that an estimated 53 percent of Americans thought that it was 'fair' to ask people deemed to have unhealthy lifestyles to pay for higher insurance premiums than people with a healthier lifestyle (Steinbrook, 2006). Here in New Zealand, according to their official website, Southern Cross Health Insurance offers new members a 10% discount on their premiums for the first two years if they "meet a healthy lifestyle criterion." Also, in New Zealand, Stuff.co.nz reported in 2016 that Health and life insurer Sovereign was offering their insurance customers cash back on their insurance premiums if their Fitbits proved that they were living a 'healthy lifestyle" (Edmunds, 2016). The article reported that Health by Sovereign were launching a loyalty programme to offer customers rewards if they exercised and eat well, this was to be supported by a Sovereign partnership with the fitness trackers Fitbit and Garmin, along with the gym clubs Next Gen, Configure Express, Jetts and Club Physical, and finally with the supermarket chain New World (Edmunds, 2016). Here the Sovereign insurance customers could accumulate points if they were recorded and provided tracked proof to have "racked up enough steps, register exercise, buy fresh foods and get a check – up with their doctor and dentist" (Edmunds, 2016, para 4). The article reported that the programme had been "designed to motivate and support Kiwis on their health journey and help created a healthier nation as a whole" (Edmunds, 2016, para 7).

There is literature to show that there is possible effects of an individuals' life-style choices and where they find themselves in the social positioning within society, such as where they live and their socio-economic context, on their sleeping habits and overall health (Patel et al, 2010). The area around the influence that the social structures have on sleep patterns, durations and quality are growing, it has been suggested that those individuals that are sitting at the lower end of the social hierarchies tend to have, overall, poorer sleep (Lallukka et al, 2012). However, having mentioned that, the general sociomedical discourse of most western-influenced nations is that one's health and well-being is, at the heart of it, the obligation of a 'responsible' citizen to maintain a healthy lifestyle through the practice of eating well, sleeping well and actively exercising (Zarhin, 2020). While most societies do recognise a strong focus on personal responsibility towards health and well-being, there are also views where the authorities and healthcare professionals also hold a level of responsibility when it comes to public health (Traina et al, 2019). There is a need for government and health authorities for public health promotions, public encouragements towards personal responsibility for one's health, and raising awareness on the consequences of harmful (health-wise) behaviours (Traina et al, 2019). There are also controversial views that the government's role in preventing people from adopting unhealthy behaviours should go further than public awareness campaigns and education but to regulation and taxation in the form on infringements for unhealthy life-styles (Traina et al, 2019). As mentioned previously, there are some countries, such as Norway, that have proposed policies that factor in personal responsibility into their criterion for healthcare coverage and in some instances access where some waiting-lists or exclusion for certain treatments when the conditions is considered 'self-inflicted' (Traina et al, 2019). This opens

an area of interesting debate into the ethical zone of the division of health responsibilities between the authorities and the individual (Traina et al, 2019). One article puts forth some argument towards both sides of the debate, in favour of and then also in opposition to taking 'individual responsibility' into account within healthcare policy and practice (Friesen, 2018). The arguments against the inclusion of personal responsibility have included: the extensive time and resources that would be required to be able to assess and examine each individual's level of responsibility for any given condition would be untenable; also that the difficulty of being able to accurately determining the responsibility would be extremely difficult; as well as the impossibility of being able to assess if the individual had reasonable foresight to be able to predict what consequences their "poor choices" might have resulted in; and finally "the inevitability of social biases playing a role in attributions of responsibility" (Friesen, 2018). It was also mentioned that the number of 'dangerous behaviours' that would have to be accounted for within 'individual responsibility' categories for any policies, such as any dangerous jobs, hobbies, sports, etc…would be enormously large and therefore unfeasible (Friesen, 2018). The article then presents the arguments in favour of potential consequences for failure in personal responsibility when delivering and distributing healthcare (Friesen, 2018). This was described as "the behaviour change argument" which will motivate healthy changes in behaviours, improve overall health outcomes and decrease overall healthcare costs; an example was given that the best way to motivate smokers to give up smoking is to refuse or reduce health benefits for smokers such as angiograms or surgeries thereby contributing to better overall health outcomes (Friesen, 2018). However, it was then argued that someone who is initially undeterred by the prospect of serious health concerns by partaking in known unhealthy habits (such as lung or throat cancers in

the case of smoking) is also likely to be undeterred by the prospect of less than ideal health care after the fact (Friesen, 2018).

Technology and weight management apps Recent years have seen a proliferation of apps that are designed and marketed to help people improve their health (McKay et al, 2019). As seen with sleep tracking apps, there are also apps that have been designed to promote physical fitness through either gym attendance reminders and motivation or via counting daily steps, apps that people use to record and track their caloric intake as well as suggest possible modifications or substitutions for food items, apps that are designed to assist people to stop smoking or reduce alcohol consumption, and finally apps that help to promote mindfulness or guided meditation (McKay et al, 2019). There are studies that have reported that there are some behaviour change content embedded within the design of the apps, such as smoking cessation (BinDhim et al, 2018), or alcohol reductions (Crane et al, 2015), or increased physical activity and exercise (Bondaronek et al, 2018), as well as apps aimed at promoting medication adherence (Morrissey et al, 2016). However, conversely, there are also research evidence to suggest that many of the apps created have not data to show that they are effective in creating any measurable behavioural change in people, and also lack the ability to be customisable to the individual users' needs or are responsive to any personal user changes (McKay et al, 2019). There are also those that believe that there may be a risk to users if improper or unsupervised use of the apps lead to harmful outcomes that are outside the current health recommendations (McKay et al, 2019). Research in this area is still ongoing.

Personalised Approach Hislop and Arber (2003) found that there was another approach to promoting sleep health and wellbeing which was labelled as 'personalised'. This approach is made up essentially of sleep management strategies, that were by in large, learned throughout childhood as well as other experiences of informal cultural, social and knowledge experience sharing (Hislop & Arber, 2003). It was found that the bases of personalised approaches were historically sourced from 'being passed down through the generations', from parent to child or other forms of informal socialisation as something that has 'always been done' to help with sleep (Hislop & Arber, 2003).

Through the personalised approach it is believed that when people deal with and control their sleep patterns and habits through processes of their own belief systems and culturally passed-on knowledge rather than being influenced by any medical, psychological or public health knowledge discourses (Hislop & Arber, 2003). Hislop and Arber (2003) found that in contrast to medicalisation or healthicisation, which are largely publicised through mass media avenues, as well as commercialised promotions, the personalised strategies are formed through a combination of individualised and informally sourced channels (Hislop & Arber, 2003).

Another form of personalised approach towards sleep health has been used successfully in obstructive sleep apnoea (OSA) or obstructive sleep disordered breathing (SDB) treatment. OSA is classed at the severe end of the SDB spectrum with an estimate of 9-36% of the adult population suffering from it, and 1-6% of the paediatric population afflicted (Siriwardhana et al, 2020). As previously discussed, sufferers of OSA and SDB experience either a partial or complete collapse of the pharyngeal airway during sleep which then exposes the sufferer to intermittent hypoxia, hypercapnia, huge changes in their intrathoracic pressure,

sympathetic activation and massively fragmented sleep (Siriwardhana et al, 2020). As a result of the effects associated with OSA and SDB, this leads the individual to experience a range of side-effects affecting the cardiovascular system, behavioural and neurocognitive functioning (Siriwardhana et al, 2020). Diagnosis for OSA or SDB is reliant on overnight polysomnography, which refers to a sleep assessment where multiple physiological parameters are simultaneously recorded continuously over a period of sleeping episodes, is fairly costly and can have limited availability (Edwards et al, 2019). As a first-line treatment plan for adults diagnosed with OSA is continuous positive airway pressure (CPAP) machines which is a mechanical ventilation system where air is transported into the airways and lungs under positive pressure during inspiration (Edwards et al, 2019). However a significant proportion of OSA patients retain varying degrees of OSA even after treatment due to a variety of reasons such as poor adherence to the use of the CPAP or if there were any other underlying disease mechanisms that remained untreated (Edwards et al, 2019; Siriwardhana et al, 2020). It has been thought that a more personalised approach to the treatment of OSA, which tests for and recognises that there are affecting interactions between the genetic and anatomical make-up of an individual (such as a degree of anatomical issue that can predispose an individual to a compromised the upper airway, or some obesity-related factors) and their environmental exposures which can manifest as OSA (Siriwardhana et al, 2020). There is growing literature which has sought to identify and understand the interactions to then be able to allow clinicians to accurately diagnose and manage the OSA with the aim to improve patient outcomes (Siriwardhana et al, 2020). This is in the hopes of shifting away from the current one-size-fits-all approach towards a more individualised, targeted approach to diagnosis and management of OSA (Siriwardhana et al, 2020).

Body-Image and how it is presented in the media

One of the avenues that people in society access information and understandings about the different personalised approaches to sleep aids etc, is through the media therefore it is important to investigate further into how that information and social views are presented within the media and how it may influence individuals' choices.

As already mentioned, the average weight of most populations in the world have rapidly risen in recent years with New Zealand being ranked as the third highest country for obesity in the OECD ("Obesity," 2023). According to the Ministry of Health (2023), one in three adults (15 years old and over), are classified as obese, and one in ten children are classified as obese. Conversely, while the concerning rise of the populations average weight is an area of political and medical interest which requires attention, the use of underweight, unrealistic or unhealthy models in advertising material is equally concerning. It is true that there is no shortage of research evidence which shows that continual exposure to these 'unrealistically'-sized and perfectly airbrushed model images can have quite harmful effects of the viewers mental and physical health (Lin & McFerran, 2015).

Societal culture, which the media is a representation of, has long established the concepts surrounding what is 'normally accepted' – at points in history - when it comes to body shapes and sizes, and conversely problematizes the bodies outside those standards (Thompson & Hirschman, 1995). As previously mentioned, Body Mass Index has long been the gold-standard for measuring the ratio of body fat to total weight which is then used to define the healthy and unhealthy weight ranges. Media however has had some effect on

the cultural definition of 'normal' bodies, or the desired beautiful body shape/size, which is often far from what 'healthy' BMI calculations suggest (Thompson & Hirschman, 1995).

There is a pervasiveness of body image dissatisfaction and it is in some instances 'normalised' experience for people, in particular for women with the pursuit of thinness and the female body ideal (Moulding, 2007). Moulding (2007) also reports that there are a large number of studies that show that there are very high levels of body dissatisfaction among women and girls in western countries in particular. This 'feminine' ideal of beauty which is pushed into the minds of individuals via the media and society, is eventually internalised over time (Czepczor-Bernat, 2022). This internalised idea of an impossible body ideal leads to strong feelings of body dissatisfaction and other related feelings of body shame (Czepczor-Bernat, 2022). It should be noted that while there is the social discourses in place that essentially pressures individuals to reach to unattainable slender, lean, toned and muscular body ideals, there is also more recently, another discourse that has been steadily gaining ground in society (Rodgers, 2016). This discourse has some subtle differences from the previous message, for while it still is extolling the ideal of thinness and vilifying those whom are overweight or obese, it does not as explicitly promote an unattainable body ideal (Rodgers, 2016). But rather, the emphasis is placed on the individuals maintaining a 'socially responsible weight' - within the widely recommended standardised body sizes and 'correct' BMIs – to represent the 'Healthy Weight' (Rodgers, 2016). In contract to the traditional thin-ideal social discourse, this healthy weight discourse is conveying a health-promotion message, endorsed by health-related institutions and professionals – broadcast through mainstream media – to emphasise the message that lower weights are associated with lower health risks (Rodgers, 2016). Also, at the same time, the healthy weight discourse is

highlighting the economic burdens that overweight and obese individuals are placing on society, thereby, this discourse is aligning itself within the personal responsibility for good citizenship pursuit (Rodgers, 2016). With research showing that about 20% of overweight individuals are successful with long-term weight-loss maintenance – which is defined as losing at least 10% of the initial body weight and then maintaining that loss for at least one year (Wing & Phelan, 2005); therefore, while the healthy weight message is an unrealistic ideal for some, it is different from the thin-body ideal as that is unrealistic for most (Rodgers, 2016). Rodgers (2016) continues to critically examine that as the healthy body can be unrealistic for some to achieve and maintain, it was also suggested that the lifestyle changes that are emphasised and promoted within this healthy weight discourse may be even harder to achieve and sustain for some individuals (Rodgers, 2016). This then new healthy weight/body discourse may be setting people up to fail to achieve and maintain thus increasing the body dissatisfaction felt, thereby potentially – for some – resorting to more extreme and unhealthy forms of body change strategies to achieve the desired results (Rodgers, 2016).

To have a body which is classed as overweight or obese is still highly stigmatised, despite there being an increasingly widespread "body acceptance movement," and the cultural stigma attached is often consists of the notion that these individuals are not putting in any effort or self-motivated care to either avoid or rectify the state they are in (Thompson & Hirschman, 1995). To have a healthy 'beautiful' body takes dedication and hard work which some individuals are not meeting (Thompson & Hirschman, 1995). Body acceptance has gathered political momentum within the last decade with the Dove Real Beauty campaign where higher-weighted bodies of all shapes were represented, as well as the availability and

visibility of ‘plus-sized” clothing and models (Bombak et al, 2019), however not all are convinced that there is enough evidence to suggest that not just a corporate and political gimmick and that the progression of social tolerance does in fact not translate into local contexts (Bombak et al, 2019).

It is interesting that at the same time of a society seemingly stigmatizing obesity, there is supporting literature that recent years advertisers have increased the use of larger models, known as plus-sized models, in their marketing campaigns, stating that the larger-bodied models are more in-line with ‘real’ women’s body types (Lin & McFerran, 2015). While many groups and individuals world-wide have applauded for the advertising companies for their move towards promoting a healthier body image in society, however there have been studies published that are suggesting that the acceptance of larger body types have been leading to a growing reduction in motivation from society to lead healthier lifestyles (Lin & McFerran, 2015). This is thought to be the case as because as ‘larger-bodies’ are seen to be more socially acceptable or permissible, therefore essentially giving people ‘permission’ to not engage in healthy behaviours (e.g. exercise) and eat healthy foods (Lin & McFerran, 2015). This could be seen as problematic as those who are overweight or obese are at a greater risk for more serious health issues such as heart disease, diabetes and some cancers (Lin & McFerran, 2015).

The relationship between sleep, gender and body image

Media has the ability, to some degree, to influence society as well as individuals through its presentation of various ideals, cultural reflections and dominant viewpoints. One of the areas where there has been some research into is the area of body image, which has seen that the more exposure one has to the media images, and in particular social media, the greater chance that someone has in experiencing body dissatisfaction.

Body dissatisfaction – characterised as the negative feelings an individual has about their shape, size and weight – has many negative consequences including depression, low self-esteem, and the possible development of serious conditions such as eating disorders (Brooks et al, 2020). Although body image concerns are an issue that both men and women experience, with research findings showing that the societal messages are distinctively gender specific, with women being more likely to describe themselves as fat, obsess about their weight more often and diet frequently (Adams et al, 2017). Across the age groups, study findings see men appearing to be more satisfied with their bodies compared to their women counterparts, where women, particularly young women feeling a stronger drive for thinness and feeling a greater perceived "body-specific social pressure", with "self-objectification, body monitoring and shame, disordered eating, and appearance anxiety" found in very young girls of 10, 11, 12 years old (Adams et al, 2017). Body image and body dissatisfaction is thought to be very much a gendered occurrence, with research showing that women tend to be much more concerned and also more dissatisfied with their bodies than men are (Ålgars et al, 2009).

While it is understood that the direct causes for people's body image concerns and the possible subsequent related disorders is one that is as complex as it is varied; many of the pathways to negative body image is frequently attributed to the media and the influences that it can have on society (Brooks et al, 2020). To fit a typical, stereotypical standard of beauty, the woman must be young, tall, toned but not too muscular, and be simultaneously curvaceous yet very thin; all being all but impossible for most women to achieve leading to a form of gender-specific related stress, body shame, social appearance comparison and body dissatisfaction (Adams et al, 2017). The traditional female gender norms place importance on physical appearance which evidence suggests is due to media exposure to television shows, images and publications which tend to sexually objectify women, increased focus on physical appearance, all leading to a greater feeling of stress for meeting traditional expectations of sexual attractiveness (Adams et al, 2017).

There are a few explanations for the difference in body dissatisfaction between the genders, one being from a more evolutionarily standpoint where attractiveness in women served to display genetic health, youth and fertility in mating and reproduction while the male is needed to provide for the family unit so their requirements are predominantly for power, strength and status; however for most, media's influence on body image is thought to be the more powerful driving force for women's higher levels of body dissatisfaction (Ålgars et al, 2009). It is interesting to note that "most social comparison studies on body image have focused more on female participants compared to male participants" (Cho & Lee, 2013. p. 95). What the previous studies, that involved female participants, showed is that when women were exposed to images of thin bodies, their associated body dissatisfaction increased – the results demonstrated that for women who are dissatisfied with their bodies

and body image, their body dissatisfaction tends to “typically engage in an upward comparison process” (Cho & Lee, 2013. P 95). However, in comparison, there is relatively few studies specifically investigating the impact on men’s body image satisfaction with the exposure of stereotypical masculine muscular male figures in the media, and what is available shows mixed results (Cho & Lee, 2013). A meta-analysis of 25 studies showed evidence that, on average, the exposure of print media images depicting typically masculine muscular male bodies, does lower the experienced body satisfaction and body self-esteem levels for young men (Barlett et al, 2008). Conversely, a study with 104 male university participants aiming to investigate the role of social comparison in response to images of muscular-ideal male beauty, showed that there was little to no impact on the satisfaction on the level of men’s weight satisfaction (Hargreaves & Tiggemann, 2009). Similarly, another study examining the effects of viewing media-portrayed muscular-ideal male bodies on 90 male university students also demonstrated that “there were no significant effect of the images on men’s body image” (Johnson et al, 2007). There is much more scope for study in the area of gender difference in body dissatisfaction in the future.

Regularly publications will use Body Mass Index which is an evaluation of a person’s weight in relation to their height as a measure for ‘health’ and an acceptable body weight (Ålgars et al, 2009). According to literature available, the relationship has been seen to be that the higher the BMI, the higher the level of body dissatisfaction, body weight dissatisfaction and lower levels of body esteem (Ålgars et al, 2009). According to the Heart Foundation website, generally, a BMI of less than 18.5 is “below the normal range”; a BMI of 18.5 – 24.9 is “a normal BMI range”; and a BMI of 25 or more is “above the normal range” The use of BMIs is frequently referred to within all areas of public messaging from Doctors, to

governmental public health promotions, to news reporting; however there is a growing body of literature which believes that there should be a clear distinction between the "standardised normal body weight" and that of an 'individually optimal weight (Golubnitschaja et al, 2021). It is growing in popularity that the basic principle of 'one size fits all' cannot be applied anymore, but rather a more individualised "contextual normal' is created taking into consideration the individual's genetic predisposition, geographic origins, cultural and nutritional habits and relevant lifestyle (Golubnitschaja et al, 2021). This would mean that a development of an innovative health screening public programmes are needed to be able to effectively promote a more multi-parametric health risk assessments which include a more individualised profiling system which is currently not the case (Golubnitschaja et al, 2021).

Results of previous studies analysing the media representations of sleep, it was noted in Seale et al's 2007 article that there was a differentiation on the delivery of the media's discourses based on the who the intended target reader was. It was argued in that study that the media's discourses on sleep varied depending on the social class, the gender and the age of the intended readers of the news and other print articles (Seale et al, 2007). The study saw that if the readership was deemed to be predominantly women, then the discourse around sleep was framed as providing 'emotional' female with tips and tools to help with their sleep troubles; such as drinking warm milk before bedtime, using lavender-scented pillows, or magnesium rubs or creams (Seale et al, 2007). On the other-hand, men's sleep issues were portrayed as more 'masculine' and physical rather than emotional and psychological with snoring and sleep-apnoea related cures and solutions (Seale et al, 2007). Here the masculinised discourse will typically depict the 'snorer' as an overweight middle-

aged man, therefore should the 'snorer' be a woman, her femininity is questioned (Williams et al, 2008). It has also been noted in other studies that there is gendered associations and stereotyping in discourses around insomnia sufferers; this is done through the common use of female case studies in the construction of 'evidence citing's' as well as reinforcing the gendered stereotype of the 'emotional' woman through the specific choice of words used to describe the nature of the sleeping disorder (Williams et al, 2008). When male insomniacs are described it is with the underlying notion that they are the stereotypical 'unemotional' man that have external issues such as stress at home or at work which is at the root of their condition (Williams et al, 2008).

There are also review results available (Courtenay, 2000) that suggest that the social construct of masculinity is "largely unhealthy with dominant men required to undertake socially masculinised, physically risky behaviours," thus it has been suggested that men see 'health' as typically a woman's business and responsibility, men tend to know quite little about their health, and tend to keep quiet about any health problems that they may have (Venn et al, 2013). Within this model in the terms of sleep health, Courtenay (2000) suggests that men will unlikely know much about sleep and the health messages and behavioural practices recommended by health professionals. In one of the few sociological explorations of men's sleep attitudes and understandings, Meadows, Arber, Venn and Hislop (2008) found that men, particularly men of working age, held a complex relationship between sleep and their need to balance masculine functioning during the day. The men studied by Meadows et al. (2008) showed that they "relied on their 'body' to be the informant of the need for sleep," while deciding themselves how much they are able to 'trim' the length of time to sleep without compromising their ability to function and

accomplish the next day's activities (Venn et al, 2013). Popular culture appears to portray men lacking any real regard to the importance of sleep, for example Meadows et al, (2008) quoted another source that it was suggested that "there is a macho culture of sleeplessness – sleep is for wimps who can't take the pace" where "the tough and motivated like to brag about how little sleep they need" (Meadows et al, 2008). Within this paradigm, men are portrayed as essentially using sleep as a tool to demonstrate idealised forms of masculinity and positions of power:

> Men are demonstrating dominant norms of masculinity when they refuse to take sick leave from work, when they insist that they need little sleep, and when they boast that drinking does not impair their driving (Courtenay, 2000, p 1389).

It is argued that this is evidence of the 'dark side' of masculinity, which leads men to engage in life-shortening behaviours and influence them to act in ways contrary to their health and wellbeing (Meadows et al, 2008).

Aim of this Study:

The aim of this present thesis is to explore the discourses of the topics of sleep and weight found and presented in the news media. This thesis which may begin to understand and represent the broader social drivers for the views, behaviours and understandings in relation to sleep and weight. This discourse analysis thesis aims to contribute to the

broader exploration into the areas of social discourse and the connection to sleep and weight, and overall health in general.

Chapter Two, Methods

Theoretical Approach

This thesis study draws from a qualitative approach to critical discourse analysis (CDA), which, as described by Zahrin (2021), "is an approach commonly used in studies looking to analyse the ideological assumptions and/or associations of sample texts, as well as the 'relationships of dominance, power and control' that is presented within those texts" (p 5). Anitasari (2018) described CDA as a research methodology for the deconstruction of the discourses and the "fixed power relationships," where from an "epistemological standpoint, it presupposes the multiple possibilities of knowing and interpreting the world" (p 1). According to Fairclough (1995), the central aim of CDA is to "systematically explore the opaque relationship of causality and determine between a) discursive practices, events and tests, and b) wider social and cultural structures, relations and processes" (p132). This approach, which has been utilised by numerous studies, has been explained by van Dijk (2006) as being primarily interested in and focused on examining social issues, and where critical discourse analysis is stated to be. According to Rogers et al (2005), this approach has being generally concerned with issues of power and justice, and the ways in which the economy, race, class, gender, religion, education, etc are constructed, reproduced or transformed within the social systems. Here, CDA has been explained by Rodgers et al (2005, p367) as focusing on how language as a "cultural tool mediates relationships of power and privilege in social interactions, institutions, and bodies of knowledge." Mogashoa (2014) presented an interesting perspective that:

> Texts are moments of inter-subjectivity, that is the social and discursive relations between human subjects, they involve writers and readers, speakers and listeners, individuals whose intentions are neither self-evident nor recoverable without recourse to another text. Critical discourse analysis is a tool to help members of a profession understand the messages they are sending to themselves and other and to understand the meanings of the spoken and written texts by others. (p 105).

While there is set processes and methodology for CDA, there is also a place for both an inductive as well as abductive reasoning when analysing the text hence there is some room for personal interpretation of the messages and ideas presented in the examined texts (Zahrin, 2021). CDA as a theory, methodology, and type of analysis is used across a variety of fields, including linguistics, sociology, and philosophy (Sveinson et al, 2021). CDA focuses on how language is used; the range of discourses that are found within the language used, and what knowledge is created through the discourses (Sveinson et al, 2021). For these reasons, CDA was the most appropriate method to utilise for these present thesis. It should also be noted that unlike other domains or approaches used to carry out discourse analysis, CDA does not predominantly seek to contribute towards the growth of knowledge of the specific discipline or school of theory investigated but rather it looks to better understand the social issue investigated through the study of the discourse around the topic (Van Dijk, 1993). CDA looks to understand how the 'powerful' exhibit their power within discourse and how they are able to influence their audiences; this can even extend to look at how some 'less-powerful' voices are not heard from or some perspectives are ignored (Van Dijk, 2993). Fairclough (1992) presented the argument that the language used within society is a form of social practice rather than an individual activity which is a very interested stance.

The first published attempts to formalize an approach for discourse analysis was carried out by the linguist Jerry R. Hobbs (Hobbs, 1985); here Hobbs presented a productive variety of interesting links and relationships between positions, including application processes that can be used as a model and guide for the methodology (Martin-Rodilla & Gonzalez-Perez, 2023). Van Dijk (2009) characterised CDA to be an interdisciplinary multi-methodical approach rather than an isolated specialty on its own; but rather CDA is more a thoughtful combination of a critical theory and application. Sahmeni and Afifah (2019) reaffirmed Van Dijk stance of CDA being an interdisciplinary multi-methodical approach as well as adding that CDA is a way of examining a social group's mental representation of the social structures at work which is what they believe mass media to be a representation of.

To be able to effectively use CDA as a research tool, one must understand its main underlining theory that language is used as a form of social practice (Janks, 1997). Where the language used is either repeating or challenging existing social relationships, or where different positions of power are either maintained or shifted (Janks, 1997). Ramanathan & Tan Bee Hoon (2015) discussed the concept of discursive practice which is the relationship between texts and social practice; where the "production, distribution and consumption of text" (p 59), is shaped by social practice and context.

The Fairclough model for CDA, for which has been well used by other studies, includes three interrelated processes when critically analysing discourse which are (Janks, 1997):

1. The object of analysis (verbal discourse, visual discourse or verbal/visual texts) – the descriptions presented;

2. The process by which the object is presented (written, spoken or designed) and then received (read, listening or viewing) by the participants – the interpretation of the presented descriptions;
3. The socio-historical conditions that preside over these processes – the social explanation of the discourse.

Discourse has been described as a linguistic production, both verbal and written, which is constructed to communicate ideas and concepts (Martin-Rodilla & Gonzalez-Perez, 2014). Written text is a permanent and visible adaption of discourse, however when discourse is demonstrated in text, some of the intended information can get lost by there being not verbal cues, no body language or voice tone to gage from. This means that while written text can preserve the core essence of the discourse, some of the intended message is lost therefore discourse analysis work on written text can be an imperfect, yet valuable investigation tool of the discourses (Martin-Rodilla & Gonzalez-Perez, 2014).

Through critically analysing discourse many texts on the given topic need to be reviewed to be able to begin to look for answers for any hypotheses or questions created during the introduction of the study (Janks, 1997). The intention of this thesis is to be looking at is the discourse that goes beyond those of the text, but also that of the connections between the tone, elements and perspectives referred to within the texts (Martin-Rodilla & Gonzalez-Perez, 2023). In following other studies' discourse analysis frameworks, this work has been largely based on the following chosen two methodology processes: (1) patterning the language used in the media to portray the structure and meanings of the sourced text; and (2) following some processual guideline frameworks for then applying that modelling

language - a formalised representation of what concepts and relationships are present within a domain or a portion society's discourses - within the discourse analysis process (Martin-Rodilla & Gonzalez-Perez, 2023).

It has been said that through mass media one is able to know about the world, where mass media communication can be a powerful tool of communication between a very large group of people (Anitasari, 2018). Mass media can be described as any form of communication which is transmitted through a medium or channel that can simultaneously reach a very large number of people, and mass media is one of the channels that can carry forms of mass communication (Florescu, 2014). In the case of this thesis study, Stuff.co.nz is the mass media channel which was examined; and with the emergence of the internet came with it the complexities of the developing industries of media and communication as new forms of technologies are created and modified and which is becoming ever-more integrated into everyday life (Florescu, 2014). According to the stuff.co.nz website, Stuff stated that it reaches 3.4 million New Zealanders per month across both the print and digital products; and according to the latest Nielsen review results, Stuff claims the number one news website (Stuff, 2023).

Research Methods & Techniques

Texts were collated from mainstream NZ print media (Stuff.co.nz) with a date parameter of 10 years. The role that 'time' plays for the use of research, particularly in the sciences, in this case specifically health care, generally changes quickly with the acquisition of new knowledge, research and understanding, however a 'good rule of thumb' that is generally agreed among research academics is to use sources published in the last 13 years for research (Barrosos et al, 2006). The dates that were looked at were articles from 2010 to 2023, any article outside those dates were excluded from analysis because it was thought that this would be maintaining a reasonably modern search window, and to also maintain a manageable search yield for this thesis study. As this was intended to be a snap-shot of the discourses presented in the news articles therefore the texts were collected for three days (10 articles were collected per day) during the first week of May 2023, and 30 relevant articles that appeared in search that were rated as the most viewed were included in the study.

As initially discussed in the section above, the media source, Stuff.co.nz ("Stuff"), was selected due to the fact that this is a free news content which is accessible to all national and international English-speaking individuals with access to the internet. Stuff was chosen due to the idea that online content has become the main source for accessing information for most in society when compared to printed articles or subscription-based news platforms (Breheny et al, 2023) an example of which would The Herald Premium. Stuff has stated that their readership is roughly 2.3 million New Zealanders every month with a demographic of 45% men and 55% women; with those aged 55 and over making up 31% of the reported readers (Stuff Limited. & Media, 2017).

It is interesting to note that the same parameters of date and key words (‘sleep’ and ‘weight’) were entered in each of the three days the articles were collected in, and as each search was executed the resulting articles were ordered differently than the day before. The articles that were listed in each search were differently organised, in that the article that appeared first in the results on the first day was not the same article that was listed the next two days. There was not an obvious reason for the different search results for each of the days so this presents a few limitations for this investigation in regards to reproduction and verifiability.

Appendix 1 exhibits the information on the articles used in this snap-shot analysis, outlining the titles, the dates published, the author, the section within Stuff where the article was published to and the URL address for the article.

Table 1 provides a description of the three interrelated processes of CDA and the application of those three dimensions within the present research. All sleep and weight related texts and excerpts within the 30 articles reviewed were coded into the NVivo software under 15 general codes: ‘barriers to weight-loss’; ‘importance of sleep’; ‘healthy habits’; ‘unhealthy habits’; ‘debunked studies into weight loss tools’; ‘debunked theories of sleep aids’; ‘gender differences with body and weight’; ‘parental concern for children’s sleep’; ‘preventers of sleep’; ‘research for weigh loss or weigh gain prevention’; ‘research of tools to aid in sleep’; ‘studies into sleep and weight connections’; ‘tips for sleeping’; ‘tools for weight loss’; and ‘weight, sleep and children’. This then, as the results section will describe in greater detail, resulted in the organisation of the four central discourses.

Table 1:

Summary of the three interrelated processes of critically analysing discourse (Fairclough, 2001; Janks 1997) and this study's interpretation of the analysis of the Sleep and Weight discourse taken from Stuff articles

Component of Language	Uses of the language	Details of discourse	Research approach
Discourse	The text itself	Written, verbal or visual words/language presented. The description of the ideas, messages intended.	Each Stuff article was reviewed to examine the title of the story, the presentation of the key words "sleep" and "weight" as well as the message intended to be presented to the reader. The date of publication of the article was also examined. The word choices to discuss 'weight' were also examined for meaning, implication and clarity.
Discourse presentation	The interpretation of the	The process by which the object is presented (written, spoken or designed) and then	Any excerpts found within the Stuff news articles were coded within a qualitative data analysis software

	presented descriptions	received (read, listening or viewing) by the participants. Examine the discourses within the text, the subject matter itself and the potion of the world that it represents and the entities and values that is featured.	programme (NVivo). Content covering the following issues were coded: importance of good sleep; the role that sleep plays in contributing weight-gain issues; the role that excess weight has in increasing the likelihood of individuals having sleep related issues; and the ability of 'healthy' diets and exercise support the correction of any sleeping issues. Additional codes relating to any gender-related differences in sleeping or weight issues, as well as content relating to specifically children (and weight and sleep were also added.

Coherence relations	The relationships between the discourse and the social explanation	Investigating the socio-historical conditions that preside over these processes – the social explanation of the discourse. Looking further into the relationship between the social normative practices and the text is negotiated by the discursive practice.	Following Fairclough's theory of critical discourse analysis, the aim was to investigate the connections between the interaction of the text within the social context. Drawing on social theory in order to uncover the ideological underpinnings of "lay interpretive procedures"

Ethical Statements

This research is an ethical low risk project as it does not include any interviews or statements by participants. All data used for the present analyses are available from Stuff.co.nz. Stuff (2020) has a statement regarding the use of their content: "You may browse the Site for your own personal use, information, research, study and educational purposes only. Stuff grants to you a limited non-exclusive license to view, copy and print the Content for your non-commercial or personal use."

Also, in line with Massey University's Code of Responsible Research Conduct where "researchers must foster and maintain a research environment of intellectual honesty and scholarly rigour", this research was carried out following the Principles of Research Integrity as laid out in Massey University Policy Guide (Massey University, 2015, p.3).

Chapter Three, Findings

Prior to examining the articles, preliminary findings were that most of the articles were published under Stuff's *lifestyle* section with 25 of the 30 articles published to the section, three were published under the *National News – Health* section, with one published under the *Science* section, and one in the *Dominion Post – Hutt News* sections.

During the analysis of the selected relevant articles four main discourses were found:

1.The importance of good sleep for weight levels and overall health – where the readers were explained as to why they need to be making sleep a priority in their lives not just for weight 'health' but also for overall physical wellbeing;

2. The role that sleep plays in contributing towards experiencing weight-gain as well as supporting weight loss efforts – where the readers were given the 'science' behind why they could be having trouble losing weight if they were not getting the sleep they needed;

3. The role that excess weight has in increasing sleep related issues – readers are given explanations as to why their sleep will be effected should they be heavier than recommended by health professionals;

4. The ability to use healthy diets and exercise efforts to address and support any sleeping issues.

There were two other minor discourses that presented themselves within some of the articles which were; the gender differences in the importance and challenges that sleep can effect and result in; and also the topic of sleep and weight in children. For the purposes of this review, the four main above mentioned areas will be focused on in greater detail for

this analysis, however gender-stereotypical discourse did require some examination within the findings and discussion sections as well.

During the coding process of analysis, connections and links between the different discourses and codes were observed. This is illustrated in Figure 1. Many of the passages found within the Stuff articles were reasonably coded into more than one code topic. In doing so there was found to be reoccurring connections between the codes and four main discourses. The discourse of 'The importance of sleep' was found to be connected to all of the other three themes in regards to the roles that sleeps plays in weight, how sleep is affected by weight and how to utilize tools to promote 'good' sleep. Similarly, codes (green squares) such as 'Barriers to weight loss" was reasonably coded into statements that both spoke to the role that sleep plays in weight gain/loss, as well as the importance of getting 'good' sleep.

Figure 1:

Visual diagram of the four main discourses (Blue circles) identified in the analysis process and the codes generated in NVivo (Green squares).

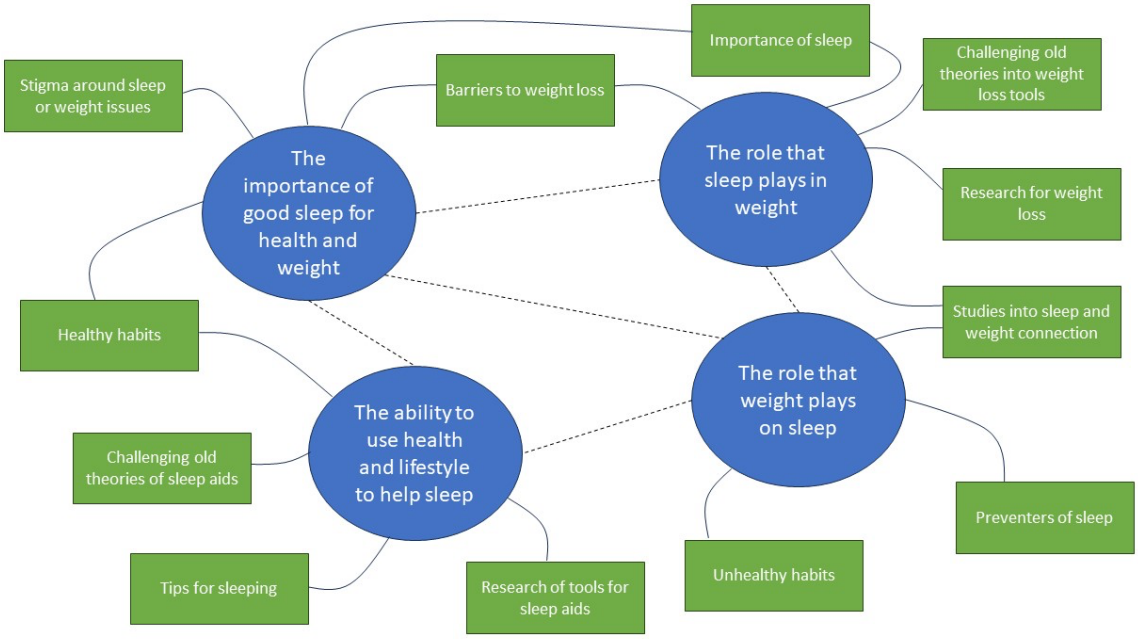

Figure 1 demonstrates that while there were distinct discourses that emerged in the study, there were clear connections between the identified discourses. For example, the role that sleep plays in weight gain and weight loss would explain to the readers the ways in which sleep can either promote or inhibit weight loss, while additionally explaining to the readers that excess weight can lead to sleeping difficulties such as sleep apnoea thereby essentially creating a perpetuating cycle. Another example of discourse connections that were seen in the study was that the importance of sleep for weight loss and overall health was central to all other three discourses; such that making sleep a priority and getting the recommended length of quality sleep is pivotal for being able to lose excess weight (The role that sleep plays in weight loss), being able to physical facilitate the necessary sleep (The role that weight plays on sleep), and to also be rested enough to have the strength and stamina to

exercise and resist unhealthy food options (The ability to use healthy diet and lifestyle to help sleep). While the discourses found within the reviewed texts were themselves distinct from one another, they all linked to each other as well. Figure 1 also illustrates the ways that the original codes (green) that were initially generated in NVivo lined up with the four discourses (blue) identified. The diagram illustrates that several of the original NVivo codes can be linked to more than one of the four discourses such as the code, Importance of Sleep (green) had passages coded within the articles that linked with both, The importance of good sleep for health and weight (blue) as well as, The role that sleep plays in weight (blue).

The importance of good sleep for health and weight

The importance of getting good sleep for weight loss and overall general health was the most common discourse that was identified in the reviewed articles. This highlights that sleep was above-all promoted positively as very beneficial for not just weight-loss success but primarily as being important for overall health.

26 Stuffs articles from the reviewed items specifically referenced the benefits of making sure you get a good's night's sleep with a total of 110 coded text items. While the overarching message of the articles were of a 'sleep positive' nature, promoting the importance of getting enough quality sleep, a large majority of the articles were concentrating on explaining the negative effects of poor sleep. This message of continually poor or short-durations of sleep as almost definitely resulting in becoming overweight, was presented by-in-large as a cautionary tale manner. For example, one article outlined the disruption of the body's hormone balance when poor sleep is a factor, describing "how the

lack of sleep can make you fat," (Article 15). It is explained to the readers how the lack of sleep will disrupt the hormone balance within driving the hunger-inducing hormone ghrelin to increase in production while at the same time decreasing the leptin production which directs the body to stop eating (Article 15). Information is then presented to the readers that within four days of a lack of sleep, the body releases the stress hormone cortisol which increases your risk of diabetes as well as causes your body to store more fat as energy conservation because of the drop of insulin sensitivity by 30% (Article 15). The readers are then left with the statement that "so, it's not that you should sleep more to lose weight, but rather that if you don't get enough quality sleep you'll disrupt your metabolism and weight gain follows" (Article 15). Another article also drew on scientific research to strengthen the messages around sleep loss and weight gain by referencing a study conducted by The Mayo Clinic stating that women who slept less than six hours a night were more likely to gain a quantifiable amount of five kilograms than those who were sleeping at least seven hours each night (Article 23). It seemed that by referencing a well-known medical institution, which has been regarded as a highly ranked American clinical research institute (Castellucci, 2018), which will add tremendous credence to the research findings presented within the articles presented in Stuff and thereby perhaps greatly influencing the readers' opinions on the matter.

Article 17 addressed the use of the weekend days to 'catch-up' on any lost hours of sleep from during the week, did little to provide readers with any saving-grace in the implications for weight loss goals. Here article 17 broke the news to the Stuffs readers that the weekend 'catch-up' sleep would not undo the damaging impact that was caused from a lack of sleep during possibly very busy weekdays. The article wrote about a new study carried out by the

University of Colorado Boulder found evidence that confirmed that any ‘catch-up’ sleep on a Saturday or Sunday would not “counterbalance the health side effects of sleep loss during the week” (Article 17). This study involved three test groups tested over a period of nine nights, where one group was sleeping nine hours a night, and another was sleeping for just five hours a night. The third group was also sleeping for five hours each night over the five weekdays but were allowed to sleep as much as they wanted over the two weekend days, before then returning to a five hour sleep schedule again (Article 17). The results of the study showed that the participants in the second and third group both saw an increase in appetite, hunger, snacking and ultimately weight-gain (Article 17). The third group, which was allowed to ‘catch-up’ on lost sleep over the weekend, found that when they returned to the regular five hour sleep schedule, their circadian internal-body clock was pushed out further and they were eating more after dinner and also had Increased weight-gain (Article 17). It was also found that the third group participants who were able to have that weekend recovery-sleep period, had worse muscle and liver-specific insulin sensitivity than the other group participants. This showed that any weekend catch-up recovery sleep would not be an effective sleep-loss countermeasure to make up for persistent or chronic sleep deprivation (Article 17). The effect that explaining the nature of the study and the sleeping schedules being tested to the readers, provided more power to the statement that ‘make-up sleep’ will essentially not help to reverse the damaging effects of their sleep deprivation. Here the readers were being provided with a visualisation of sleeping habits of a large number of the population, perhaps their own sleeping pattern of reduced sleeping hours during the working week and then two days of weekend catch-up sleep, and they were being shown that the damage caused by the working week's sleep deprivation are not reduced from two days of ‘extra’ sleep.

The role that sleep plays in contributing towards weight-gain

There appeared to be a noticeable effort by the writers of many of the Stuff articles, to stress the point to the readers, that the popular belief that exercise and diet are the most important when it comes to weight management and a healthy heart, is actually not the correct. The articles appeared to give the message that there are so few individuals that really tend to focus on making sleep a priority, because in actual fact, sleep has been seen to be very crucial to effective weight-loss/management. This discourse around how sleep can be 'used' to promote or when sleep is prioritised to positively effect weight loss attempts or weight loss effects was seen fairly regularly within the articles examined. Researchers' studies on how good and enough sleep can positively effect ones weight loss attempts were routinely referenced to provide scientific 'evidence' to a previously overlooked promoter of weight loss, but one that is very crucial, which is sleep.

A Stuff news article titled "Five weight loss roadblocks," looks at the five most likely reasons for why despite using caloric-restrictive dieting routines as well as exercise regimes someone is not managing to lose the weight they want (Article 6). The first "hidden weight loss roadblock" is "a lack of sleep" (Article 6). The explanation starts off with the statement of "not getting the right amount of sleep can have dire consequences to your weight"(Article 6). The article goes over the negative effect on hormones (leptin and ghrelin) which results in the person overeating and decreased metabolism from a lack of sleep (Article 6). Here the readers are given the names of the 'culprit' hormones, which are released in sleep-deprived states, which are responsible for their 'confusing' weight gain. The title uses the word roadblock which essentially means barrier, is quite final in its

implication so should one not be getting the required quality and amount of sleep necessary, then weigh loss is not possible. It is all sounding fairly negatively final for readers.

Stuff news readers have been 'taught' that with less than the recommended 7-9 hours of sleep per night for the average adult, weight gain is essentially guaranteed, however that is not all that readers are educated to. The Stuff.co.nz website also directs readers to a publication of a 2010 study adding another piece of the puzzle for obesity. Spivey (2010) explained that there are some studies that have shown that is not just the total amount of sleep time that is key, but rather how much sleep time is spent in the different sleep stages. This is explained that individuals who spend less time in slow-wave sleep (which is the deepest sleep stage) were the individuals identified as being obese at the time of the sleep study (Spivey, 2010). The term 'obese' is one that is associated with weight stigma and can be quite 'triggering' for individuals who are overweight (Anekwe, 2022). Here the readers were exposed to the term obese being used multiple times under a strong anti-fat bias which can indirectly contribute to a current weight stigma language that is widely used still within the media and cultural settings (Anekwe, 2022).

A Stuff article published in 2010 (Article 1) discussed a study conducted by the University of Chicago and published in the Annals of Internal Medicine which adds to the mounting evidence that sleep is a key factor in people's ability to regulate weight-gain/loss. The study included 10 overweight men and women who slept in a sleep lab for a two-week period, in two separate periods (Article 1). The study's design was such that during both of the separate periods the participants followed the same calorie-restricted diet but over one

period the participants slept for 8.5 hours per night, and then during the other period they slept just 5.5 hours per night (Article 1). What the researchers found was that while the dieters lost the same average amount of weight (seven pounds) during both sleep-time periods, however during the sleep-restricted period, the dieters predominantly lost muscle mass rather than fat (Article 1). When the participants were sleeping 8.5 hours, more than half of the measured weight loss came from fat-loss; while during the 5.5 sleeping hour period, only one-quarter of the recorded weight-loss was from fat-loss, meaning that the majority of weight-loss had come from the loss of lean body tissue (muscle and other non-fat body tissue) rather than fat (Article 1). The article did mention that this was but one study, and that further research into the longer-term effects of dieters' body composition over time, it did however stated that this does provide more evidence for the detrimental effects of sleep-depravation has on the body and weight management (Article 1). The reported study findings in the Stuff article were interesting in that it was highlighting that while the two groups were placed on the same caloric-restricted diet, there were differences seen due to the amount of sleep each group got. Often overweight and obese individuals are portrayed within the media as lazy, lacking in willpower and somewhat self-indulgent (Major et al, 2014), however this study provided the readers with some evidence that all may not be as it appears. By stating "getting too little sleep might prevent dieters from losing body fat, according to a small US study" (Article 1), is giving readers a very clear insight into the point that sleep is a vital part of weight-loss programs which was backed by providing the information that this is the results from an American study. Providing the general public (not just academics who have access to research findings) with this information may have positive effects in regards to reducing and tackling the negative social stigma that many overweight individuals report to experience.

Physical or medical conditions have also been attributed to effecting sleep. The topic of sleep apnoea was explained in Article 19, that discussed the effects that the medical condition had on one woman's sleep and obesity issues. The article describes one woman's journey with weight loss after visit her doctor explaining her extreme feeling of tiredness because she was getting so little sleep overnight that she was falling asleep constantly throughout the day, experiencing wild mood swings, permanent dark circles under her eyes and was yawning constantly (Article 19). After sleep-testing with a sleep specialist she was diagnosed with sleep apnoea. The article explained that while some people suffer from sleep apnoea due to the misshape of their jaw or because of issues with the brain controls of their breathing, but it was stated that "the number one biggest cause of sleep apnoea is obesity" (Article 19). This chronic broken sleep and reduction in oxygen levels has multiple dangerous consequences including increased heart rate and blood pressure during every apnoea attack and higher likelihood of developing heart disease and diabetes (Article 19). With this article, the focus was brought back to obesity being the root cause of sleep disturbances such as those brought on by sleep apnoea. While the article presented prior(Article 1), was discussing weight loss issues from the angle that there was more to the issue of not achieving the wanted weight loss successes than simply not consuming large amounts of calories in order to lose weight, Article 19 refocused the attention on the idea that if you are obese (presumably because you are not eating well nor exercising enough as society generally implies) then you will affect your ability to sleep and therefore not be able to lose weight. The article seemingly only focused on what could be happening if you are obese (using the stigmatising term 'obese') and are unable to lose weight, then apnoea may be the underlying cause. The article made the cycle of obesity-sleep disturbances (sleep apnoea)-obesity seem very simple to overcome; 'cure' the sleep apnoea (which was caused

by the individual's obesity) you will then be able to 'cure' the obesity. Article 1 appeared to be oversimplifying the issue of unrealised weight loss attempts, while Article 19 were offering the readers with insight that weight loss may not be something that is easily resolved by 'fixing' one condition.

The role that excess weight has in increasing the likelihood of individuals having sleep related issues

A Stuff article titled, "The surprising reason you're sleepy all day" was discussing the leading causes of chronic drowsiness (Article 13). Here is stated that the latest research from Penn State College of Medicine had found that obesity and depression are the leading causes of chronic drowsiness; where it was found after analysing 1300 people over the span of 7.5 years that those who were obese and depressed showed higher sleep disturbances with high experiences of daytime sleepiness (EDS) (Article 13). What the study also showed was that once individuals lost weight, it had a positive effect on their EDS and as the weight went down, so did their experiences of daytime drowsiness (Article 13). The article then went on to discuss that:

> With more than 65 percent of Kiwis currently overweight or obese this research could be considered ground-breaking in the treatment of drowsiness or 3pm-itis. Instead of reaching for sleeping tablets or a chocolate bar, it may be as simple as upping your dose of healthy food and exercise. (Article 13).

The use of the word 'simple' implies that it is just that, simple to lose excess weight which might be misleading for a large proportion of overweight individuals. The article is implying that a healthy apple at 3pm followed by a walk will result in weight loss that may have not been achievable prior. The article also reinforced the social stereotype that those whom are overweight are lazy, weak-willed and self-indulgent (Major et al, 2014) by stating the overweight individuals should reach for healthy foods and do some exercise rather than the sleeping tablets and the chocolate bars that they normally would have. It is these types of subtle statements printed and presented within the media which perpetuates the negative social stigma felt by overweight individuals and also can trivialise the issues experienced when trying to lose unwanted excess weight.

A Dr Nicholas Fuller who is an expert in obesity and metabolic disorders at the University of Sydney's Charles Perkins Centre was quoted to state that "we know already that people who are obese are sleepier during the day and that their night-time sleep is disturbed, compared to people of normal body weight" (Article 13). Dr Fuller goes on to state that:

> It's common for people to associate being overweight as having a higher risk of type 2 diabetes, cardiovascular heart disease and some cancers, however a lot less is known surrounding the day to day effects on quality of life, such as alertness, breathlessness, excessive sweating, joint pain, snoring and general lethargy. (Article 13).

The article then goes on to answer the question of "why though does excess weight affect sleep?", another clinician, Dr David Hillman, was consulted for the article who stated that

while there was not a defined explanation or causation, it is understood that due to the metabolic disturbances associated with excess weight, the combination of obesity and sleep loss has been shown to promote and inflammatory and insulin resistance change within the body (Article 13). Based on national statistical information, Dr Hillman was quoted to state that "there is good reason to hypothesise that problems are worsening. Sleep is under more pressure from other activities than ever, and national obesity rates are increasing," (Article 13). This article finished by stating:

> The moral of the story? If feeling zonked isn't an option – prioritise shut eye, get your 30 mins exercise a day in and dose up on fruit and veg if you want to be healthy, happy and more importantly, awake. Easy, huh? (Article 13).

Ending the statement with the term, "easy, huh?" can be interpreted as quite invalidating to some. It may not be an easy thing to get enough time to achieve the recommended 7-9 hours sleep per night for some, nor may fresh fruit and vegetables be financially possible for others, and 30 minutes of exercise might not be achievable for everyone for a vast number of the population for a variety of different reasons. Saying that the solution is "easy", when in, reality, it may not be as 'easy' as the article is stating may lead to more feelings of failure, pressure and stress for those reading the article.

Article 24, titled "why sleep is crucial to your workout routine," was aiming to shed some light for readers as to the possible reasons why, despite exercise and a healthy diet, the expected weight-loss results are not achieved. The article stated that according to a number of studies available, sleep deprivation was the cause for negative weight-gain

outcomes, an increase in sporting injuries, reduction in muscle mass and lower testosterone levels (Article 24). A personal trainer was quoted with "you can have two people who are doing the exact same workout and eating the same good nutrition, but one is seeing huge progress and the other isn't. A lot of the time, good sleep is the difference" (Article 24). It was explained that it is during sleep only when the body is able to fully recover and rebuild from exercise, and it is specifically during the deep sleep phases when the body is able to repair tissue and muscle (Article 24). The key to optimising the restorative benefits of sleep is for the proper sequence to occur, which was explained as: "Stage 1 (near-awake), stage 2 (onset of sleep), stage 3 (deep and restorative sleep) and stage 4 (deep REM or dream state), which occurs at about 90 minutes into each cycle" (Article 24). The article explained that according to the personal trainer interviewed, that interestingly it is during sleep when muscle is 'built,' this occurs because during deep sleep, the body uses the consumed protein along with the growth hormone which is produced during the deep sleep phase to repair the muscle tissue which was damaged during a workout and it is that repair which allows the muscle to grow and get stronger (Article 24). The final message of the article was to stress the point that "sleep needs to be made a priority. If you don't sleep, your body is stressed, you crave food, your immune system is compromised" (Article 24).

These discourses appear to be expressing to readers that there is a double-edge sord when it comes to weight and sleep. Excess weight has been shown to negatively impact sleep quality, as seen with contributing to conditions such as sleep apnoea, while at the same time, poor sleep amounts and poor sleep quality will contribute to excess weight gain. The articles were aiming at conveying that wanted weight losses would not be possible without a utilisation of both healthy foods and exercises, along with proper sleep amounts and

quality. While the language chosen in many of the articles were stereotypically negative (obese) with their implications perpetuating negative social stigma (overweight people are lazy and self-indulgent) the messages were also aiming to direct the readers into understanding that restful sleep and healthy eating and exercise are a necessary combination, in that it is not possible to have one without the other.

Using healthy diet and exercise efforts to address and support any sleeping issues

The Stuff articles highlighted the ideas around how healthy diets and regular exercise can positively support sleep quality and quantity, where the focus was on prompting positive sleep techniques where one can address sleep issues through utilising healthy eating and exercises routines.

While there quite a few articles outlining the effect that poor sleep quality and quantity can lead to weight-gain, there were also some that discussed the effect that diet can have on the quality of sleep. One such article discussed that while there were a few studies available that provided evidence for the undisputed link between a person's weight and the quality of their sleep, there were also studies that provided results to demonstrate that there is a link between the person's diet and their sleep quality (Article 14). It was noted in this article that there is often a perpetuating cycle in effect, where people need to have good sleep to feel well enough and have the motivation to eat well, but then people also need to have a balanced nutritious diet to get the quality of sleep needed (Article 14). Article 14 quoted nutritionist Samantha Gemmell stating "practitioners have always known that sleep quality

and health are linked. It makes complete sense that those with weight issues may get less restorative sleep,"; where "poor sleep may be one of the mechanisms contributing to a person's weight issues, or a symptom of the underlying cause," she explained (Article 14). This bidirectional effect, of where weight effects sleep and sleep effects weight is in line with, or reaffirming the discourses above but now where the focus for the readers is being moved away from what the issues are to where one can start to make positive changes. The article showed that when this diet/sleep relationship is off-balanced, it can be fairly easy to then fall into the continuing cycle of relying on detrimental food and drink items (caffeine, sugar, high-caloric foods) just to 'make it through the day' (Article 14). The article does then provide readers with suggested food and drink items that could help to improve a person's sleep quality such as milk, turkey and cheese items which contain amino acids believed to help facilitate quality sleep; tart cherry juice (containing naturally occurring amounts of the hormone melatonin) to help promote sleep onset, as well as calming herbal teas such as chamomile to assist with calming the body ready for sleep (Article 14). As sleep is something that is not always controllable when it is occurring, making some adjustments to what one eats and drinks is more governable which is what the article was aiming to get the readers to understand. Using the term "make it through the day" implies that the individuals are struggling to keep awake during the working hours and that there is a 'fight for survival' occurring and that things are fairly desperate for these individuals.

Diet was presented to the readers as being not the only tool that people can utilise to support their sleep for better health outcomes. Article 26 described another study which looked at how the use of light can be used to lead to better sleep and subsequently better health (including weight) outcomes. This Stuff article discusses a new study which was

conducted to look into, and provide recommendations for how bright our living and working environments should be to enable people to stay mentally alert during day-working hours and to then promote good sleep during the night (Article 26). The article references how there are studies to show that human eyes contain a specialised neuron which holds a blue-light-sensitive protein called melanopsin (Article 26). This study proposes a new light measurement standard called the melanopic equivalent daylight illuminace (EDI) for which they are urging companies to assess the lighting products they manufacture against this new standard (Article 26). Based on this new standard the article suggests that in preparation for sleep, at least three hours before bedtime, that a maximum melanopic EDI of 10 lux so that the melanopsin is not activated and thus inferring with the body's natural sleep inducing process (Article 26). It is also recommended that the environment that we sleep in is as dark as possible with a maximum melanopic EDI of 1 lux to promote the most quality sleep possible (Article 26). With article 26, the readers are directed to understand that 'exercise' is not only in the form of cardiovascular exercise, nor lifting weights, exercise also comes in the form of mental exercise. The healthy habits include getting one's mind prepared for sleep, and in this case it is limiting the brains exposure to disruptive light which has been found to interfere with getting restful sleep. The article was written in a format that was particularly science-based, which perhaps was the form used to give a sense of formality and validity to the information being presented. It gives a feeling of intelligence to the article perhaps intending to give the readers a sense of being presented with a piece of academia knowledge and therefore perhaps influencing the reader to take particular note of the information presented.

Article 10 focused on discussing some of the commonly held ideas around successful weight-loss beliefs and that the key to successfully losing body weight (if that is the intended goal), is not simply due to the widely understood process of 'calories in versus calories out.' This article introduced the requirement of sleep by stating that "one of the most overlooked yet critical factors to a healthy and lean body" is getting adequate amount of quality sleep (Article 10). The term 'critical' is used to stress the point to the readers that the adequate amount of sleep is vital and essential to maintaining a slim body. The article discussed the findings of particular studies that showed that people who are consistently sleeping less than six hours per night will gain, on average, twice the amount of weight than those who are sleeping seven to eight hours per night over a six year period (Article 10). The article continues on to report the findings of other studies that have found that those who are sleeping on average only five hours per night have a significant increase by 73% for the likelihood of obesity than those who are sleeping seven hours per night (Article 10). This article did not just discuss the referenced studies findings by wording it as "chronic reduced sleep may result in increased weight-gain"(Article 10), as other articles in this discourse analysis report did, but rather provided Stuff news readers with specific numerical data reported in the studies to highlight the detrimental health consequences that chronic short-sleep will have on the body (Article 10). Examples of the consequences of sleep loss, regardless of any diet and exercise regimes, were listed, for example, a 40% increase in time for blood sugars to regulate after eating a high carbohydrate dense meal; the body's insulin secretion and response ability has been reduced by 30%; a decrease of 18% for the hormone leptin which is the signal to the brain to stop eating when full; and an increase of the hunger hormone Ghrelin by 28% (Article 10). This article was aiming to provide readers with the understanding that if they are lacking in the required amount of sleep, that the

healthy diet foods that they are eating will be used in an 'unhealthy' way by their sleep-deprived bodies. What is vital is the combination of a healthy diet as well as the recommended amount of sleep is what will promote the desired weight loss, a healthy diet may not be enough. By listing all the ways that the body will be effected, along with the listed percentages statistics, it aims to "increase the perceived message credibility" through this "data-based storytelling format" (Link et al, 2021).

Weight-loss is harder for some

It is important that mention of the noted gender-based discourse, as well as the age-based norm discourses, that were found in the Stuff articles reviewed are covered in this thesis. There were noted differences in the way gender was discussed as the underlying cause' for either poor sleep or unwanted/unhealthy weight-gains. An article titled "Why you get fat in your 40s,"opened by discussing a few general gender-neutral stereotypical experiences for people in their 40s and 50s for two paragraphs then launched into a large section discussing the difficulties that only women in their 40s will experience:

> As the evidence suggests, it's incredibly tough being a 40-something woman. After sacrificing their bodies for reproduction and then embarking on the all-consuming journey of postpartum recovery – an average timespan of between six-to-ten weeks – many women are left with excessive weight retention that just won't budge. Unfortunately that's just the beginning of things literally going pear (or apple) shaped (Article 22).

The term ‘incredibly tough’ being used to describe life for women over 40 makes the experience seem pretty desperate. It does not make being a woman over 40 something that is all that enjoyable, and appears that it is something that all women over 40 experience. “Sacrificing their bodies for reproduction”(Article 22) appears to insinuate that pregnancy is a negative experience for women, and one that leaves many women with excessive weight retention that just won’t budge. The word “excessive” is worth examining as in this context it can be somewhat subjective to the reader as to what constitutes ‘excessive’ amounts of weight, and also it has quite a negative connotation. The article then goes on to state that the “excessive amounts of weight” is just the first of “things literally going pear (or apple) shaped” implying that after the age of 40, and also after pregnancies, women’s bodies begin to resemble rounded fruit shapes, all of which are not positive imagery to put out to the readers.

The article outlines that it is not just hot flashes, and mood swings that women between the ages of 40 and 50+ need to contend with, it is also “thanks to declining oestrogen levels and the ovaries going berserk – otherwise known as the transition of peri-menopause” that can contribute to a modest increase in body weight and total body fat – notably an increase of abdominal fat around the centre of the body (Article 22). This article also included commentary from a 48-year-old full-time mother which stated that disrupted sleep patterns triggered a consumption of more and unhealthier snacks between meals which “made it impossible for her to ‘get out of the funk’ and regain her 20-year-old figure.” The term ‘get out of the funk’ is one that was interesting to use in the article. This gives a very negative connotation and imagery to the readers, one where you picture a unkept, sad and overweight woman, in her late forties, whom is trying to get into the same shape as she was

when she was 20 years old. It is true that pregnancy will change the shape and feel of a woman's body in many different ways, the question is, is it even realistic to aim for a 48 year old woman to 'regain' her figure or body shape from her 20s after pregnancies? According to some there are some permanent body changes after pregnancy which include, "stretch marks and loose skin…breast changes, heavier periods, and broader hips may be more permanent body changes after pregnancy" (Migala & White, 2023).

In the article it was specifically mentioned that the interviewed 48-year-old was a full-time mother – the relevance of that specific mention for discussing the weight and sleep issues that she was having were unclear; for when the article eventually began to discuss what occurs for men around the same age, their family status nor day-time occupation was not mentioned. What was discussed in the article regarding the effects that 'middle-aged men' can experience due to their age was that the "decline of the manly hormone testosterone can also see men gain fat more easily" (Article 22). The term 'manly' to describe the hormone is interesting and warrants some discussion. Female bodies produce the hormone testosterone, although in lower quantities than that produced in male bodies, so this begs the question, what makes testosterone 'manly'?

While the article stated that researchers found that men with levels of testosterone which are outside the normalised levels tend to store more fat in their lower bodies, the article clarified that "age has no effect on testosterone levels in healthy men" (Article 22). This appeared to be saying to readers that the effects on women's bodies when it came to sleep and weight issues were 'given' as they age, while only unhealthy men may experience issues

regarding weight only regardless of their age, no mention of sleep was made when discussing men's experiences.

Article 20 is another article addressing the gender differences when it comes to unwanted weight gain in particular. The article opens with the statement that 'hormonal' is a term heard often which is usually "applied to everyone from moody teenagers to menopausal women" (Article 20). The article discusses the connection between insulin resistance (explained as the hormonal issue where the body's ability to process insulin becomes less effective while at the same time creating more insulin), type-2 diabetes and weight gain stating that while insulin resistance is common in both men and women, women are particularly vulnerable to it due to the drop in oestrogen levels from perimenopause and beyond (Article 20).

Finally, while this thesis study was not looking at imagery and pictures as a part of the research as it is not part of a discourse analysis study, it is interesting to briefly discuss two specific images that stood out in the course of this thesis study. The two images found within the article is one, a profile picture of a woman's head and shoulders with a collection lines all in a jumble in her brain (Appendix 2), while the other is of a man dressed in a suit hunched over a desk with an open laptop on it (Appendix 3). The image of the man has a title of 'stressed out' above it, with the accompanying tag-line of explaining that 'mystery weight gain' could be connected to with stress levels (Article 20).

The weight-gain associated with women is discussed in the article as being "complicated" with the reduction of oestrogen and the hormones "interaction with the stress hormone, cortisol" which can lead to weight gain; while with men, the interviewed doctor for the

article stated that “there were so many things that [she] would do before [testing for testosterone]” (Article 20). The interviewed doctor stated that she would “see so many overworked, stressed males”, fuelled by stress hormones, that was what was actually at the heart of their unwanted weight-gains, which if addressed (eating healthy foods, exercising and not ‘overdoing the caffeine’ or alcohol) would remedy the issue.

The imagery used in the article 20 (Appendix 2) also portrayed the gender stereotypical depiction of the ‘complicated woman’ who is a ‘slave’ to her emotions and hormones (Heathy, 2020), while the man (Appendix 3) was shown to be a stressed professional with a high powered job.

Chapter Four, Discussion

The aim of this research was to investigate how the messages around sleep and weight are delivered in the New Zealand media. There is an ever-growing interest around the topics sleep and weight within the media, and it is through the media where the public gains their understandings and shapes social discourses. Through the research of this thesis, the aim was to investigate the ways the topics of sleep and weight are represented and presented to the public and therefore informing social understandings of the topics. It is through this thesis that perhaps some new theories on sleep as a social practice and its relation to some wider social narratives around aspects such as sleep-time, gender, and the physical body may be provided. This thesis examined texts from New Zealand's main free online news source Stuff.co.nz where the key words "sleep AND weight" were collated. A critical discourse analysis was used to describe the texts and then interpret them with regards to discursive practices and wider social explanations.

Research has shown that short sleep intervals, or impaired or suboptimal sleep quality and durations are issues that have all been directedly implicated in weight gain, adverse cardiometabolic health as well as mental health difficulties (Hall, 2022). Evidence within the literature available, indicates that habitually poor sleepers are associated with a lower quality in diet, increased intake of sugary foods and have lower overall energy patterns (Hall, 2022). While it is widely publicised that it is recommended for an adult to aim for an average of 7-9 hours of sleep per night, it is estimated that between 6-10% of adults are diagnosed with insomnia disorder; however it is believed that outside that estimation, many

millions more do not regularly succeed in sleeping for the recommended duration (Hall, 2022).

The general attitude of the majority of the articles reviewed in this thesis study promoted a 'sleep-positive agenda', similar to those found by Williams (2002), that lauds sleep as an important part of life which needs to be prioritised. Sleep was presented as a vital resource that is imperative for individuals to live healthily and achieve the most from themselves; and it was also noted that one of the overall tone of the majority of the news articles reviewed in this thesis supported Zarhin's (2011) attitude of 'personal responsibility' over their own wellbeing and subsequent sleep and weight management plans. The Stuffs news articles reviewed in this thesis promoted the research that stated that while sleep is vital for our health, it does require effort, planning and commitment into 'getting it right'. This personal responsibility to one's health is considered by some to be a form of mass 'victim-blaming-ideology,' which ignores what is academically known about studied human behaviour and also tends to minimise the evidence of the importance of the how the cultural and environmental circumstances can have towards one's health (Weinstein, 2015).

As discussed in the finding section of this thesis, the four main discourses that were identified:

1. The importance of good sleep to help lose weight, maintain achieved weight loss or general good health;
2. The specific functions that sleep plays in contributing towards unwanted weight gains, as well as how sleep can support weight loss efforts;
3. How excess sleep can increase chances of having sleep issues;
4. How healthy diets and exercise efforts can help address some sleep issues.

Underlying discourses also identified how women were presented as experiencing more weight gain related issues than that of men, and more issues surrounding body size and shape concerns.

The discourse around sleep and body-weight, is seen to be a concept deeply rooted in the economically-weighted concept of health as an individual and moral responsibility to manage, and where the appearance of the 'fit' and 'healthy' body is the prized representation of both health and self-discipline (Preston, 2019). It has been also been observed during this study that this perspective unfortunately disregards and minimises the social and economic influences of health while also discounting the variations of the human body in shape, size, and ability which all naturally occur which is similar with what was found in Preston (2019).

The idea around people being encouraged to continually strive for the 'right' body shape which is communicated within the vast majority of the articles reviewed in this thesis study is interesting. The term 'body shaming' refers to the act of making negative comments about an individual's body, either directly or indirectly (Merriam-Webster, n.d). Body shaming is unfortunately not uncommon within the media and there is quite a fair amount of evidence to show that it has taken a negative toll on individuals with the unrealistic and unattainable beauty standard which has been created. Although it is publicly frowned upon, body shaming continues to be an issue in the media with both men and women falling victim to the negative effects, however women are usually more often subjected to this. Literature available suggests that women are more often expected to live up to unrealistic beauty standards where they are not too fat but not too thin, no cellulite on their legs or arms are have a fit and toned body regardless of age and post-partum status (Czepczor-

Bernat, 2022). Titles such as “How lack of sleep can make you fat,” (2018) as was printed in one of the Stuff articles reviewed may have the result of being received by some of the readers, as an indirect form of body shaming. This tagline title can be a form a stigma manipulation were it is communicating the message that being larger or having a larger body in comparison to the unrealistically small bodies of the airbrushed advertising models is not acceptable (Lin & McFerran, 2019). Some feel that it is the very act of labelling which is the problem, as it creates a situation of creating a distinction between them (the pretty thin ones) and us (the fat ugly people) (Meadows & Daníelsdóttir, 2016). There is very fine line between getting the message out there of the negative impacts that excess bodyweight and obesity can have on the body, and then actually making the person feel ashamed of who they are and how they look physically which can equally have negative effects on the person. There are also those who believe that it is not just ‘fat’ people who are affected by fat-shaming, that society in a whole can suffer. This is thought because fat-shaming can cause even people who are not fat to perceive themselves as ‘too fat” leading to lower self-esteem and for those non-fat individuals to hate their bodies, regardless of their size, because having an imperfect body is socially unacceptable and ridiculed in the society and the media (Shaw, 2023).

Body image dissatisfaction, shaming and ageism

Body image dissatisfaction can be quite a complex cognitive and emotional construct which can influence how individuals perceive their bodies (Gendron & Lydecker, 2016). Society in general tends to have a fairly antiaging culturally viewpoint, western society perhaps more predominantly, that promotes maintaining a youthful appearance (Gendron & Lydecker, 2016; Tomas-Aragon's & Marion, 2016). There is a focus and a very high value placed on a youthful appearance within society which can contribute to increased anxiety in individuals about aging and the perceived 'decreased physical attractiveness' that comes with aging (Gendron & Lyecker, 2016). Literature exists which show that there is a connection with the concerns that individuals feel about aging in appearance and the internal drive that they feel to meet other societal ideals such as thinness (Gendron & Lydecker, 2016). The more common stereotypes of aging that persist in society is that there is reduced physical attractiveness which is caused by a change in a 'frumpy' or 'rounded' body shape for women as they age, and a loss in muscle tone for men, all which could lead to individuals seeing themselves as less attractive (Gendron & Lydecker, 2016; Tomas-Aragon's & Marion, 2016). New research has seen that "old talk" while different to "fat talk" holds similar 'power' associated to the negative feelings that they can generate (Gendron & Lydecker, 2016). Specifically, what this study found was that the ideal to be thin and youthful, which has been prolific in media advertising, promotes the ideals that youthful, thin and wrinkle-free appearances as the goals to aspire to (Gendron & Lydecker, 2016). Having tag-line titles of articles of "Why you get fat in your 40s" as was the case in one of the articles reviewed in this thesis study may be perceived as an example of such ageism and body-shaming. This is in a way saying to the reader that as 'we' age, becoming overweight is a foregone

conclusion, but a seemingly, negative one at that. It is not only using the word 'fat' to stress the associated negative body-shaming aspect of the term, when perhaps the term, over-weight for example may be received in a less negative manner, the article's title may be implying that 40 years old is 'old' and as such not something that can be attributed to being attractive.

It appears that Stuff portrays the relationship between their reader and scientific or medical expertise to be very superficial or very 'watered-down' than that of the 'serious' publications. It appeared that if sleep apnoea (a medical or physiological condition) was not the cause of sleep issues and poor quality or limited sleep quantity, then it was predominantly because people have not made sleep a priority. It was suggested several times and fairly consistently in the articles that the general public must not be aware of the importance of needing adequate sleep. While the suggestion that sleep was perhaps not a priority for most individuals in contemporary society with all the electronic distractions and modern-life, the majority of the articles did little to explain the biological and psychological effects little sleep may have on individuals. The majority of explanations were "'if you are sleep deprived the hormones which make you eat more get up-regulated and the hormones which suppress your eating get down-regulated,' Dr Seton said" (Article 9), however not much more what explained by way of what hormones are involved, what it is that the hormones control and how this is affected by a lack of sleep. Most explanations for what occurs is very superficially discussed which may do little to really stress the importance for readers about *why* sleep is vital to health and weight. One article (18) discussed the two hormones that are related to the regulation of hunger by stating "the two hormones that are key in this process are ghrelin and leptin. Ghrelin is the 'go' hormone that tells you

when you eat, and when you are sleep-deprived, you have more ghrelin. Leptin is the hormone that tells you to stop eating, and when you are sleep deprived, you have less leptin. More ghrelin plus less leptin equals weight gain" (Article 18). This is a very brief description of the physiological events that occur when adequate sleep I not achieved, this mention does little to stress how the hormones contribute to weight-gain and why they are released or not released during periods of sleep deprivation. Perhaps if the discourse were to explain more to the readers as to why the hormones are over or under produced by the body during reduced sleep periods then that may do more to emphasise to individuals as to the importance getting adequate sleep. Perhaps leaving the overall explanations of what happens to the body during periods of sleep deprivation, and why that happens somewhat vague or superficially discussed may leave the reader not truly absorbing the consequences of poor sleep. Future research would be useful to better understand if the discourses are left vague and quite basic because it is assumed that the readers will either not understand more scientific discourses or is because it is thought that it will not interest the readers to get more in-depth information.

The link between sleep and weight has been made evident from the strong epidemiological based data and results from numerous clinical and field research(Leger et al, 2015). While there are some very strong links and associations between the complex interactions between behavioural and physiological possibilities, there are still some significant limitations and gaps in the current research which may then lead to the reduction of information being passed onto consumers (Leger et al, 2015). If the information being shared via the media to the everyday individual, then any impact of prevention or treatment could be meaningfully influenced (Leger et al, 2015).

During this research, it was interesting to note that while the research was conducted involving subjects from different geographic locations, cultures and populations, one very important limitation from a large majority of the studies was that they all relied on self-reporting measures of sleep duration and quality. This leaves much of the results open to subjectivity at times depending on the possible personal bias of the reader (Knutson & Van Cauter, 2008).

It was interesting that the Stuff news articles published that were reviewed throughout the course of this discourse analysis, all were discussing the believed connection between sleep and weight with the perceived perspective that the lack of sleep would lead to only obesity/unwanted-weight-gain and that the article will interest and resonate with individuals that were over-weight already. None of the top 30 articles published mentioned or discussed any correlations of sleep disturbances or issues and eating disorders such as anorexia and bulimia. This has shown that this is an area which were further research can look into the relationship more thoroughly. There are several international studies that provide evidence to the connection between sleep issues and the instances of eating disorders particularly amongst adolescents (Hirai et al, 2022; Díaz et al, 2023). The studies have found that sleep-related problems increased the likelihood for people to feel, throughout the day, a lowered sense of well-being, reducing both physical and mental functioning as well as sleepiness, all of which were associated with a potential eating disorder diagnosis (Hirai et al, 2022). In the study carried out by Hirai et al (2022), they were not able to determine whether the sleep problems led to the eating disorders or vice versa or whether the co-existence of issues were interactional, however they were able to provide evidence to the correlation of problems. Another study carried out Boston University recently, found that evidence to show that it may be possible that sleep disturbances may

be linked to malnutrition with those suffering with eating disorders, particularly anorexia nervosa (Abanobi et al, 2023). It was interesting to note that these studies also found evidence that the eating disorders which due to the malnutrition that is a consequence of the eating disorders can increase the production of the neuropeptide Orexin which is the trigger for episodes of wakefulness "to search to food" (Abanobi et al, 2023). It is interesting that not one of the top 30 Stuff news articles which were reviewed in this study made any reference of a connection between sleep issues and restrictive eating disorders but rather only in the form of overeating caloric-rich food items. More research is needed to investigate this connection and discourses around the area of sleep and eating disorders. The statistics that of around one in every three adults (aged 15 years and above) are classified as obese in New Zealand ("*Obesity",* 2021) while the hospitalisation numbers for eating disorders in New Zealand recorded in 2020 were 125 for children aged 0-14, 241 for adolescents aged 15-24 and 90 for adults 25 and over (Leask, 2021). Perhaps its seen as being more relevant to report from a perspective of obesity as being the main cause of concern hence the lack of reporting of the association between sleeping issues and eating disorders. Perhaps this is a reflection in the change in trends when it comes to the ideal body weight and shape in society (Owen & Laurel-Seller, 2000), however more study into this topic is required, these are just hypotheses at this stage.

It is also noteworthy that there were next to no mention in any of the top 30 articles discussing sleeping issues about the connection with poor sleep quality and/or duration and mood disorders. Whilst this was not a focus of the thesis search, it has been found that mood disorders are the second most common psychiatric conditions affecting people worldwide, with anxiety disorders being the first most prevalent disorders, where

researched estimates that suggest that approximately 12% of individuals will meet the DSM-5 criteria for a mood disorder at some point in their lifetimes (Rumble et al, 2015). Individuals suffering with mood disorders commonly report a range of sleeping difficulties, such as duration and quality as well as other daytime difficulties associated with sleep deficiencies (Rumble et al, 2015), hence it was very interesting that the association with sleeping difficulties and mood disorders were not mentioned in the group of Stuff articles reviewed for this research thesis. Many of the news articles would report statements such as "Too little sleep has also been tied to a host of other health problems, including heart disease and diabetes, which have their own associations with weight" (Article 3) or to similar effect, but not also mentioning the connection with sleeping issues and mood disorders. An estimated 90% of individuals with depressive disorders report sleep quality issues, such as insomnia, difficulties falling asleep, difficulties staying asleep, waking up too early, significantly altered sleep durations as well as nonrestorative sleep (Rumble et al, 2015), all of which were symptoms and experiences being discussed in the majority of Stuff articles reviewed for this thesis, however mood disorders were not brought up as a possible added complication for the readers to be aware of and seek help for. Perhaps this is an area where further research can be carried out to explore the importance of promoting the health and well-being of both the physical body in terms of healthy weight and sleep requirements, as well as the stable mental well-being of the individuals.

The focus on weight-loss was in regards to the physical health benefits (diabetes control or prevention, hypertension prevention or reduction, etc…) rather than mentioning overused clique notions of having 'bikini bodies' or 'getting beach ready' where the main goal of weight loss is a slim, trim and beautiful body. Research has provided evidence to suggest

that when news media reports on medical studies it typically supports the stance and viewpoint of traditional public health messages where fatness is fundamentally unhealthy and purely the responsibility of the 'fat' person to rectify (Frederick et al, 2020). There is still immense pressure for people across the full weight spectrum to conform to the 'perfect ideal' when it comes to culturally acceptable body weight or shape norms and anyone that does not 'measure up' faces discrimination in all areas of daily life (Bombak et al, 2019). Literature has shown that women are particularly targeted with weight-related stigma and pressure but experiencing the social pressures at disproportionately lower weights than me; they also report experiencing a greater amount of weight/body dissatisfaction as well as weight-related negative internalisation (Bombak et al, 2019). Literature has shown that there is a paralleled growth of a *fat acceptance movement* (body acceptance with the goal to achieve comfort in one's current body shape) with the traditional fat-critical discourses since the beginning of the twenty-first century (Bombak et al, 2019). Bombak et al (2019) found that it was felt by many that society has become more accepting of higher-weight, bigger bodies over the last few years with the greater representation of bigger bodies in media and with a greater availability of plus-sized clothing. It appears that 'body positive' corporate campaigns are trying to focus on promoting body positivity to say that the 'problem' with one's body is something that can be 'fixed' by simply changing the person's viewpoint of themselves (again the individual's responsibility) rather than diet, exercise and proper sleep to change their bodies (Bombak et al, 2019).

When articles are quoting 'executive directors of Harvard's Division of Sleep Medicine' as saying that "without adequate sleep, 'you get sick, fat, and stupid'" (Article 10) it has the possibility of leaving the news article readers with a feeling of dread and fear. The use of

the words ‘fat’ and ‘stupid’ are rarely, if ever, used in a positive way hence it may be assumed that those choice of words were initially negative to shock the readers and grab their attention. These words are often used in negative and derogatory ways intended to deliver psychological pain (e.g., teasing, ridiculing, derogating, devaluing, humiliating); this generally stigmatizes individuals and may be seen as verbal attacks causing depression and other negative feelings (Jeon et al, 2018). There may also be the feeling of hopelessness and overwhelming exhaustion that even if there are other steps put in routine practice such as healthy eating and regular exercise, that without the minimum required amount of the ‘right kind’ of sleep then it is all futile and destined to fail. This same article referenced the term ‘corporate warriors’ that believe “they’re bulletproof” (Article 10) seeming to imply that if one has a fast-paced, time-demanding corporate career where they are not getting the sleep that they need, then they will on a path to almost certain weight issues and other health concerns. This is an interesting idea to bring forth, that regardless of your corporate status, and economic and social positions, that the consequences (excess kilograms) of neglecting the sleep needs of one’s body will still catch up with them.

Another article further drove-the-point-home by referencing a study conducted by The Mayo Clinic stating that women who slept less than six hours a night were more likely to gain a quantifiable amount of five kilograms than those who were sleeping at least seven hours each night (Article 23). This could very likely lead one to believe that the last 5-10 kilograms that they have been unable to lose despite all their ‘healthy’ weight-loss life-style practices (namely diet and exercise), then perhaps it is their sleep duration or quality that is at fault. This could add yet another layer of complexity when trying to lose weight, that the widely long-term belief that weight-loss is determined by “calories in versus calories out” is

no longer true and there are many other factors to consider which is what Article 10 was trying to stress. Is this making achieving the coveted slim bikini-body even harder to achieve? Does knowing that it is not just as simple as exercising and watching what you are eating does not contain high fat/sugar levels will help one achieve their desired body weight, would this help individuals or make the difficult task of weight-loss more challenging when extra elements are added? With the more body-positive trend being portrayed in social media and online, do people still feel strong need to obtain the traditionally viewed swimsuit body or is the idea of beautiful body's changing? Is health becoming more important than body size? These are perhaps areas that require regular study to help media outlets report and present relevant information to the public.

Finally, in recognition of the images that were noted in the results section, it could be useful for future research to include analysis of the visual content within articles referencing sleep and weight.

Weight loss difficulties for women and the connection to lack of sleep

There is a wide-spread understanding that the concept of gender within the media is one filled with complexity and contradictions in regards to the way they are each portrayed, one way in particular is of the position where the woman is the nurturer and the man as the provider (Gough, 2006). Article 22 seemed to play right into that particular notion where it discussed 48-year-old full-time mother Bronwyn Aitken being unable to "regain her 20 year old body" make it a special point to mention her status as a mother, and a full-time one too.

That same article mentioned some effects that middle-age may played on the body and the ability to sleep properly and lose weight for men as well, however it was never mentioned that being a father would impact one's ability to sleep at night with young children in the house, perhaps it assumed that the mother would be tending to the children?

It is no longer the case where men are considered to be the sole financial providers for their family and women are the caring mothers parenting the children and caring for the household (Diekman & Johnston, 2013). Woman have very much entered the workforce and are taking on various key responsibility roles within companies, while still having the responsibilities of childcare as well. While it is thought that advertising and the media tend to reflect the current realities of society, it is not always the case and instead it is found that the traditional gender stereotypes are followed (Heathy, 2020). In media women are tended to be depicted as being weak and fragile, blinded by their emotions, dependent on their male counterparts, while needing to show their beauty and sexual attractiveness; while the men are still portrayed as athletic, strong and typically engaging in high status jobs or physically demanding strength-based occupations (Heathy, 2020). Typically, media continues to bombard women with the message that they are inherently flawed, and that should they not be physically perfect or attractive then they will not be loved by a man or accepted in society (Heathy, 2020). It has been found that women, in particular are, are sent images and language that constructs an unrealistic level of beauty with is often unattainable in reality, while me are often shown in powerful and dominant positions (Heathy, 2020). Articles 20 and 22 reflected this with their images and also with the words used. A 48 year old woman will find it very difficult to look like her 20 year old self because almost 30 years has past not to mention the fact that she has birthed children, yet, the

discourse used in the article (22) would make it sound that with some sleep and exercise it is possible and should she not be able to, then she is either not trying hard enough or there is something she is not doing – i.e. Eating, sleeping or working out right. These were specific examples of the larger stereotypical discourses and narratives of the unrealistic physical expectations society has had for women for generations. The language in the articles 20 and 22, effectively reflect the wider general view that there is an "ethical nature of the beauty ideal" where there are "moral assumptions" that it is a personal responsibility to not let oneself go and to work to address your appearance (MacCallum & Widdows, 2018).

MacCallum and Widdows (2018) stated that appearance has become:

> A proxy for, and imitation of, character and values: thinness and grooming shows competence and efficiency, and efficiency, and scruffiness and dishevelment reveal inner turmoil or distress and not dressing appropriately is a failure of respect (for the self or others). Essentially the message is that if you conform to the beauty ideal, become better (thinner, firmer, smoother, younger) you will be rewarded (MacCallum & Widdows, 2018).

It is the personal responsibility to take note of different recommendations made available to the public in order to be able to achieve this ideal of beauty. In the case of this thesis, the recommendation made by the publicly available news articles was to make sleep a priority so that you can lose weight and maintain the desirable thin body.

For men in article 22, the discourse was seemingly more 'gently put forward' with the article stating that "researchers found that men with abnormal testosterone" tend to store more fat in their lower bodies, the article clarified that "age has no effect on testosterone levels in healthy men" (Article 22). As stated above, this appeared to be saying to the readers that the effects on women's bodies – weight-gain - when it came to sleep and weight issues were a 'given' as they age, while only unhealthy men may experience issues regarding weight only regardless of their age. This could make add pressure onto men by saying if they were to only eat well, get the right amount and quality of sleep and exercise then they are guaranteed to look the part of the "strong, powerful, provider" because their bodies are less susceptible to the effects of aging (Heathy, 2020).

Ethnicity difference around sleep and weight discourses

Much like that of the mood disorder topics, this study was not specifically looking at the discourses around sleep, weight and ethnicity differences. However in light of the numerous studies available that show that there is a significant over-representation for Non-White individuals (of various ethnicities) for poor sleep quality and duration compared to that of White individuals (Inam et al, 2023); it was surprising that very few, if any, mentions of those study findings were made in any of the Stuff news articles. It was unexpected to not see much mention in the New Zealand published media source Stuff in regards to the disproportionate population of Māori individuals reporting short-sleep; and while it was not an article which appeared in this thesis examined articles, the Pain & Gander (2016) national study found that poor sleep quality was more commonly

experienced in the Māori population. This is just a limited snap-shot of the published media so more research is needed to identify if more work is needed to get the needed public health messages out to all New Zealand citizens in meaningful ways.

Limitations

This is by no means a full compressive search; this was just a 'snap-shot' of the top 30 articles available on the given day of searching from one media source. It should be noted that the articles selected were in no way "cherry-picked", and that 30 articles were ultimately chose for their suitability and relevance on the specific topics of "sleep" and "weight".

Further limitations could be associated with utilising only Stuff.co.nz as the source for articles for examination. This may contribute to a lack in cultural and racial diversity and representation within the articles examined. Perhaps there is further scope for expanding the sources for examination, such as radio, television, or Māori run radio and television stations, which would allow for a much wider and more multiplicity in the results.

Another limitation within this thesis study was that this was solely a discourse analysis conducted on written articles sourced from a single channel, and no Stuff readers were interviewed to gage how the readers themselves interpret the language used in the news articles. Therefore, future studies could be conducted to which examine the articles targeted audience understand and interpret the articles themselves.

There is a scope for a much larger study into the topic, using more media sources and more media articles.

Conclusion

It is clear that sleep is an essential part of a human experience and a key aspect for good health. Based on the findings of this present thesis, one could assume that the discourse around sleep and weight (also overall health) was one predominantly of a sleep-positive nature by indorsing the potential over-all health benefits of getting enough good quality sleep. However, with that there was also a fair amount of a somewhat negative cautionary-tales and worry-inducing promotion of the detrimental effects that not getting enough good sleep can have on the mind as well as the body, essentially scaring the reader to go to sleep immediately if a future of obesity and sickness is wanted to be avoided.

While the discourse within the media was aiming to promote and highlight the physical and mental health benefits of getting enough 'good' quality sleep, it could potentially be setting the readers to set unrealistic ideals and practices given today's modern society.

A large proportion of the articles stressed that it was at the discretion of, and also the responsibility of the individual to personally prioritise sleep within their daily routines and to follow the routinely advised steps and techniques to getting better, longer sleep. Techniques such as, having a consistent bedtime and bedtime-routine; making sure the bedroom is dark and relaxing (perhaps having lavender scents and white-noise in the background); staying off electronic devices at least one hour before bedtime; avoiding caffeine, alcohol and large meals before bedtime; and making sure that exercise is part of the everyday routine. The articles were at times saying that there is no quick-fix to sleep

issues, however then following up with ‘easy’ tips on how to solve sleep concerns which can be seen to be contradictory or minimising of legitimate barriers to adequate sleep.

While it was not specifically investigated nor part of this thesis focus, it was interesting how little was mentioned in the 30 reviewed articles regarding diagnosable mental health issues such as depression or anxiety as a reason for sleep disturbances or sleep difficulties. The messages communicated within the articles were predominantly from a stance where the main reason that one may not be getting the sleep amount that they need is because of ‘poor’ person choice. Individuals may either be working too long or hard and feeling stressed and over-worked from everyday existence of our modern society; or it was that individuals are not making good quality sleep and adequate sleep-times a priority. Both of these stances have the potential to be perceived negatively by the reader as judgement of their busy personal lives which have been filled with long working hours to meet growing costs of living, technology and external stimuli, all of which may be something that is out of the control of the individual thereby potentially leaving the readers with a hopeless outlook on themselves. While it is good to try to actively encourage people to live healthier lives and make healthier and better choices in terms of their mental and physical wellbeing, it is important that the message is delivered in a way which is thoughtful and gets the intended message across without leaving the recipient with feelings of failure or inadequacy.

It was also thought-provoking that while society is progressing to more body-accepting mindset, where all shapes and sizes of bodies are celebrated and normalised with the inclusion of plus-sized models and a ‘big is beautiful’ movement, there was still the message that a slim body is still the most desirable and what we should all be striving for within the

articles reviewed. The message that a slim and toned body is what society really wants, under the bodily capital which refers to the social capital enjoyed by an individual which has the aesthetic (slim and beautiful) and functional (athletic and toned) features of physical beauty, is still one that is strongly promoted within society and the media. Despite society stating that they are wanting to, or is moving towards a more inclusive environment, the articles reviewed appeared to imply that this may not have been achieved yet. While there was strong message references, within the articles reviewed for this thesis, of the overall physical and mental health benefits of prioritising sleep and getting the required quality sleep hours; the predominant message was that being slim and beautiful was most important to society and sleep was how you will achieve that ideal.

Finally, this thesis adds to the growing body of work in the fields of both sleep's relationship to health and weight, as well as the more broader social discourses around the overall importance of sleep for the New Zealand population.

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Appendix

Appendix 1

Stuff.co.nz articles used in the discourse analysis snap-shot

Article Number	Title	Author	Date Published	Published Section in Stuff	URL
1	Dieters need a good night's sleep to fight fat		6 October 2010	Life-Style	https://www.stuff.co.nz/life-style/well-good/4199692/Dieters-need-a-good-nights-sleep-to-fight-fat

2	Weekend sleep may equal leaner children		27 January 2011	Life-Style	https://www.stuff.co.nz/life-style/well-good/4585103/Weekend-sleep-may-equal-leaner-children
3	Sleep and stay slim, research suggests		11 July 2011	Life-Style	https://www.stuff.co.nz/life-style/well-good/5267526/Sleep-and-stay-slim-research-suggests
4	Study on how poor sleep affects weight	Jody O'Callaghan	24 September 2012	Life-Style	https://www.stuff.co.nz/life-style/well-good/7721191/Study-on-how-poor-sleep-affects-weight
5	Researcher probes sleep, weight gain link		02 October 2012	Dominion Post – Hutt News	https://www.stuff.co.nz/dominion-post/news/local-papers/hutt-news/7727113/Researcher-probes-sleep-weight-gain-link

6	Five weight loss roadblocks	Larry Jones	21 June 2014	Life-Style	https://www.stuff.co.nz/life-style/10177385/Five-weight-loss-roadblocks
7	How to lose weight while you sleep	Aileen Nakhle	13 August 2014	Life-Style	https://www.stuff.co.nz/life-style/10374737/How-to-lose-weight-while-you-sleep
8	Stay healthy while you sleep	Aileen Nakhle	20 January 2015	Life-Style	https://www.stuff.co.nz/life-style/well-good/motivate-me/65210562/stay-healthy-while-you-sleep
9	A good sleep equals a healthy kid	Rachel Browne	09 October 2012	Life-Style	https://www.stuff.co.nz/life-style/parenting/big-kids/tweens-to-teens/health-nutrition/7087430/A-good-sleep-equals-a-healthy-kid
10	The hidden reason you	Luke Istomin	08 August 2015	Life-Style	https://www.stuff.co.nz/life-style/well-good/teach-me/74883385/the-hidden-reason-you-cannot-lose-weight

	cannot lose weight				
11	The link between food and sleep	Lisa Wynter	05 October 2015	Life-Style	https://www.stuff.co.nz/life-style/well-good/teach-me/72725348/the-link-between-food-and-sleep
12	No more beersies if you want to look goodsies	Michael Jarosky	04 February 2016	Life-Style	https://www.stuff.co.nz/life-style/well-good/motivate-me/76536714/no-more-beersies-if-you-want-to-look-goodsies
13	The surprising reason you're sleepy all day	Sam Bailey	06 May 2016	Life-Style	https://www.stuff.co.nz/life-style/well-good/teach-me/79689626/the-surprising-reason-youre-sleepy-all-day
14	How is your diet affecting your sleep?		20 June 2016	Life-Style	https://www.stuff.co.nz/life-style/well-good/teach-me/81240037/how-is-your-diet-affecting-your-sleep

15	How lack of sleep can make you fat	Raewyn Ng	14 August 2018	Life-Style	https://www.stuff.co.nz/life-style/well-good/106211455/how-lack-of-sleep-can-make-you-fat
16	Good sleep protects children from obesity, study finds	Aaron van Delden	07 September 2018	National News - Health	https://www.stuff.co.nz/national/health/106901016/good-sleep-protects-children-from-obesity-study-finds
17	'Catch-up' weekend sleep doesn't undo impact of lack of weekday sleep	Katarina Williams	01 March 2019	National News - Health	https://www.stuff.co.nz/national/health/110921780/catchup-weekend-sleep-doesnt-undo-impact-of-lack-of-weekday-sleep

18	Four things that will make us fat in 2016	Georgia Van Tiel	10 February 2016	Life-Style	https://www.stuff.co.nz/life-style/well-good/teach-me/76755669/four-things-that-will-make-us-fat-in-2016
19	After sleep apnoea diagnosis, woman lost 75kg	Emily Brookes	12 May 2021	Life-Style	https://www.stuff.co.nz/life-style/life/125102569/after-sleep-apnoea-diagnosis-woman-lost-75kg#comments
20	The myths about weight and hormones	Niki Bezzant	16 February 2022	Life-Style	https://www.stuff.co.nz/life-style/wellbeing/300518122/the-myths-about-weight-and-hormones
21	Hungry? You may need more sleep		12 April 2010	Life-Style	https://www.stuff.co.nz/life-style/well-good/3573698/Hungry-You-may-need-more-sleep

22	Why you get fat in your 40s	Stephen Heard	08 January 2020	Life-Style	https://www.stuff.co.nz/life-style/well-good/teach-me/117868571/why-you-get-fat-in-your-40s
23	Seven reasons you might be gaining weight	Alina Gonzales	20 March 2015	Life-Style	https://www.stuff.co.nz/life-style/well-good/teach-me/67453901/seven-reasons-you-might-be-gaining-weight
24	Why sleep is crucial to your workout routine	Gabriella Boston	26 February 2016	Life-Style	https://www.stuff.co.nz/life-style/well-good/motivate-me/77325427/why-sleep-is-crucial-to-your-workout-routine
25	Five ways to get a better night's sleep		19 January 2016	Life-Style	https://www.stuff.co.nz/life-style/well-good/teach-me/75904600/five-ways-to-get-a-better-nights-sleep
26	New study on light could lead to better	Siouxsie Wiles	11 April 2022	Science	https://www.stuff.co.nz/science/300561057/new-study-on-light-could-lead-to-better-sleep-health-outcomes

	sleep, health outcomes				
27	Obese pre-schoolers bullied and struggling to sleep - expert	Cate Broughton	22 December 2016	National News - Health	https://www.stuff.co.nz/national/health/87339258/obese-preschoolers-bullied-and-struggling-to-sleep--expert
28	Kids' sleep: Parents' top health concern	Amy Nelmes Bissett	30 April 2019	Life-Style	https://www.stuff.co.nz/life-style/parenting/112310917/kids-sleep-parents-top-health-concern
29	The complete A to Zzzz of sleep: How much to get, how to deal	Alice O'Connell	21 March 2023	Life-Style	https://www.stuff.co.nz/life-style/wellbeing/300836063/the-complete-a-to-zzzz-of-sleep-how-much-to-get-how-to-deal-with-a-snorer-and-the-biggest-sleep-sins

	with a snorer and the biggest sleep sins				
30	Is a lack of sleep making you pudgy?		26 August 2023	Life-Style	https://www.stuff.co.nz/life-style/blogs/4060615/Is-a-lack-of-sleep-making-you-pudgy

Appendix 2

Published image #1, and accompanying tag-line for article 20

"Understanding how hormones affect health and weight is quite complex.

Appendix 3

Published image #2, and accompanying tagline for article 20

"Think you have mystery weight gain? It may have something to do with stress levels."