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**How do societal pressures influence the nutrition choices of adolescent boys in a New Zealand single-sex school context, and what are the implications for New Zealand educators?**

A thesis

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of the requirements for the degree

of

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## Abstract

Understanding how nutrition choices of adolescent boys are influenced by social pressures in a New Zealand single-sex boys' school is critical in informing science educators on how to design and deliver nutrition education. While there is a body of literature on social influences such as family (Berge et al., 2016), peers (Ragelienė & Grønhøj, 2020) and social media influence (Derenne & Beresin, 2006) on adolescents and children, much of the research had a focus on young females and overlooked the niche influences that shape the nutrition choices of adolescents' at a single sex boys school. Adolescence marks a significant change period, including the shift in value of opinion from their parents to their peers (Mazzeo et al., 2024). Additionally, compulsory subjects at school are coming to an end. Therefore, there is a great responsibility on educators to highlight the importance of the nuanced factors that affect nutrition consumption throughout their lives and equip adolescents with a more realistic approach to nutrition that extends beyond calories and macronutrients.

With this in mind, and to gather some initial data this study sought out to explore: *How do societal pressures influence the nutrition choices of adolescent boys in a New Zealand single-sex school context, and what are the implications for New Zealand educators?* Given the scope of the study, a mixed-methods survey was conducted with Year 11 students (16 years and older) combining quantitative questions with a small number of open-ended questions to capture nuanced perspectives associated with nutrition.

This study not only considers the formal teaching of nutrition but also the informal culture of the school environment and how these factors play their part in influencing the choices adolescents make about their food habits. Year 11 students are at a key developmental stage of transitioning from childhood to adolescence. The findings from this study raise several implications for educators. A clear takeaway is the need to address the existing narrow scope

adolescents have when it comes to nutrition. For many boys, nutrition has been reduced to a narrow mindset focusing on protein consumption, macronutrient balancing and body image. This mindset, reflected in many of the survey responses, prioritises physical measurements such as physique or athletic performance, rather than their overall health or well-being.

Social media was raised as a contributor to this mindset with most participants reporting daily exposure to social media and fitness influencers who promote this hyper fixation on macronutrients. This culture of misinformation is corroborated by school sporting environments, where coaches try to deliver simplified nutrition advice, reinforcing this narrow, macronutrient tracking mindset. Compounding this issue is the segmented approach to nutrition education within the school curriculum, as well as the school culture and canteen options, which fail to cultivate healthy eating messages.

These findings suggest the need for an educational reform. A more integrated approach that can suitably portray the nuanced and multifaceted factors that influence nutrition choices is required. Finally, this survey's results indicated education is not sufficient alone to harbour healthy eating, but the school environment must also reflect and promote healthy eating.

Therefore, nutrition should not be segmented to individual topics, but taught across departments in science, physical education (P.E.) and health, social studies and be displayed in everyday school practices. Additionally, providing education to sports coaches and trainers will enable them to offer more well-rounded, holistic nutrition advice to their students.

Without considering an education reform, schools run the risk of continuing to instil this narrow-sighted ideology about nutrition.

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## Chapter One - Introduction

New Zealand is currently facing a health crisis. There are concerns about the poor nutrition habits of New Zealanders of all ages which are contributing to the rising statistics of weight levels outside of the healthy range (Hill et al., 1998; Ministry of Health, 2022, World Health Organisation, 2025). In schools, this issue is echoed in a quieter but still concerning way. Students regularly engage in discussions about extreme ideas they have seen online. These students acknowledge these trends are shaped by Tik Tok and gym influencers, rather than information that has been taught to them by science or P.E. teachers through health education. Unrealistic portrayals and levels of measurement of health have been normalised for this generation through the constant barrage of information and aesthetic image that is given a platform on social media and regularly goes without critical reflection or examination.

As a secondary school teacher at an all-boys school, I became increasingly concerned about the discourse shared between students. Students openly discussing fad ideologies, ego lifting, cutting or bulking at progressively younger ages. More concerning is their source of information: social media and popular figures with all-or-nothing mind sets such as David Goggins and Andrew Tate. These observations in my own classroom made me wonder: where does an adolescent boys' values lie when it comes to gathering information and knowledge? Who do they trust? Are we as educators doing enough to support these students in having sufficient knowledge to make informed decisions? Is our education system meeting their developmental and social needs to help give real-life context to this very real and individually unique life-long need? To begin, I needed to consider the types of developmental changes these adolescents are going through, and why they are so easily influenced by the types of information that are portrayed to them through social media.

## **Adolescent Nutrition Context for this Study**

Working with secondary school boys, it is evident that adolescence is a critical developmental period marked by physical, physiological, emotional, and cognitive changes (Loosli & Benson, 1990). A common factor throughout all these changes, are the impacts nutrition has on these body systems in ensuring optimal growth and wellbeing (Torre, 1977). For adolescent boys, nutrition is important given they often have greater physical activity levels, with additional hormonal changes, and therefore the need for a greater caloric intake and key macronutrients and micronutrients compared to adults (Thompson, 1998). Despite the importance of good nutrition during this developmental stage, it has been documented that adolescents often make food choices based on external influences, rather than their nutritional understanding (Mazzeo et al., 2024). The myriad factors of family and cultural history, friendships, media exposure, school culture and education, and economic status all intertwine and shape adolescent behaviours and their choices around nutrition (Devine et al., 2023).

Among all these factors, societal pressures are a major influence in the nutrition choices of adolescents. These social pressures range from wanting to fit in with peers and family, to social norms that are portrayed over social media (Calado et al., 2010). At this developmental stage, adolescents are much more susceptible to social factors as they are more attuned to fitting in with the crowd. For adolescent boys, who are beginning to feel pressures to match the societal ideal for men (lean, muscular physique, masculine attributes etc.) foods that align with this body image and lifestyle tend to dominate their diets, such as supplements, excess consumption of meat (as protein) in fast foods, protein supplements, and in extreme cases steroid use (Derenne & Beresin, 2006). Although these choices often result in bodies that fit the social norm of looking “healthy” these choices made in excess or without sound understanding, do not support long-term health.

## **New Zealand Context and Climate**

In response to the public health implications of poor health choices, the New Zealand Ministry of Health (2025) has introduced many policy reforms to try to improve the education and understanding of nutrition in wider society. Since the early 21<sup>st</sup> century, there has been a significant focus on healthy eating initiatives for rangatahi and the general public with a focus on a supposed obesity epidemic. Most recently, in the primary healthcare and educational sector, there has been a large production of educational material such as eating and physical activity guidelines. For example, in the context of education and schooling, the Labour government rolled out free healthy school lunch programme - Ka Ora Ka Ako - in their last elected term (LabourVoices, 2020). However, conflicting government agendas and changes to the elected body in New Zealand causes turbulence to these policies. The financial support for healthy lunches has been cut leading to widespread criticism about the failing nutrition value of these provided lunches for those in need (Seymour et al., 2025). Other programmes such as the Healthy Food and Drink Guidance (Ministry of Health, 2020) are New Zealand's "healthy foods" and "water only" initiatives. However, many of these programmes are often recommendations and not mandated. Because of this, their level of implementation depends on the individual contract held between the school and the canteens and are therefore not always carried out to a suitable level at all schools (Mackay et al., 2020).

While these efforts are commendable, a cultural shift cannot be solely implemented through school-wide policy and reform alone. Policies are often standardised and do not consider the individual cultures of the schools, wider messages and influences students are receiving from media, home and peers. If these external influences are not confirmed or challenged by

contextualised education, then these external influences can and will outweigh adolescents' formal education.

### **The New Zealand Curriculum**

In the New Zealand Curriculum, food and nutrition education lies solely within the health and physical education key area of learning (Ministry of Education, 2007). However, studies have shown the effectiveness of this approach is hindered by limited formal training of nutrition for health and physical education teachers (Pillay et al., 2023). Comparatively, despite no formal outline in the science curriculum, nutrition concepts are simplistically covered in science with topics like digestion and nutrition in terms of “energy” including the basic macronutrient groups being covered. Interestingly, in overseas countries such as Brazil, science teachers are tasked with the teaching of nutrition concepts. This has led to the question of whether science educators have suitable qualifications to teach nutrition or if the unit and learning resources should be planned by a qualified nutritionist (Rangel et al., 2014). It seems that in both countries, critics wonder if educators are qualified and adequately prepared to deliver such important content as food and nutrition education.

In addition to the New Zealand Curriculum, schools across New Zealand can choose to deliver overseas curricula, such as the Cambridge IGCSE Curriculum. Comparing the New Zealand curriculum to IGCSE which has a standardised curriculum, students are taught food and nutrition, digestion and metabolism within their science programme. They also have the option to specialise in food and nutrition as a practical and theoretical subject which includes the entire science curriculum as well as practical cooking, hygiene and food preservation (Cambridge Assessment Group, 2022). A major difference between the two examination boards is that under the IGCSE curriculum, nutrition is not taught in physical education. Additionally, there is no consideration of the socio-cultural aspects of nutrition education

such as culture and food availability which would be well suited to a social sciences curriculum.

Considering these different assessment systems, there is a clear opportunity for success with The New Zealand Curriculum as it offers flexibility and a good level of collaboration between departments. While this can be used positively and lead to innovation, it also leads to major disparities between schools and even between different classrooms and therefore students leave school with different levels of understanding and knowledge about these important life topics such as nutrition. Given this opportunity to interpret and implement the New Zealand Curriculum in a way that we as educators feel will be most beneficial to learners, we also carry the ongoing challenge of actively reflecting on our teaching and assessing whether our current model is still suitable for setting adolescents up for success in their lives.

### **Why this Research Matters**

In this research, I considered the effectiveness and relevance of school-based nutrition education with a unique context of an all-boys single-sex school in New Zealand. I questioned whether our current interpretations of the very flexible New Zealand curriculum are sufficiently equipping our adolescent boys with the knowledge and critical analysis skills to manage informed decisions about their nutrition consumption. By exploring these topics, I aimed to contribute to the ongoing conversations about the constantly changing nature of education, media consumption, and nutrition education, and whether we are doing enough as educators to meet the needs of adolescents living in a world inundated with conflicting messages.

## **Chapter Two - Literature Review**

Considering the level of flexibility in the New Zealand Curriculum, it is important to first look at what is expected of these students to learn and take away from their current food and nutrition curriculum. In the target school, this challenge is split across science and physical education. Science has the focus is on macronutrient and some micronutrient content. This is corroborated in P.E. with the teaching of health, along with some additional teaching of mental health and wellbeing. The first section of this literature review considers the existing literature which backs up what is taught in schools, and an interpretation of what students should be able to apply to their everyday lives.

### **Adolescent Nutrition and Health**

Adolescence is a critical time of growth and development and is often considered to be between the years of 10 and 19 years of age (Das et al., 2017). During this period, there is remarkable physical and psychological growth and development which requires an altered intake of the significant nutrients required in a balanced adult diet (Torre, 1977). Therefore, during adolescents, individuals require a balance of major macronutrients; carbohydrates, proteins, fats, fibre and water as well as micronutrients (vitamins and minerals) (Thompson, 1998). Protein is particularly important due to its role in cellular growth (Loosli & Benson, 1990). Smith et al. (2015) contributes the importance of carbohydrates in an adolescent's diet, which in some cases are entirely excluded in some fad-diets. Carbohydrates are an important energy source; therefore, poor carbohydrate intake can lead to fatigue during exercise and result in the body metabolizing protein stores for energy, which decreases muscle mass which can inhibit adolescent growth.

Micronutrients are important in maintaining a balanced diet in adolescents. Also significant in an adolescents diet is hydration. Smith et al. (2015) outlines adequate hydration, particularly

during exercise is required to regulate heat. Conveniently, individuals who eat a balanced diet of whole foods and drink water, provided they are meeting their daily energy requirements, are most likely to be meeting their micronutrient goals as well (Stalling, 1997). However, with the increase in ultraprocessed foods in the modern Western diet, a balanced diet is becoming less common (Nicolas et al., 2023).

Nutritional deficiencies and health issues among teenagers are multifaceted, being shaped by social factors, genetics, economic status, food-fad diets and misconceptions about nutrition (Jen & Yan, 2010). However, the widespread availability of fortified foods and dietary supplements has reduced the occurrence of many of the health issues that rise from a low nutrient diet. In the modern world, most of the causes of nutrient deficiency stem from a lack of nutrition understanding paired with misinformation in the form of fad diets, or restrictive eating to maintain a particular body mass or for sport (Thompson, 1998).

During adolescence, individuals generally need to be at a net positive energy balance to meet the energy requirements for their growth and development. Adolescence is a critical time with regards to health and nutrition as it is when eating habits are developed (Thompson, 1998). However, if the energy intake significantly supersedes the energy expended for a prolonged time, excess energy is stored as fat. The modern western-style diet, which is often high in ultra-processed foods, saturated fat and sugar, has resulted in a staggeringly high rate of obesity (World Health Organisation, 2025). Obesity results in health-related issues such as hypertension, an increased risk of raised cholesterol linked to an increased risk of future heart problems (Thompson, 1998), type two diabetes and the likely flow on to adult obesity (Das et al., 2017).

In contrast to this over consumption of food, some adolescents report reducing their energy intake to meet the requirements of their sport such as meeting a specific weight class

(Thompson, 1998). Adolescents eating at a negative energy balance (consuming less energy than they expend) for a prolonged time results in several health problems such as stunted growth, nutrient deficiencies, poor bone health, increased injuries and potential to develop eating disorders (Stalling, 1997).

### **Psychological Factors and Eating Behaviours**

The link between mental health and nutrition is clear in literature. This is due to the link between metabolism and how the brain functions, most importantly, the effects on the hippocampus (the brain's reward centre). The hippocampus is important for learning and memory and is, by nature, influenced by environmental factors. Factors such as exercise and diet have a direct impact on the hippocampus and the brain (Nicolas et al., 2023).

Additionally, there is a link between undereating of healthy foods, such as fresh fruits and vegetables, with a decline in mental health. Many children and adolescents do not eat the recommended 5 servings of fruit and vegetables each day which has been linked to a decline in mental health (Folkvord et al., 2022). On the other hand, negative changes to diet and leading a sedentary lifestyle has detrimental effects on the brain. Particularly during adolescence, these negative environmental changes leave the brain susceptible to mental health issues (Nicolas et al., 2023).

Although, just adding more fruits and vegetables to an adolescent's diet might not be the cure-all it appears to be, consumption of unhealthy food seems to have its own negative effects on brain chemistry. Research has been conducted on the brain patterns of obese and lean children using functional MRI revealing how these children's brains respond to food-related cues. Bruce et al. (2015) found that obese children are more sensitive to external food cues such as time of day and less sensitive to internal food cues such as feeling full, compared to the children who are leaner. This altered brain function contributes to unhealthy food choices

such as overconsumption, particularly of hyper-palatable foods, which can exacerbate the negative link between these foods and poor mental health. Nicolas et al. (2023) agree with this notion of overconsumption of unhealthy foods leading to a decline in mental health due to the high metabolic demand of the brain resulting in any type of malnourishment ends up affecting the brain.

### ***Review of literature influencing current curriculum***

As a high school educator, I hear conversations about students balancing their macronutrient intake, focusing on performance-based goals, such as how much weight they can lift at the gym, or upcoming sporting goals and use these achievements as measurements of their overall success and health. My concern lies in the applicability of macronutrient counting and balancing to everyday life. Are we expecting adolescents to track or count their macronutrients to ensure they are carrying out a healthy diet? Very few students discuss eating balanced healthy food but often fall into these “on” and “off” sporting season extremes. Does the limited formal teaching of macronutrient nutrition play into this ideology. Despite the risk, it is clear as a high school teacher that adolescent boys continue to carry out extreme diet regimes in hopes of performing better at their chosen sport. Ensuring adolescents have a simple and sustainable understanding of nutrition, allows them to make more informed decisions of their consumption which is critical for their well-being.

## **Societal and Cultural Influences on Food Choices**

After considering the existing literature, and how we currently teach nutrition and health. I wonder what are other additional factors that influence student nutrition choices? The second section of this literature review considers the social, cultural and environmental factors that influence adolescents' nutrition choices.

Social and cultural influences play a key role in determining adolescent food choices. This is ultimately due to the human nature of wanting to 'fit in'. Family, and the culture at home plays a big role in setting the eating habits early in an adolescent's life (Scaglioni et al., 2018; Hardcastle et al., 2015). Comparatively, at school, the influences are swayed by the culture of the school and the individual cultures and experiences that are brought by the friend group. When an adolescent begins to mature and make decisions for themselves, they may sometimes value the opinions of their peers more than their caregivers (Ragelienė & Grønhøj, 2020; Mazzeo et al., 2024).

### ***The role of family and caregivers in shaping food choices.***

Haines et al. (2019) explore the idea of *how* a child eats' is just as important as *what* the child eats, explaining the role caregivers play in role modelling their children's nutritional habits. Adolescents who help prepare family meals tend to develop healthier dietary habits and make more sensible nutrition choices (Berge et al., 2016). In contrast, adolescents who participate in less family meals tend to consume a greater amount of unhealthy junk foods (Scaglioni et al., 2018). In much the same way, a study of young adults' eating habits revealed the young adults that regularly eat breakfast, grew up eating breakfast with their caregivers. Similarly, those adolescents who frequently eat fresh fruits and vegetables, previously ate regular night-time meals with their caregivers (Scaglioni et al., 2018).

One of the three broad themes that have been identified by Hardcastle et al. (2015) as the factors relating to food choices are the social and environmental influences on food choice. An example is strong family modeling of healthy eating resulting in children shadowing this behaviour when leaving home and continuing healthy habits. Parent feeding behaviours have a huge impact on child feeding behaviours, such as restrictive or permissive behaviours around food, directly impacts a child and adolescents' ability to self-regulate their own consumption and their ability to make healthy choices (Scaglioni et al., 2018). This aligns with Hardcastle et al. (2015), who found fewer rules around food consumption and a free range of calorie-dense foods resulted in reduced rates of obesity in children.

### ***The influence of peer groups and social interactions on eating behaviours.***

Peers have a huge effect on the conscious decisions made by adolescents while they try to mitigate social interactions as independent individuals (Mazzeo et al., 2024). Although nutritional needs and understanding should be the guiding factor in making food choices, Devine et al. (2023) indicates this is not the case for all adolescents, who are more likely to prioritise factors such as taste, convenience, cost and the behaviour and influence of their peers, when it comes to making food choices.

Devine et al. (2023) identified peer influence as a notable factor influencing adolescent decision making. This is due to the significant shift in responsibilities and decision making from parent to adolescent. As adolescents start to make their own choices, such as purchasing food at the school canteen, both the influence of the school and the influence of seeking approval and acceptance from their peers impact their decisions (Bruce et al., 2015). The influence of peers can have both a positive and negative effect on eating behaviour. Ragelienė and Grønhøj (2020) identified peer groups often mimic each other, this can result in a feedback loop where individuals reinforce healthy eating habits, leading to a positive health

outcome. Or conversely, they reinforce unhealthy eating habits resulting in a negative impact on the groups health.

The influence of peers is not limited to mimicing within friends groups, but also reinforced by social norms as described by Ragelienė and Grønhøj (2020) suggesting that the entire cohort influence the descriptive norms in society. Adolescents percieve what others are doing and strive to fit in. Due to social pressures, they align their habits with the wider group such as in a school setting. This is further supported by research from the United Kingdom that indicates adolescents (particularly males) face negative social consequences such as teasing from peers or exclusion from groups if they choose healthy options (Calvert et al., 2020).

Despite the substantial body of literature suggesting a plausible influence on adolescent's nutrition choices from peers, there are studies that suggest this relationship is not universal. One London based survey study on youth aged 9-13 found no correlation between peer influence and nutrition choices of adolescents (Finnerty et al., 2010). While I did find a positive relationship between peer influence and an increased physical activity, the lack of link between peer influence and nutrition choices could be indicative of multiple factors such as age, peer group dynamic or cultural context deviating the results of this study.

The potential to utilize peer influence in a positive way is a consideration for improving school cultures about nutrition and health. Ragelienė and Grønhøj (2020) suggested making use of the positive influence of peers in regard to healthy eating by encouraging adolescents in school leadership roles to adopt and advocate healthy eating behaviours.

### ***Cultural norms and their impact on dietary habits.***

Research shows that Māori and Pasifika have higher rates of overweight and obesity compared to non-Māori and non-Pasifika children (Pillay et al., 2023). However, the western framed diet guidelines tend to demonise many of the staple foods in Māori and Pasifika culture, such as coconut, kumara or taro due to having a high fat or sugar content (Pillay et al., 2023). This leads to Māori and Pasifika communities having to choose between their cultures or conforming to a western idea of body image. This western ideology also tends to frame health and being healthy as purely aligned to physical health which does not align with more cultural and holistic notions of health. Additionally, there has historically been a lack of culturally sensitive content around media issues with nutrition and indigenous communities. Most of these body image programmes have been made with a white European or American female perspective. This leaves very little racial, ethnic or even gender diversity in these programmes (Mazzeo et al., 2024). There has been very limited research into nutrition views from the perspective of Māori and Pasifika. Furthermore, the added scrutiny of not trying to fit into to Western media despite its heavy push to stigmatize “fat” and push blame onto the individual for being “lazy” or gluttonous. This approach fails to recognize the cultural significance of food sharing and celebration that run through Māori and Pasifika heritage, such as at a hāngī or church gathering where it is disrespectful to not eat.

There has been a notable gap in the literature about cultural influences, such as ethnic identity and family or cultural traditions and their influence on health and food consumption. This is particularly important when considering the multicultural nature of a New Zealand school, and the diverse range of cultural and family influences that students bring with them to the classroom. These factors have an outstanding influence on how students engage with nutrition, and therefore how they engage with nutrition education.

Nutrition consumption is deeply influenced by cultural values, whether they be traditional, religious beliefs or family food practices. However, few studies examine these cultural contexts in detail, considering their influence on nutrition learning and understanding. For example, studies have identified that adolescents from low-income backgrounds, which are often Māori and Pasifika families, experience food insecurity and as a result face different food challenges than their peers (Pilay et al., 2023). Additionally, adolescents from different cultures can hold different attitudes towards health, and place cultural meaning on local cuisines. These factors significantly shape the eating choices of the whole household, including young people.

As a result, the lack of discussion around these cultural influences means that New Zealand schools are failing to provide a comprehensive understanding of nutrition to adolescents. Students are unlikely aware of the magnitude of factors and influences that alter their perceptions and choices around nutrition.

### **Media and Social Media Influence**

There is remarkable influence of social media on an adolescent's body image and eating behaviours (Derenne & Beresin, 2006). Platforms such as TikTok, Instagram and YouTube portray idealised and warped realities of physical ideals and dietary trends (Mazzeo et al., 2024). Social media often promotes gender-based body standards such as muscularity in boys and thinness in girls which can result in disordered eating, over supplementation or exercising, and in extreme cases use of body altering steroids (Calado et al., 2010). Recent studies such as Mazzeo et al (2024) identify the lack of and desperate need for young people to develop critical analysis skills to help them navigate these social media influences.

### ***The impact of social media on adolescent body image and eating behaviours.***

Social media has a notable impact on adolescents perceived ideology of the world, including nutrition and body image. Social media platforms such as TikTok, Instagram and YouTube have been linked to negative body image, obesity and disordered eating (Mazzeo et al., 2024; Derenne & Beresin, 2006). Because adolescents are so heavily influenced by their peers and seek social acceptance, they often struggle with self-image. Teens who are susceptible to social comparison are constantly exposed to these themes of the ideal physique, weight loss or muscle building trends. These social media influences reinforce unrealistic body standards, such as thinness in girls and masculinity in boys. This results in many teens developing disordered eating habits, over supplementation and in some cases, steroid consumption (Calado et al., 2010; Devrim et al., 2018).

The desire to attain these body standards is further reiterated by influencers in the media who advertise and promote the use of fad diets, supplements, and extreme workout routines. Derenne and Beresin (2006) identify the medias obsession with the aesthetic appeal of weight loss, simultaneously broadcasting the negative aesthetic and health effects of obesity, heart disease and strokes combined with limited effort put into the promotion of balanced eating or sustainable healthy lifestyles. In an attempt to combat this, there has been a body positive movement mostly within the female-targeted media. For example, Barbie dolls have become increasingly inclusive and representative of a more natural body shape (Derenne & Beresin, 2006). In contrast, this movement has yet to be picked up by the male-targeted media. For example, male action figures have always portrayed a low fat, high muscle mass man. This continues to lead males down a more common pathway of over exercising, increasing protein intake, using gym supplements and in some cases, use of steroids (Devrim et al., 2018).

Despite the trend in recent media to improve body positivity to try to reduce the harm that decades of diet culture media have caused, there is concern that this movement could increase the already high rates of child and adult obesity by normalising larger, unhealthier body weights (Mazzeo et al., 2024). Therefore, developing critical consumption skills is an important skill for youth so that they can identify the underlying messages of promoting healthy behaviours with food and exercise.

Research has also shown that not all media, or the consumption of media, affects adolescents in the same way. One study from Calado et al. (2010) on Spanish high school aged students found there was no significant difference between female students' consumption of the media between those who reportedly had eating disorders and those who did not. This contrasted with male students, as it was found those with eating disorders consumed more printed and digital media than their male peers without eating disorders. This included media around sports and body image. The same study also pointed out the multifaceted nature of eating disorders and recognised not all individual's exposed to the same type of media develop eating disorders.

Excess consumption of these types of media have also been linked to a worsening state of mental health (Derenne & Beresin, 2006). A troubling statistic by Nicolas et al. (2023) indicates approximately 14% of adolescents have mental health conditions. There could be a link between social media use and the constant barrage of negative body image worsening an individual's depression. However, there could also be a correlation between a poor diet and the media as a decrease in general mood and energy could result in an individual spending more time using media platforms such as TV and internet sources (Derenne & Beresin, 2006). Regardless, an improvement of dietary habits and a reduction in use of social media could have a positive impact on mental wellbeing.

There is an overarching focus in the literature on female body image. With increased numbers of anorexia, bulimia and other restrictive disordered eating more commonly associated with women than men. However, as the discourse changes around male mental health, there has been an apparent increase in men's concern over their own body image, and an increase in restrictive and disordered eating among males (Calado et al., 2010; Derenne & Beresin, 2006). The amount of literature around males' interpretation of the media and wellbeing and nutrition is limited, giving an important opportunity for this study to fill a gap in the literature. It is also apparent that adolescents are not likely going to stop using social media, so it is important to consider some strategies to mitigate the negative effects (Mazzeo et al., 2024). As educators, we should be considering the implementation of school-based harm prevention methods to help students navigate their world in constant exposure of media coverage.

### ***The role of advertising and influencers in promoting certain food choices.***

Advertising plays an important and key role in influencing adolescent food choices. Marketing of unhealthy food products is prolific and abundant across many platforms, such as television ads, social media and video/cell phone games. This omnipresent marketing for fast food, high calorie, fat and sugar yet low nutrient dense, hyper palatable food significantly influences adolescence thoughts about food, and consumption of food (Folkvord et al., 2022; Boyland et al., 2016). Additionally, the highly addictive nature of these foods contributes to the declining diet of young people. As a result, they easily buy into the temptation and glamourisation of unhealthy food and diet.

Young children and adolescents are exposed to a much larger amount of advertising material compared to previous generations due to the modern use of television and social media (Bruce et al., 2015). Additionally, major food brands such as McDonald's and Coca-Cola

invest remarkable funds into the promotion of their products (Rodrigues et al., 2024), and often target a younger audience as many have their own pocket money to spend (Folkvord et al., 2022). They also influence their caregivers purchasing and grow up to become adults and are therefore candidates for being lifelong customers (Boyland et al., 2016). Additionally, adolescents are often unable to recognise that these advertisements are targeted for commercial gain rather than for their benefit (Folkvord et al., 2022).

The rise and constant use of social media has a notable role to play in the increasing exposure of marketing about unhealthy food choices. Ninety percent of child and adolescent YouTube influencer videos contain promotion of unhealthy foods and drinks. Additionally, there are entire channels who promote the overconsumption of unhealthy foods such as Mukbang videos and competitive eating videos (Folkvord et al., 2022).

A meta-analysis of literature was conducted by Boyland et al (2016) finding there was significant effect on the exposure of food advertising on consumption of unhealthy food in children, conversely, there was almost no effect on adults. One factor that the researchers identified could have caused this disparity is the ability for adults to critically analyse the information portrayed to them in the media. This indicates that children and adolescents need more education and practice utilizing critical consumption of information portrayed in the media.

Despite research findings like this, and the recommendations from the World Health Organisation to restrict the promotion of unhealthy foods (World Health Organisation, 2023), many countries fail to include social media promotion in their regulation policies (Folkvord et al., 2022). For adolescents who are more vulnerable to the effects of online marketing, this is particularly devastating. In the western world, the unhealthy choice is often the easy choice due to availability, marketing and cost (Folkvord et al., 2022). Governments need to work to

shift this dynamic by implementing policies that make the healthy choice the easy choice by reducing healthy food costs and marketing.

It has become apparent throughout this section of the literature review that adolescents likely do not have the critical analysis skills developed to wonder where their choices and behaviours around food choices stem from. Adolescents need to be taught how to critically analyse content portrayed in the media Boyland et al. (2016), this includes nutrition advice and fad dieting. This is a critical life skill for adolescents who grow up surrounded by the media and often receive conflicting messages from school, home and the media. Developing these critical consumption skills should be an integral part of any curriculum that aims to teach adolescents to become lifelong learners. Critical thinking empowers students and gives them the tools to make informed choices about any aspect of their life, including food and health choices and is equally important to be taught in a scientific, health and wellbeing and social setting. Using real life context from social media give greater real-life applicability to nutrition topics. This will better provide adolescents with an overarching and comprehensive understanding of nutrition to make them more aware of the health choices they are making.

### **Educational Interventions and Their Effectiveness**

School environments play an important role in harbouring healthy eating habits. For some students, bring their own packed lunch from home is common. However, a great deal of students also purchase at least some aspect of their lunch at the school canteen (around 50% nationwide) (Ministry of Health, 2003) or are part of the government free lunch scheme (25% nationwide) (Ministry of Education, Ka Ora, Ka Ako | Healthy School Lunches Programme, 2024). That means contracts between the school, the canteen and the government all influence the culture of nutrition within a school setting.

### *History of school lunches*

Pilay et al. (2023) investigated the factors which affected the types of foods students were likely to eat for lunch. For many students in New Zealand, it is common to eat a packed lunch from home. This means the school has little impact on what the students bring to eat. Additionally, the students themselves have varying amount of control over the food they bring, as it is purchased by their caregivers and thus reflects their families' dietary habits. Furthermore, adolescents from low-income families struggle with food insecurity and have less choice over the foods they eat. Carter (2010) recognise Māori, and Pasifika students are disproportionately affected by food insecurity as they tend to have larger families to support. This research also found this lower income demographic is more likely to consume more sugary beverages and take away meals and are less likely to consume breakfast or five servings of fruit and vegetables per day. This indicates a need for education around healthy, low-cost meals that are easily attainable for these adolescents.

Although schools have limited control over the food adolescents bring to school, they do still significantly influence the food sold on site. One factor affecting the quality of food sold from schools is the contract between the school and the canteen. The canteen is often an outside, for-profit company. Limited availability of healthy options in contrast to numerous unhealthy options has been regularly reported in New Zealand high schools, as well as multiple international schools (Swinburn et al., 2014; Devine et al., 2023). Unhealthy, processed food like chips and sausage rolls often sell better due to greater taste appeal and because they can be manufactured at a lower price compared to healthy alternatives like salad filled sandwiches (Pillay et al., 2023).

Previously in New Zealand, food choices were mandated in schools and only healthy foods were able to be sold. Since 2009, this mandate has been lifted, and the onus is back on the

school and the contract with their canteen to decide the quality of food to be sold in their schools (Radio New Zealand, 2024). Following this, in 2014, it was recommended by a nutrition panel from the University of Auckland that the government implement policies to improve the nutrition quality of food provided in schools (Swinburn et al., 2014). However, in 2020 the Healthy Food Environment Policy Index assessed the government on their attempts to improve school nutrition and found there had been no change to any implementation of nutrition policies in schools (Mackay et al., 2020). Although the Ministry of Health (2020) did publish the *Healthy Foods and Drinks* document as a guideline for schools, the purpose of this document was to provide schools with suggestions to ensure food sold at school was healthy for student consumption. However, this was published as a guideline and its level of use and enforcement is dependent on the schools' policies.

In 2023, the Ministry of Education implemented the Healthy School Lunches Programme which acts as a guideline for schools to ensure their lunches contribute to the minimum daily nutrition needs of adolescents (Ministry of Education, 2024). While this is a step in the right direction, there is continued pressure from the canteens due to the discrepancies in profit between healthy and unhealthy food, resulting in it still being common practice for schools to sell unhealthy foods at cheap prices (Pillay et al., 2023).

### ***The role of schools in promoting healthy eating***

Schools play a crucial role in developing the eating habits of young people and adolescents, considering schools are a constant in adolescents' life until at least 16 years old. This means schools can influence individuals during their developmental and impressionable years. In New Zealand (and other countries where education is compulsory), we have a unique opportunity to encourage healthy eating options to everyone, if implemented well at the school level (Pillay et al., 2023). However, New Zealand does not offer a standardised

curriculum which results in varying extents to which schools take advantage of this opportunity. Additionally, there are several challenges in promoting individualised healthy eating within general education environments.

One such challenge is that “healthy” eating is not a “one-sized fits all” learning outcome.

Healthy eating habits are not easily defined and differ from one individual to the next.

Throughout this literature review, the idea of “healthy eating” is referring to eating a balance of nutrition from a variety of whole foods, fruits, vegetables, grains, lean meats and ample hydration. How this looks for an individual will differ depending on metabolic needs, allergies and food availability. An additional challenge in education about food and nutrition is that a greater knowledge about a topic does not always result in a positive change in behaviour. Research suggests that despite efforts to educate adolescents about nutrition and healthy eating, nutritional knowledge does not seem to be a major concern for adolescents when making nutritional choices (Devine et al., 2023). This indicates that although education about nutrition is important, it is not enough on its own to enact a change in behaviour.

In addition to teaching about healthy eating habits, schools need to harbour a culture of healthy eating. The school environment (as well as the pupils and teacher influences) plays a significant role in adolescent eating patterns (Bruce et al., 2015). This social influence can be utilized for good as outlined by Ragelienė and Grønhøj (2020) who suggest the school leaders should model healthy lifestyles, such as sporting, academic or service success as well as advocating for good nutrition. This peer-driven positive inspiration can be particularly useful in early years of adolescents where they are still largely influenced by social acceptance and peer behaviour.

### *Evaluation of nutrition education in schools*

To form lifelong healthy habits, an understanding about nutrition education is important.

Despite this, in New Zealand, the implementation of and methods of teaching nutrition vary from school to school. In the New Zealand Curriculum, nutrition education is taught within the health and physical education key area of learning (Ministry of Education, 2007).

However, one study has found that the effectiveness of this approach is hindered by limited formal training of nutrition for physical education teachers (Pillay et al., 2023).

It has been suggested by Pillay et al. (2023) to integrate the teaching of nutrition into core subjects such as science, mathematics and literacy. This is confirmed by Kempler et al. (2023) who recommend an important first step in the teaching of nutrition is developing a sound understanding of subject specific vocabulary. This interdisciplinary teaching of nutrition is a strong concept as it gives multiple different contexts to teach nutrition in, which is more reflective of the multifaceted and complex nature of the factors influencing nutrition. An example context for educators could be the critical evaluation of nutrition information in the media. This could incorporate teaching from science, health and English encouraging students to assess media claims critically. This also taps into a greater context applicable to mental health and wellbeing which is harm prevention of the negative effects of media consumption (Mazzeo et al., 2024).

For nutrition to be sufficiently taught and understood, teachers across all departments including science, health and food science need upskilling in advanced nutrition concepts (Rangel et al., 2014; Kempler et al., 2023). This interdisciplinary approach, which could be supported by resources and guidance from nutrition experts could provide students with both the theoretical and practical expertise fostering a deeper understanding of nutrition and its significance in everyday life.

## **Government Policies and Initiatives Aimed at Improving Adolescent Nutrition.**

Government policies play a crucial role in the implementation of change within our communities. Over the years, there have been several policies from governments, with varying levels of implementation, reflective of whether the policy is a recommendation or a mandatory change. Positively, the New Zealand government has ranked highly compared to other countries for policies around the labelling and packaging of foods such as nutrition declarations and declarations around health claims on packaging (Swinburn et al., 2014). In addition to this, research suggests that adults who pay attention to the labels and nutritional information on packaging tend to eat a healthier diet (Hardcastle et al., 2015). However, labelling alone will not make a change to the constant barrage of unhealthy food promotions. New Zealand still has remarkable gaps in the implementation of policies around the promotion of unhealthy foods to youth, and the discrepancies between the promotion, availability, and pricing of healthy versus unhealthy foods (Swinburn et al., 2014).

Despite this, the government has not been stagnant with its attempts to initiate change around nutrition policies. Recently, there has been debate in the media about the recent changes to Ka Ora, Ka Ako, our governments healthy school lunches programme. This programme has aimed to improve efficiency and flexibility by centralising the food production and distribution to schools. This standardised approach has the primary goals of reducing the cost to the taxpayer from the previous programme, as well as providing children and adolescents with nutritious lunches (Witton, 2024). Despite there being little discussion about what types of food will be available through this programme, it can be assumed that it meets the government's policy on healthy lunches.

Although there has been ongoing discussion from government parties about the advantages and disadvantages of two leading policy changes around nutrition, namely the taxing of high

sugar foods and the removal of GST from fruits and vegetables. Neither of these policies have ever been implemented. Thomas (2022) reports that the Government has consistently ruled out the implementation of a sugary drinks tax, despite studies indicating that these taxes significantly reduce consumption. For instance, the World Health Organisation funded the analysis of 86 studies and found evidence that taxing sugary drinks drove down sales (Andreyeva et al., 2022).

Similarly, the removal of GST from fruits and vegetables has not been brought into policy despite the seemingly positive result this would have for families struggling to afford fresh fruits and vegetables. An interview with twelve economists conducted by Radio New Zealand (2024) resulted in a unanimous response of all economists thinking it is a bad idea for the economy of New Zealand to remove tax from GST and would not save the lower economic demographic a significant amount of money.

## **Conclusion**

This literature review has provided valuable insight into the myriad factors that influence nutrition consumption choices of adolescents in the modern world. However, there remains a lack of focus on adolescent male school and education contexts. There is a clear need to comprehensively teach and engage male students in this context of nutrition education.

Therefore, the research question *How do societal pressures influence the nutrition choices of adolescent boys in a New Zealand single-sex school context?* Is filling a gap in the current spread of literature.

While conducting research, this question has developed further into wondering whether the current, segmented approach to teaching nutrition is sufficient. Should nutrition be taught as individualised segments of the science curriculum or the health and physical wellbeing

curriculum as it does in our current New Zealand curriculum when it is apparent from this literature review that this fragmented approach to teaching nutrition fails to address the complex and nuanced nature of nutrition and food consumption.

*What are the implications of understanding the nutrition choices of adolescent boys on how we design and deliver nutrition education in single sex boys' schools?* To achieve a well-rounded and thorough education of nutrition, including the multiple factors affecting nutrition, an interdisciplinary topic is corroborated by Rangel et al. (2014) and Kempler et al. (2023) which would draw on scientific understanding, mental health and well-being, and cultural and societal influences could be considered. This ensures students understand not only the biological basis of nutrition that is currently taught, but also how they fit into the cultural, social and physiological factors that can influence their eating choices. This well-rounded approach could empower adolescents to make healthier and more critical choices.

This would provide students with a comprehensive understanding of the way their bodies utilize nutrition, as well as the social influences that effect their choices. A cross-curricular approach could target subject-specific content within an overarching health unit. Science could focus on biochemical and physiological digestion and absorption of nutrients, health classes could focus on the link between food, energy and performance in sport, and social studies could focus on the social, cultural and historical value and influences of food.

Incorporated into this unit could be a critical thinking emphasis to navigate the mental health effects of social media and to understand the marketing and media influences on food consumption.

## **Chapter Three - Methodology**

### **Introduction**

The societal pressures that influence the nutrition choices of adolescent boys is a multifaceted subject that requires a breadth of foundational understanding. Due to the complexity of the social and environmental influences that shape an adolescent's choices, such as family structure, peer groups, media and education content, as well as the limitation of this study due to the scope of a master's level thesis project, the decision was made to capture a brief, initial overview of these many factors. Therefore, this study was designed to allow for a broad overview of these factors, as an initial starting point to inform decision making for the design and delivery of nutrition education. Therefore, the collection of this data and the methodology was planned to acquire data that described the underlying foundation of what students perceive to understand about nutrition and how applicable their high school education seemed to them.

Utilising open-ended survey questions and an interpretivist lens allowed the researcher to explore adolescent nutrition choices with breadth. The interpretivist perspective was well suited to this research as it recognises the complexity of human behaviour and recognises that multiple truths can exist, allowing for a more nuanced and holistic exploration of the social and personal influences which shape adolescent nutrition choices (Alharahsheh & Pius, 2020).

### **Research Design**

The focus of this research is how young people consume and interpret information about nutrition, then what this means for educators designing the curriculum to support their needs. This required understanding their individual perspectives and experiences. Therefore, this

study is guided by the interpretivist paradigm which considers and acknowledges the subjective experiences of adolescents. This is significant for this type of research, which aims to identify the many social and environmental factors that influence nutrition consumption in adolescents. Alharahsheh and Pius (2020) describe the interpretivist paradigm as an approach that prioritises factors such as culture, education background, family backgrounds and socioeconomic status, which all influence how individuals perceive and apply their knowledge.

This study also draws from Ecological Systems Theory (EST), which provides a broader framework that shows how all aspects of social interaction are interconnected.

Bronfenbrenner (1979) breaks down the social environments of young people and adolescents into microsystems (direct family and friend contacts, the school environment), mesosystems (interactions between microsystems), ecosystems (external factors that the individual is not part of, but still influences their environment, such as school board decisions) and macrosystems (such as cultures, socioeconomic factors, government policies etc.) EST explores how social pressures interact and impact individuals' behaviours and give a holistic and overarching understanding of the magnitude of factors involved in this study.

By adopting this paradigm and drawing on these frameworks, the research focused on the participants unique experiences that influenced their interpretation of nutrition information. I acknowledge that these experiences varied from person to person; therefore influencing their understanding. This paradigm is relevant to this study as it provides the opportunity to understand how adolescents are willing to comment on how they perceive social pressures and their effects on their understanding of nutrition. The interpretivist paradigm is, therefore, the most suitable paradigm for examining the multifaceted and complex nature of how adolescents engage with nutrition education.

As this research investigates the social factors influencing adolescent nutrition choices, which stem from several different social and environmental factors, it required a mixed methods approach to be adopted. This research collected both binary responses from close ended questions, and in-depth written answers from open-ended subjective questions. Gichuru (2017) recommends a mixed methods approach for an interpretivist paradigm, as a range of data can be analysed to develop a thorough understanding of the societal and environmental influences of the individual. The combination of short answers which provide insight into the frequency of events, behaviours or attitudes, and long responses, which can provide a depth of understanding into the more interpersonal relationships between the individual and their environment, provides a well-rounded range of information (Bhattacharjee, 2012). Therefore, mixed methods were a suitable approach to reach a conclusion for this research question

## **Participants**

The population for this research survey was the entire Year 11 cohort at the single sex all-boys school where I was employed, at the time of this survey, as a science and chemistry teacher. I had access to these participants through the school community; however, did not have direct contact with any individual participant as I did not teach any Year 11 classes the year the research was conducted. The survey was offered as a non-compulsory option to all Year 11 students enrolled at the subject school. The survey was posted to the individual science classes Google Classroom and remained open for a duration of two weeks. During this time, it was requested that teachers find one classroom period to offer time for students to complete the survey. Additionally, the survey could be completed at home.

As a result of the 454 enrolled Year 11 students, 134 students gave consent and were over the age of 16 to be eligible to participate. Of this cohort, the majority identified as New Zealand European (63%), followed by Māori (26%), Pacific Islander (11%), Asian (18%). **Fig. 1**

illustrates the distribution of boys' ethnic demographic. This large sample size and diverse population is beneficial for quantitative data as it is more reflective of the entire population. Woudstra et al. (2024) recommend a minimum sample size of twelve for quantitative data, and twenty-five for qualitative data. This sample size is superseding this minimum size and includes data from a diverse range of cultural, sporting, ethnic and socio-economic backgrounds, making it reliable to make an inference for the target schools' population of adolescent boys.

What is your Ethnicity? Select all that apply

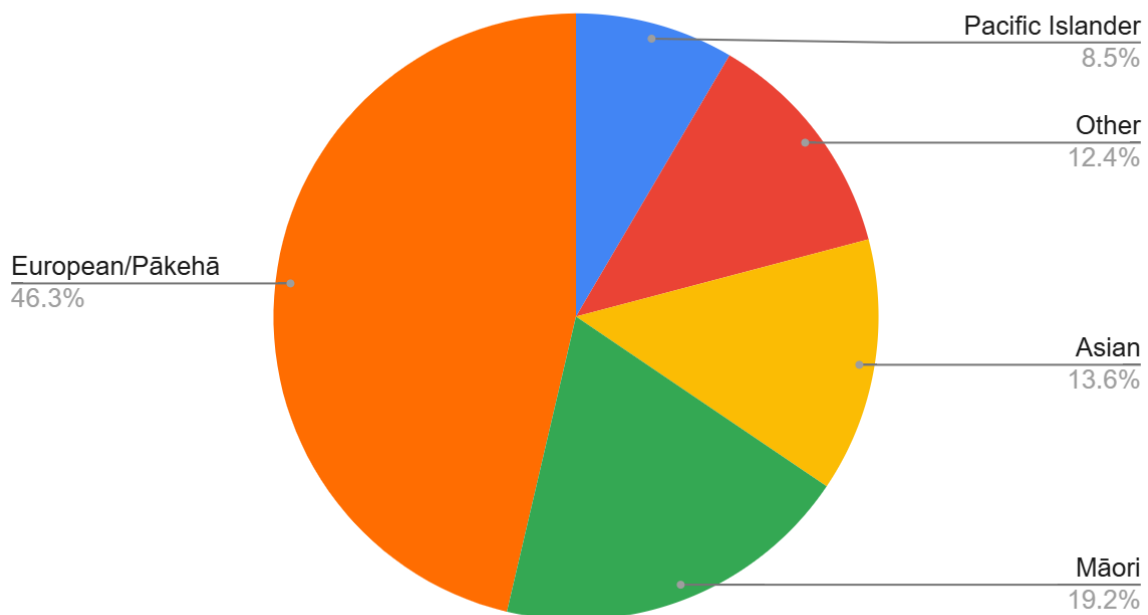


Figure 1. Pie graph showing the ethnic diversity of adolescents in this survey.

### Target School's Context

Considering the nature of the New Zealand curriculum, and its ability to be interpreted and implemented differently between different schools (and thus the potential for content and delivery discrepancies between schools) it is important to investigate the target schools learning outcomes about nutrition for different subjects and thus analyse what students are

expected to learn. At the school where this research was conducted, the implementation of nutrition education reflects these discrepancies. In science only Year 9 students learn about the human body and health. This is in the human body topic where they learn about the heart, lungs, and digestion. Primarily, the focus of nutrition is on protein carbohydrates and fats, and how the body needs macronutrients for fuel. This is covered in only 1-2 hours of teaching and could be providing adolescents with a far too simplified and compartmentalised idea of nutrition without painting a wider picture of how to eat for health.

In physical education nutrition is delivered much more informally as there is no specific nutrition topic. The P.E department have woven the ideas of nutrition in throughout multiple topics. In Year 9, students watch and discuss different docuseries about health and nutrition, such as “What the Health”, which critiques our reliance on over-processed foods, although it also promotes a vegan agenda and demotes the consumption of animal products, deeming them unhealthy. Another docuseries they analyse is “Supersize Me” which explores fast food consumption and portion size. These forms of media are explored in class, but there is limited scaffolding or expected discussion topics in the teaching scheme. Depending on the quality and level of personal interest from the teacher, the learning outcomes of watching these docuseries could vary from one classroom to another. In Year 10 Physical Education, there is no structured nutrition content in the teaching scheme at all. Units that are entitled “Health” link physical activity to mental wellbeing, or sexuality and health which aims to debunk body image portrayed in social media and X-rated content.

Although these are valuable learnings, removing nutrition and food consumption entirely from health topics appears to be a fragmented approach and raises concern about the level of contextual teaching these students are receiving.

### **Sampling Method:**

Given that the analysis of quantitative data is quick and easy to collect and analyse, it was feasible to survey a larger sample size. However, 13 long answer subjective questions were also included for participants to explain their understanding. Considering so few longer answer questions were included which would require thematic analysis, a census sample of the entire Year 11 cohort was still used for this survey to capture the diverse perspectives of the school cohort.

Therefore, all Year 11 students over the age of 16 were invited to participate in this survey. Students over the age of 16 can provide their own consent. To minimise the ethical dilemma of involving boys under the age of 15, they were excluded from this survey. This exclusion was mitigated by the opening question for the survey which asked the boys their age. If the participant selected an age under 16, they were automatically directed to the concluding “thank you” page at the end of the survey. Therefore, no responses were collected or stored from adolescents under 16 years of age. Due to the research being conducted in an all-boys school, female students were also excluded from this survey. There were no additional inclusions or exclusions from this sample.

### **Data Collection and Administration of Survey**

To collect the range of data required to represent the diverse population, a large-scale survey was conducted. When conducting a survey, I needed to consider several factors, such as how to maintain anonymity of the boys, appropriate question types (multichoice, unstructured, Likert scale etc.) and the method of completing the survey (online, interview etc.) (Bhattacharjee, 2012).

This survey was created using Qualtrics software for ease of use for the boys. Qualtrics is an online survey platform that allows the user to create surveys and securely store collected data in a confidential database for analysis and longer storage of data. Only the researcher and authorised individuals crucial to the research, as per the ethics application, were permitted to access the data. As part of accessing the survey through their Google Classroom, participants were only eligible to access the survey if they logged in through their school Google account. However, no identifiable information (such as email addresses) was collected as part of the survey. This improved the integrity and reliability of the survey, as only those with a verified school email were able to complete the survey, minimising infiltration of people outside the population completing the survey.

The boys were given time during one of their Year 11 science lessons to complete the online survey. A link was posted into their Google Classroom which they have access through using their secure school Google accounts. Their science teacher explained how to use their Chromebook or cell phone to access and complete the survey. Within the post on Google Classroom was an explanation of the purpose of the research, their rights to participate in or withdrawal from the research, and an estimate of 10 minutes time to complete the survey. The post on Google Classroom and the link to the survey were kept active for a period of two weeks to accommodate for students' schedules and attendance to optimise completion and participation in the survey.

The survey was designed with comprehensive, relevant questions guided by a thorough review of recent literature. The questions were worded in a way that minimised ambiguity or the use of leading or misleading questions. To ensure the coherency and clarity of the survey questions, and ensure validity of the survey design, a pilot survey was run with a smaller cohort before surveying the target population. Running a pilot is critical in ensuring the

survey questions are worded in a way that students can interpret them as intended, resulting in responses that sufficiently answer the research question (Desimone & Le Floch, 2004).

The survey consisted of four main types of questions:

Multichoice questions: which result in clear, concise data about the boy's diet choices, preferences and information about their background.

Example: Do you have any dietary restrictions or preferences? (Select all that apply)

Vegetarian

Vegan

Gluten-free

Dairy-free

No restrictions

Other (please specify)

Likert scale questions: which provide information about an individual's attitude or behaviour about a topic

Example: How important is eating healthy to you?

Not important

Somewhat important

Important

Very important

Binary response questions: which collect data about definitive topics about a range of context questions

Example: Do you think you eat a balanced diet?

Yes

No

Open ended questions: these questions collect in depth qualitative data and allow the participant to share their opinions and explain their experiences.

Example: If you were to eat a healthy meal (and cost was not a factor) what would you choose to eat?

What information or understanding did you use to explain your meal?

This range of questioning techniques allowed the researcher to collect a range of both short data for statistical analysis, and long answer data for thematic analysis giving insight to the numerous influences on adolescent nutrition choices.

### **Data Analysis Methods**

One benefit of analysing quantitative data from an online survey such as Qualtrics, is that the survey platform can automatically produce graphs such as pie graphs to visualise a frequency of a certain type of data. For example, results from “who is the main meal preparer at home” provided answers as a percentage in a pie chart. This visual data can then be used for inference (Desimone & Le Floch, 2004). Similarly, the Qualtrics software can produce visual representations of data from Likert scales and multichoice questions. Therefore, descriptive statistics (graphs, frequencies, percentages etc.) were a main method of analysis for the simple short answer data that did not require in-depth analysis. Additionally, Qualtrics can also analyse complimentary data sets. For example, determining if there is a link between how many meals are shared per week with an adult at home, and whether the participant feels his caregivers influence his eating habits. Qualtrics completes inferential statistics using a chi-squared analysis to cross analyse the more in-depth short answer data. Chi-squared analysis takes two pieces of data and identifies whether there is a relationship between the two. This is possible by comparing the data to an expected value, the larger the deviation from the expected value, the greater the confidence that an inference can be made. Although a limitation to the use of Qualtrics is that it still requires human input as I had to decide which correlations to make between which questions.

Analysis of the long answers which were generated by open ended questions in the survey, required thematic analysis. This is a method of qualitative data analysis that identifies key themes or patterns across data (Braun & Clarke, 2006; Kalpokaite & Radivojevic, 2019;

Lester et al., 2020). I read the responses and then grouped the responses into similar categories. These categories were organised with the use of coding. Codes are labels allocated to data to highlight the themes or patterns between data and condense the dataset. Codes can be either decided upon by the researcher who has chosen what ascertains a ‘theme’ (an important reflection of the data) in the context of their research (Braun & Clarke, 2006). In this research, I chose the codes after reading through the research and identifying common themes. Example of some codes when reading through the responses to “why do you think you eat a healthy diet” the researcher coded individual mentions of macronutrients such as “protein” “carbs” and “fats” as their own unique codes, as well as more broad term such as “balanced” “variety” “range of fresh foods” all were coded together as recognising a balance of nutrients.

### **Ethical Considerations**

Ethical approval for this research was granted by the Te Kura Toi Tangata Division of Education Research Ethics Committee. All research procedures have been conducted in alignment with the standards and ethical requirements outline by the University.

All boys in this study were over the age of 16 which under New Zealand law allows them to give their own informed consent to participate in research. Bissenden and Gunn (2017) and Hurley and Underwood (2003) agree that at this age, students are more than capable of giving informed consent. However, while not a requirement, within a high school setting it is ethical to get additional parental involvement. Finch (2005) and Bissenden and Gunn (2017) agree with this view on the importance of parental involvement, suggesting the significant ethical responsibility of involving the caregivers to ensure transparency of research and support from home. Therefore, information about the research was sent home and caregivers were invited

to discuss with their sons whether their involvement in this survey was suitable for them. However, caregiver consent was not collected as part of this survey.

Anonymity and confidentiality were important considerations for the safety of the boys and the reputation of the school (Mockler, 2014). The survey did not collect email addresses, or any identifiable information about the students. The data were kept securely in Qualtrics data bank, with a password protected account. This ensured the participant's responses and the school's name remain confidential.

As this research was being conducted at the school I was at the time employed as a teacher, careful consideration went in to minimising the power dynamics that could influence a student's responses. It has been experienced by many and recorded in the literature that adults can influence young people's opinions (Finch, 2005; Mockler, 2014). Therefore, this ethical concern was mitigated through the census selection of the Year 11 cohort, none of whom were my current students. Additionally, the use of an online survey helped to further minimise this power dynamic as I was not present in any of the rooms while the survey was taking place. Both steps minimised the possibility of student response bias, and coercion of consent.

Finally, the data collected from this survey was stored in a password-protected, secure account. Only the researcher and the research supervisor had access to the data ensuring the confidentiality of the boys and the school. Any data published did not include any identifying information to maintain the anonymity of the boys and the school.

### **Methodological Limitations**

One of the most significant limitations to this study was the scope and time limit of conducting a master's thesis limited to only 90 points. The restricted timeline and limited

word count necessitated certain methodologies and limited the depth and breadth of data that could be sensibly collected and analysed. Therefore, this research aimed to look at the fundamental, baseline understanding of social and educational influences on adolescent boys in a single-sex high school setting.

While this allowed me to gather data from the entire cohort of Year 11 boys, giving a multicultural and diverse range of responses, it limited my ability to delve deeper into nuanced ideas and lived experiences that framed these boys' ideologies around nutrition. Given the multifaceted nature of nutrition choices, including the social and psychological factors that drive food choices, more open-ended interview style questions would have been well suited to better capture these nuanced ideas.

Additionally, considering this topic from my perspective as a science teacher seeking development in my teaching, I only asked the students about their educational experiences in science. While I did discuss the curriculum with health and physical education teachers within this school community to gather an understanding of the baseline education that is expected to be covered at the Year 11 level, no questions explicitly asked the students about their health or physical education lessons. In an attempt to capture this knowledge, students were asked if they could think of any other factors that influenced their understanding of nutrition within this survey.

Due to the voluntary nature of every question of this survey, there was a significant decline in responses for the long answer questions compared to the "click box" style short answer questions. This reflects a limitation to collecting long answer questions through a survey and therefore "significant findings" such as 14 mentions of named fitness influencers seems insignificant against the entire data set of 134, however, only 47 participants provided a response for that question making 14 responses a much greater proportion of valid responses.

Moreover, because participation was voluntary, this can give rise to self-selection bias. The students who participated in this survey could have had a greater interest in nutrition to begin with and give more informed responses than those who opted out of the survey. Thus, this could have skewed the data and decreased the generalisability of the findings.

Additionally, when collecting self-reported data, the possibility of self-report bias is significant. Participants could have provided invalid responses that did not reflect their lived experiences. This can occur if they were unconsciously ashamed of their answer, or if they were not able to recognise their answers weren't completely factual. For example, when asked to describe whether they thought they ate a healthy and balanced diet, several factors could have subliminally altered their responses: health shaming, economic difficulties, or the misunderstanding of what constitutes a healthy diet. This bias could have been minimised by incorporating objective measures, such as having a select group of boys record a food diary to align with their personal reflection of their dietary habits.

During analysis of qualitative questions, thematic analysis was utilised. Thematic analysis is subject to interpretation of the researcher and therefore carries potential for bias shaped by personal perspectives and preconceptions held by the researcher. A way to mitigate this was the use of clear and simple coding guidelines I followed throughout the analysis.

Additionally, reflexivity was a key part of the process; while the results were being interpreted, I frequently considered how personal biases could possibly be shaping the interpretation of the results and minimised them. Moreover, regular meetings with my supervisor allowed more than one person to check for interpretation bias.

## **Conclusion**

This research used a mixed methods approach to investigate the influence of social and environmental factors on the nutrition choices of adolescent boys. By collecting both binary

responses and longer answers, the study aimed to capture a breadth of the range of factors affecting the nutrition choices of students, and what this means for the nutrition curriculum for high school educators.

Despite the methodological limitations, the data set provided some initial evidence to support new thinking about the design and delivery of nutrition education. Overall, this methodology was designed to provide an insight into the factors affecting the nutrition choices of adolescent males, addressing the multifaceted nature of these choices and provide information for educators to better develop the teaching of nutrition education.

## Chapter Four - Results

The results section of this study presents the findings of the survey, organized around the first core research question: (1) What are the key social influences on adolescent nutrition choices? Results include quantitative data derived from survey responses and qualitative insights from open-ended survey questions.

- Firstly, this survey highlights these adolescent boys have a limited and narrow understanding of nutrition.
- Secondly, the family, social and sporting factors that were the most significant in shaping these nutrition ideas, each of which influencing adolescents in their own unique way.
- Lastly, the lack of connection of real-life contexts to school-based nutrition learning.

Each section is directly relevant to the influences that affect adolescent nutrition. The layout of the data were organised logically to showcase the overarching themes that became apparent throughout the analysis of this data.

### **Adolescents' Limited Scope of Nutrition**

Healthy eating is foundational to long-term health and wellbeing, but data collected from this survey highlights oversights and concerning patterns of how adolescents view nutrition.

Adolescents in this survey tend to have a narrow mindset when it comes to nutrition, with an overarching focus on macronutrients, particularly protein. Their use of superficial health targets, such as muscle mass or athletic performance indicated a disconnect between health and aesthetic appeal. Adolescent boys have appeared to have adopted a fragmented, media driven understanding of nutrition while missing the broader picture of balanced and sustainable health.

When surveyed, 57% of boys ranked themselves as being confident or very confident with their understanding of nutrition. This self-assessed confidence contradicted their ranking of importance of healthy eating. For instance, 39% of boys ranked healthy eating as either only “somewhat important” or “not important”. This indicates a remarkable portion of the responding population (n = 131) do not consider their nutrition consumption important. This suggests a disconnect between adolescents perceived understanding of nutrition, and their values. This potentially reflects a lack of understanding or showcases some competing influences that limit adolescents’ ability to put their knowledge into action such as convenience, availability, taste, or cost.

This mismatch was further reinforced by adolescents’ ability and choices to read food labels. Only 25% of participants reported often or always reading the labels on food packets. Of those who do read labels, the primary focus was to find out how much protein was in the food (41 mentions), followed by sugar content (40 mentions) and then the amount of energy or calories in the food (27 mentions), then fat and carbohydrates (both with 18 mentions). In contrast, critical markers of health received minimal attention such as micronutrients (2 mentions), sodium (9 mentions), fibre (2 mentions), and use of the health star rating (3 mentions).

This dominating response from boys about protein revealed a narrow understanding of health. While Smith et al. (2015) and Thompson (1998) recognise eating protein is important in a healthy diet, particularly during periods of growth and physical development in adolescences, it’s overemphasis in results from this survey outweighed any other macronutrient, micronutrient, or any other critical health component. Balanced and sustainable health suggestions such as eating a variety of fruits and vegetables, fibre, hydration and vitamins and minerals were overlooked by a vast majority of participants. This data provides insight

into the apparent over reliance on one macronutrient as a symbol of health and points to some potential sources of nutrition knowledge among students, likely stemming from social media and gym influencers who promote physique-oriented information around food, rather than formal education. This finding aligns with the research from Calado et al. (2010) who discovered adolescents were the most impacted and influenced from social media personalities who focus on extreme dieting and exercise and Devrim et al. (2018) who linked the increase in disordered eating and over supplementation in adolescents to social media influencers. This link between social media and nutrition ideas will be developed further in a later section.

The narrow viewpoint on nutrition continued throughout the survey. Despite 61% of boys believing they eat a healthy diet, when asked what they believe this looks like, students gave a wide range of responses. Again, they often focused on fragmented specific aspects of food such as fresh fruits and vegetables (18 mentions), balancing macronutrients (12 mentions), consuming meat (11 mentions) and minimising junk or processed foods such as take aways and packaged snacks (8 mentions). Rarely did boys mention the concept of eating a variety of foods, only five boys explicitly mentioned variety in their responses, and six other boys referred to it in their answers. This could be looked into further as a future research opportunity with a different methodological approach, such as utilising interviews or focus groups, as these students have touched on the idea that health and nutrition cannot be boiled down to one thing such as eating fruits and vegetables alone.

A recurring theme in some students reasoning was the idea that external factors such as physical fitness and leanness is an indicator of their overall health. For instance, six students linked the fact that they participate in sport such as body building, rowing, or are currently bulking or cutting, to the fact that they must eat a healthy diet, despite not describing how

their diet was healthy. This indicates the misconception that participants link their level of athletic ability or their physique as confirmation of a healthy diet. Similarly to this, one student justified their diet as being healthy because they are not overweight, another suggested that they do not need to eat healthy because they are already fit, and another student suggested they eat healthy because they are vegan. These responses reveal a fundamental misunderstanding of nutrition. External measurements such as physical appearance, fitness or adhering to a diet are not synonymous with health and could play into the extreme dieting and eating habits that adolescents see in the media.

Additionally, when asked to list what they considered to be the biggest influence on their nutrition choices, the most common response was taste (15 mentions), followed by sport and family influence (both with 13 mentions each) and finally personal choice (10 mentions). Interestingly, six students mentioned health and body image each suggesting that while health is a concern for adolescents, it is held to a similar calibre as physical appearance. This further confirms the notion that boys think the healthiness of their diet is measurable by physical fitness rather than the variety of nutrient dense foods that they consumed.

This narrow mindset about nutrition can be dangerous as it normalises extreme “clean” eating practices, such as high-protein, low-carb or low-fat dieting, without understanding the long-term health effects. By using external measurements for health, such as physical appearance, adolescents risk (and are sometimes blatantly told to in social media) ignoring essential human indicators of health, such as energy levels, digestive health and mental well-being. These intrinsic factors can be harder to measure and easily overlooked when hyper focused on achieving a certain physique or a protein goal.

When asked to describe and explain a healthy meal that they would like to eat if cost was not a factor, an encouraging and positive trend emerged. The responses showed a significant

theme of balanced meals with lean proteins, carbohydrates and vegetables which was described by 22 boys. The most frequently named meats were chicken, steak and salmon, carbohydrate sources were listed commonly as rice, potatoes and pasta, and a considerable emphasis was placed on green vegetables such as broccoli, beans and salad. This is consistent with the idea that adolescents do have a sound understanding of nutrition (Devine et al., 2023). However, even throughout these more thoughtful responses, protein remained a dominant theme. 29 boys mentioned protein as being the most overwhelming measure of a healthy meal, with 11 boys mentioning either protein explicitly or high protein sources as their healthy meal choice. Although this aligns with the literature that growing adolescents do require a significant amount of protein, and athletic individuals require even more again (Smith et al., 2015), there is concern about the oversimplification of nutrition for adolescents who seem to suggest that protein is the only consideration for a healthy diet.

Beyond nutrition itself, several students also linked perceived healthiness to external factors such as taste (5 mentions), advice from their family members (4 mentions) and the use of the healthy plate model (1 mention). Notably, take away options that have been deemed healthy by marketing were mentioned such as Subway, Sushi, Tank and Pita Pit which had a combined 10 mentions. These responses shine light on how marketing and subjective experiences influence adolescents understanding and nutrition choices.

The results of this survey underscores a critical finding that adolescent boys hold a fragmented view of nutrition which is focused solely on protein. Their understanding of health seems to be shaped more by athleticism and maintaining a muscular physique, rather than an evidence-based approach. While many of the participants believed they are eating a healthy diet, their justification and definitions of health are overly simplistic.

## **Social Exposures to Nutrition**

A notable finding from this survey is the powerful impact that social factors have on adolescent boys. Whether direct or indirect, these social factors alter and shape the way adolescents think and therefore act around food. Of notable significance, is the influence that family have on shaping food choices. However, other social factors such as school culture and media were also recognised. It is important to acknowledge that there are many other important factors such as socioeconomic status and cultural diversity that immediately influence food availability and therefore choices. Despite this, these were not the focus of this study but do warrant further investigation.

### ***Family and peer influences***

Among the 21% of participants who self-reported their own diet as being unhealthy, a recurring explanation was due to limited control over what was provided at home. Seven students directly linked that they had no input into what food was prepared, while others attributed their unhealthy eating to overconsumption of sugary packaged snacks (5 mentions) or a lack of vegetables (3 mentions). This gives insight to a wider challenge that adolescents are subject to the environment at home which is often out of their control. Haines et al. (2019) found when caregivers do not cultivate a positive and healthy eating environment by not preparing meals or eating with their children it can result in children more likely choosing unhealthy options when provided a choice. Considering this, it would be interesting to follow these adolescents along a longer timeframe in an additional research project to see how this perceived unhealthy diet as young men will influence the food choices they make as adults.

Aligning with this, students who identified their diets as healthy often attributed this to their caregivers cooking healthy meals at home for them to eat (9 mentions). All of these mentions of family influences align with the larger dataset which show 72% of boys have their meals

cooked by caregivers at home (shown below in **Fig 2.**), and 80% believe their families food choices influence their own food choices. This indicated that for most boys, families not only determine what food is prepared and eaten but also model what is considered healthy or at least a suitable and acceptable meal. Additionally, 47 participants mentioned their parents as being the most influential figures in shaping their nutritional choices. This aligns with the findings of Berge et al. (2016) and Haines et al. (2019) that recognise the significant influence of role modeling positive and healthy eating habits have on an adolescents food consumption later in life.

### Who usually prepares dinner?

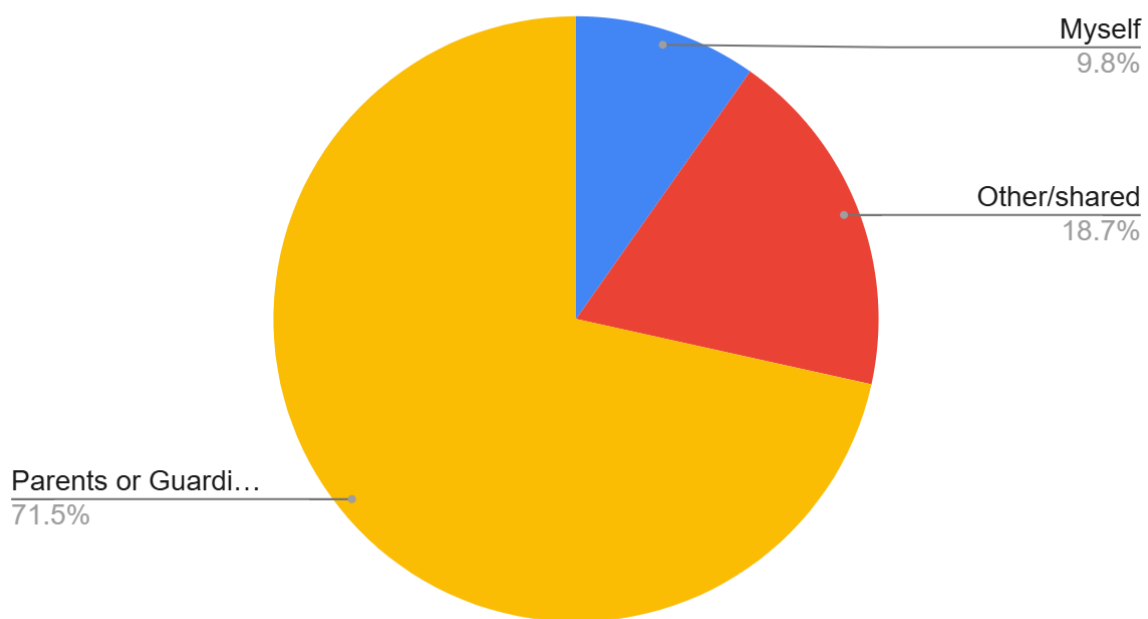


Figure 2. Pie chart showing breakdown as percentages of who prepares meals at home.

Interestingly, the boys who share cooking responsibilities at home (categorised in the “other” category in **Fig. 2**) reported the highest percentage of feeling “very influenced” by family but also had the lowest reported overall awareness of family influence (seen below in **Table 1.**).

This paradox could be reflecting a higher level of independence around cooking. This

increased confidence and ability to prepare meals may mean the participants feel additionally supported by their family rather than feeling constrained by it. This would be an interesting avenue to research further to consider how shared responsibility in meal preparation as an adolescent shapes nutrition habits and attitudes in the long term.

Table 1. Cross examination of results between Q10. Who usually prepares your meals And Q11. When you make your own food choices, do you consider your families food habits (do your families food choices impact your own food choices?)

Q11: When you make your...your own food choices?)					
Q10: Who...d Cho...	Not at all	A little	Moderately	Very much	Total
Myself	25.0%	16.7%	41.7%	16.7%	100.0%
Parents or guardians	16.1%	43.7%	35.6%	4.6%	100.0%
Other (please specify)	30.4%	30.4%	21.7%	17.4%	100.0%
Total					

Another opportunity for family influence is during shared mealtimes. The frequency that an adult family member sits and eats a meal with an adolescent seems to correspond with an increased perceived family influence. Of boys surveyed (note: for this question only, any participant who reported they lived in the school hostel were excluded), 41% reported that an adult family member sat and ate an evening meal with them every night of the week. Only 10% of students reported that an adult never sat and ate dinner with them, although this is a minority of participants, it is still a significant portion of the population missing out on quality family time. Regular family meals provide an opportunity for caregivers to showcase healthy eating and could be a crucial factor in influencing adolescent food choice (Berge et al., 2016). However, Qualtrics software analysed these two data sets and found there to be no statistical significance between the two data sets in this survey. Despite this there is a noticeable trend shown in **Table 2**. that fewer shared meals between an adolescent and an adult family member, the less influence the family seems to have on the adolescent's food

choices. Again, this positive food role modelling aligns with the findings of many prior researchers including Scaglioni et al. (2018) who recognise sharing in the preparing and eating of meals with young children result in a positive relationship with food that extends into adulthood.

Table 2. Cross examination of results between Q9. How often does an adult family member sit and eat dinner with you and Q11. When you make your own food choices, do you consider your families food habits (do your families food choices impact your own food choices?)

Q9: How...ith you?	Q11: When you make your...your own food choices?)				Total
	Not at all	A little	Moderately	Very much	
0 (never)	33.3%	41.7%	16.7%	8.3%	100.0%
1-2	22.2%	27.8%	38.9%	11.1%	100.0%
3-4	11.8%	52.9%	35.3%	0.0%	100.0%
5-6	19.0%	28.6%	52.4%	0.0%	100.0%
7 (every night)	17.4%	41.3%	26.1%	15.2%	100.0%

Another consideration was the family size and structure. Most boys live in medium sized families with 63% of boys reporting 4-5 people live in their house. Ten percent live in smaller households with less than 4 people and 26% live with large or extended families with 6 or more people. Family size could affect meal dynamics, such as time spent together, availability of cooking time with adults and diversity of foods if living with multiple adults. Data from this survey showed as family size increases, the frequency of shared meals with adults decreased shown in **Table 3**. For example, 43% of boys who live with eight or more people report not sharing any meals with an adult at home. This decrease in shared mealtime can dilute the perceived influence felt by the boy and reduces the opportunity for positive role modelling and connection.

Table 3. Cross examination of results between Q9: How many nights of the week does an adult family member sit and eat dinner with you? and Q8: How many people live in your house?

Q9: How...ith you?	Q8: How many people live in your house?			
	2-3	4-5	6-7	8 or more
0 (never)	8.3%	11.0%	0.0%	42.9%
1-2	16.7%	13.7%	21.7%	14.3%
3-4	0.0%	12.3%	26.1%	28.6%
5-6	25.0%	20.5%	13.0%	0.0%
7 (every night)	50.0%	42.5%	39.1%	14.3%
Total	100.0%	100.0%	100.0%	100.0%

While more research would be necessary to further explore this relationship, these findings indicated that family structure, routines and organising the sharing of food preparation and cooking can directly affect the amount of influence caregivers and family members have on adolescent food behaviours and choices.

In contrast, peers had significantly less impact on perceived influence on food choice of adolescents. However, still 44% of students think that their peers have some effect on their food choices when buying food together such as at the canteen, while the remaining 56% think that their peers' opinions are neutral or not important to their food choices. Only 6% considered peer influence a primary factor in their food choices. This survey suggests that peers may influence the social context of eating but not influence adolescents in long-lasting ways around their behaviour and attitudes towards nutrition. These findings did not align with the majority of the literature which indicated peers have a significant influence on adolescent nutrition choices. For example, Ragelienė and Grønhøj (2020) found peer groups often mimicking each other, including when it came to food choices and similarly Bruce et al. (2015) found peers match each other's behaviours to fit in be accepted. However, it is worth noting that peer

influence could be considered a much more subtle influence and could therefore be less likely self-identified as a perceived influence by an adolescent. There is the potential here for a more in-depth research method such as an interview where guided questions could better identify the presence of more nuanced influences such as those from peers.

The data clearly demonstrates that family (in particular caregivers) appear to be the most influential people on adolescent nutrition. This influence does not end at just providing food, but also the role modelling and shaping of perceptions around preparing and eating healthy foods. This provides the foundations for adolescents to be able to judge their own food choices in the future. Family dynamics including who prepares the meals, who sits at the table, and the level of independence an adolescent has on the food that they eat all factor into the dietary habits an adolescent carries into adulthood. In a time where social media and peers are increasingly influential, it is important to not overlook the significance of the influence from family and how educators can support and involve the entire family to cultivate a healthier food environment at home.

### ***Social media and marketing influence***

Social media is pervasive in the modern world. Adolescents have lived their whole lives surrounded and engulfed in technology. These adolescents experience high exposure to marketing and influencers with 93% of students having identified using social media platforms for at least 1 hour every day. It is evident that this high exposure effects many aspects of their everyday lives, including their nutrition choices. The data collected from this survey has already pointed towards a narrow viewpoint shared by adolescents about nutrition: that protein and macronutrient balancing is the most important factor when it comes to health and nutrition. This mindset appears to be corroborated through their media usage as a similar message can be

spread by fitness influencers and online personalities who idealise muscle gain and a year-round lean physique over long-term, sustainable health.

Daily social media use is prevalent in most adolescents (93% of boys). Additionally, 43% of boys actively follow influencers who discuss food and nutrition. While some of these influencers range from promoting healthy eating and nutritious cooking at home (10 mentions), many others promote macronutrient counting to gain or lose weight (8 mentions). Influencers that were named by participants included popular figures who share fitness focussed advice such as David Goggins (5 mentions) and body builders such as Noel Deyzel (5 mentions) Tren Twins (2 mentions) and Sam Sulek (2 mention) who all follow extreme regimens, including some use of steroids to maintain large, muscular physical appearances.

The messages delivered by these influencers are macronutrient centred, focusing on calories in and calories out and volume of protein rather than variety of foods and sustainable healthy eating. One participant surmised their understanding of the messaging and their understanding of nutrition they have received from social media as “It is not about the food you eat; it is about the calories you get.” Even though this idea was not represented in overwhelming numbers in this survey population, this was still a very concerning finding from an educator’s perspective. These types of external social influences should receive greater consideration when planning for curriculum design. This comment underscores an overall theme that is arising among adolescent nutrition, it does not matter the quality of the food you get, provided you are able to maintain a particular physical appearance.

This information coming from social media is not just theoretical, with 38% of boys reporting altering their eating habits based on something they saw on social media. These changes included positive shifts such as six boys beginning to experiment in the kitchen and attempt cooking at home, meal prepping to save time (3 mentions) and eating breakfast (2 mentions).

Some boys focussed on adding to their diet (14 mentions) such as increasing their protein, carbohydrate and vegetable consumption.

However, not all of their changes were beneficial. Ten students mentioned cutting out entire food groups such as fats or carbohydrates without knowing the long-term effects. This reflects information portrayed by the media where some food groups have been demonised in the name of muscle gain and fat loss. Some examples of videos on Tik Tok when searching “nutrition for weight loss” the results are dominated by pictures of smiling women, and video suggestions include a selection of fad and unrealistic diets such as eating only eggs for five days, trying a raw diet and eating only one meal a day (myfearless50s, 2023). When searching for “nutrition for muscle gain” the results are dominated by men shirtless men with abs, or bicep tensing. The types of messages received are to meal prep and to eat a high protein diet including eggs, Greek yoghurt, kumara, salmon and grass-fed steak (health.clue, 2020). While increasing protein, fruits and vegetables and meal prepping can be positive steps, the complete removal of food groups without sufficient nutritional understanding is an oversimplification of nutrition that adolescence need and could result in health-related issues in the long term. This aligns with the findings from Devrim et al. (2018) where it was found that an increasing number of adolescents with disordered eating and over supplementation due to social media influence. This indicates adolescents willingly consume media without the ability to critically analyse and question the information that is portrayed to them. This creates a disconnect between what they understand to be healthy as a physical attribute, with what they are selectively shown in the media to achieve that appearance.

Despite the constant barrage of advertisement on social media platforms, 36% of boys believe they are not “heavily influenced” by any form of marketing or media influence. However, the data showing their attempts to alter their diets suggests otherwise. This perceived self-

assessment may not fully capture the way that marketing subconsciously shapes consumer choices. The breakdown of these apparent influences is displayed below in **Fig. 3** the reported figures in this graph are reflective of the entire surveyed population including those 36% of boys who did not self-report a significant influence from media. However, of the remaining 64% of boys who recognise the influence from media marketing, they reported the most influential platforms were social media (43%), online videos (33%) and sports endorsement (20%). Traditional media platforms were far less impactful such as television commercials (13%) and celebrity endorsements (8%). Interestingly, the perceived influence of traditional marketing methods (for example, television scheduled ad breaks, internet pop ups etc.) is low on adolescents' list. This has aligned with the increase in social media platforms and change to marketing through paid advertising and endorsements from popular influencers rather than advertisements produced by the company.

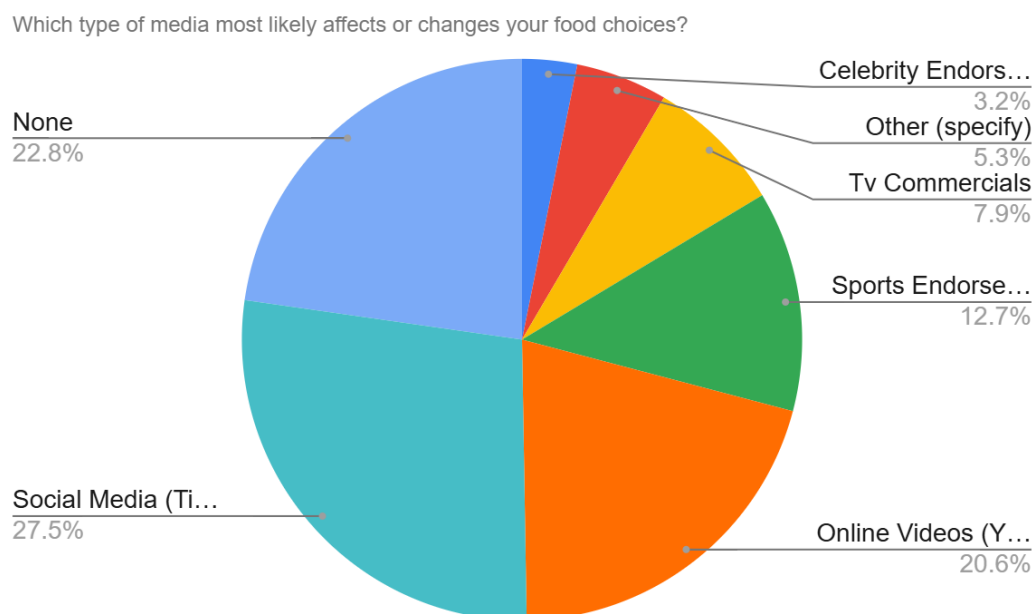


Figure 3. Pie graph of breakdown in percentages of the self-reported important media influences on nutrition choices

This finding is important as the participants perceived level of influence contradicts their reported data of altering their diets in some way to reflect what they see in social media (38% of participants). This suggests modern marketing has become more subtle, personalised through AI algorithms, and embedded within everyday content which gets consumed daily by 93% of surveyed adolescents. Instead of the overt and obvious traditional marketing displayed during scheduled advertisement breaks on television or in the advertisement section of written media, messages portrayed through social media are often delivered by influencers whose lifestyles seem aspirational. A greater level of critical thinking is needed for adolescents to navigate this influencer driven media who can blur the lines between entertainment, advertisements and advice. These findings highlight the importance of critical analysis of social media messages. Further research could examine the use of adolescent media to see if boys who mention not being influenced by social media advertisements can recognise what paid advertisement content is. This gap in critical analysis aligns with the findings from Mazzeo et al. (2024) who recommends an educational intervention. Schools could address this gap in critical analysis and use the evaluation of social media posts and marketing campaigns to recognise tactics used to influence food consumption.

### ***School culture and interfaces***

A school's environment can play an important role in shaping an adolescents' understandings, attitudes and behaviours toward nutrition. This study received a mixed review of the school's environment including influences from coaches, trainers and school culture about nutrition which suggests areas for improvement to better promote healthy eating. It should be noted that six participants reported themselves as being school boarders. Although their input about the school culture around nutrition is still relevant, they bring a greater and varied understanding

about the school's nutrition culture compared to a day student. Nonetheless, their responses have been included in this section.

When asked about how students perceive the school's culture on healthy eating, the most common response was "neutral" (54%). While 28% believed it was supportive and the minority 19% felt their school was not supportive of healthy eating. This neutrality indicates a limited emphasis on nutrition from both the curriculum, and in broader cultural practices such as messages from the school canteen.

Students offered several suggestions to improve the school's culture around nutrition, with the most popular suggestion mentioned by 43 boys is to make healthy food more accessible at the canteen, whether that be reducing the cost of nutritious items, increasing the variety, providing visible nutritional information or actively promoting the healthier options. Other recommendations included improving the education about nutrition (17 mentions), reducing the sales or increasing the price of unhealthy foods at the canteen and sports games (12 mentions). One student suggested the canteen "Sell less fried foods. Make healthier options more affordable, to directly influence consumption of more healthy food." Another participant agreed with the reduction of fried foods "For the Canteen maybe limit of the use of foods fried in oil." These comments reflect these boys have a desire to eat healthy and affordable options at school. It also shows these participants have sufficient prior knowledge to recognise that external factors such as what foods are available play a crucial role in shaping food choices.

Devine et al. (2023) documented similar findings about the culture of nutrition cultivated at school through the canteen. Adolescents are likely to prioritise factors such as taste, convenience, cost and the behaviour and influence of their peers. When a school canteen provides an imbalance of tasty, cheap and fast-food options which adolescents would likely swarm to, this continues a culture among peers of unhealthy eating. However, like mentioned

by these students above, if those temptations were less appealing due to increasing cost or decreasing availability, adolescents would be guided to make more healthy choices. This ideology aligns with the work that the New Zealand government has attempted to begin with Ka Ora Ka Ako, the guideline for healthy eating in schools. However, this is currently a recommendation and therefore not strictly followed by all schools' canteens (Ministry of Education, 2024).

### ***Sports and Coaching***

Sports and being physically active are a huge part of school life for adolescent boys. 75% of participants identified that they are currently engaged in some type of sport or athletic activities. Being active significantly alters the nutritional needs of adolescents (Loosli & Benson, 1990). Additionally, adolescents feel pressure to perform and meet the expectations of their coaches, friends and family. This results in an emphasis on performance, often body composition, and importantly nutrition.

Of the students who participate in sports, 42% engage in regular conversations and a further 36% engage in occasional conversations with their coaches or adults within their sporting field about diet and nutrition. Of this same group, 72% recognised that they altered their diet in some way because of the information given to them by coaches. The students who participate in physically demanding sports such as rowing, water polo and body building made frequent mentions of their sport and coaches throughout the survey. For example, one participant shared his rowing coach repeatedly tells him to “eat anything and everything”. Additionally, eight participants mentioned their coaches as being the greatest influences on their nutrition habits and food choices. This suggests sporting figures such as coaches, trainers and managers have a profound influence on adolescents eating patterns, whether intentional or not.

However, the messages coming from coaches can often reinforce an adolescents already narrow view of nutrition. When asked about the type of information their coaches have given them about nutrition the main message from those who recorded answers (n=17) were to eat more carbs and protein to gain weight (6 mentions). Some students were told to eat less sugar (2 mentions) and reduce fast food consumption (2 mentions). One student was even given instruction to cut and bulk at certain times of the season.

This advice, while likely given with good intentions to be effective and simple to follow, is further reinforcing this overly simplistic ideology about nutrition which is portrayed in the media and has become apparent among those surveyed: protein is paramount, and macronutrients as the focus. There is little focus given to improving micronutrient intake and supporting healthy digestion with fibre through eating a variety of whole foods. This could be a contributing factor leading to these boys' misunderstanding of food as being used only as fuel for supporting athletic performance and physical appearance rather than as a tool to support overall longevity and health.

The focus on athletic performance was further corroborated by participants listing the supplements they use in their diet. The most used supplements identified by 33 boys are protein powder and general vitamins, followed by creatine (9 mentions), electrolytes (6 mentions), and pre-workout or other gym-related supplements (5 mentions). This high use of supplementation indicates boys are either concerned about meeting their nutritional needs or are trying to optimise their sporting performance and recovery. The prevalence of protein use aligns with the widespread message amplified by both sports coaches and fitness influencers that health and nutrition is simply boiled down to an increased protein consumption.

While supplementation can be beneficial in certain contexts, the overuse of supplements consumed by over half of this cohort could be reflective of gaps in nutrition knowledge, social

media influencers promoting supplements, peer or family influences or as a means for adolescents to conveniently meet their dietary requirements. While supplement can play an important role in athletic performance, an over reliance on these supplements can shadow the value of obtaining these nutrients by consuming whole foods and a well-balanced diet. This is supported by Calado et al. (2010) who recognise the harm of social media influence of physical fitness and performance, which can result in the over supplementation in adolescents.

The results reveal how the school environment including coaches and adults involved in sport have an opportunity to support a sound understanding of nutrition when talking about fuelling for sport. Adopting a more balanced approach to discussions around nutrition can work towards a multifaceted approach to teaching nutrition, reinforcing what is taught in the classroom and out on the sports field. Without this intervention, the school and sports culture will continue to contribute to this narrow narrative that boys and the media have adopted about nutrition which fails to support lifelong health and wellbeing.

### **Lack of Connection to School based Learning**

Schools have a valuable opportunity to shape adolescents' understanding and attitudes around nutrition, both through formal education as well as the broader school environment. However, this study has indicated that this schools culture, and the New Zealand curriculum is not effectively guiding boys towards a well-rounded understanding of nutrition and healthy eating. Concerningly, 87% of boys reported rarely or never discussing healthy eating and nutrition in their science class. This is not surprising given that the only lesson focussing on nutrition as part of the science curriculum occur in year 9, two years prior for this group of Y11 participants. For 64% of students, the information taught in science about nutrition was not very relevant to their everyday life. This shows a disconnect between the information taught in class and the practical applications to everyday life.

Despite this, 12% of students acknowledge an aspect of their diet that they have positively changed due to something that they learned in science. Examples of these changes included: including more fruits (2 mentions), avoiding consumption of chemicals, and how to optimally consume foods around exercise to manage energy demands. Concerningly, there were some responses that have been misinterpreted such as one student who says, “I eat less fibre as I learned fibre is what the body doesn’t process” and another student who claimed they eat less fat. These examples reveal a need for a more coherent and comprehensive nutrition education that emphasizes the importance of a balance and variety of foods. An educational reform is particularly important considering the amount of conflicting and oversimplified information that is portrayed by other external and social factors.

## **Conclusion**

This study explored the multiple influences that affect the daily nutrition choices of adolescent boys between the ages of 16 and 17. Key findings revealed that while the majority of boys believe they eat a healthy diet, their reasoning was very narrow and oversimplified. Adolescent boys from this study seemed to recognise overall protein consumption, physical appearance, and ability to perform in sports as measurements of a healthy diet. This message was further corroborated by similar messages that they receive through social media from fitness influencers, and coaches who tried to provide simple and convenient advice around nutrition.

## **Chapter Five – Discussion**

The discussion section of this study considers the findings from the results section in response to the first core research question: (1) What are the key social influences on adolescent nutrition choices? And uses these findings to inform the second research question: (2) What are the implications of understanding the nutrition choices of adolescent boys on how we design and deliver nutrition education in single sex boys' schools? Therefore, the discussion section considers how educators in New Zealand could utilise these findings to better equip their students for lifelong health.

### **Implications for Education Environments**

The results of this study identify several implications for practice and policy within an education setting. Adolescents hold a narrow, superficial understanding of nutrition, heavily influenced by social media, convenience and their home environment. This narrow scope of nutrition may have stemmed from the “all or nothing” mentality and strict dieting portrayed by gym influencers online (Devrim et al., 2018). The prominent emphasis of protein consumption as a marker of health appears to be deeply rooted in social media (health.clue, 2020). Considering 93% of participants regularly use social media, and the growing number of and greater access to fitness influencers, this results in participants frequently encountering nutrition related content online. In addition to this, adolescents are the most easily influenced group when witnessing extreme diet trends online (Calado et al., 2010). These two factors could be part of the reason that the results from this survey was overwhelmingly in favour of a high protein diet with inconsistent care for any other macronutrient or micronutrient.

This research has shown that at current, the loudest and most influential information about nutrition is not coming from science and health teachers, but from an amalgamation of information coming from multiple social and educational settings. To make any meaningful

change to this current trend, a school-wide culture change about nutrition is required to shift this rhetoric. Education environments need to shift from a segmented curriculum to a whole-school, community-engaged approach that considers balanced nutrition and forming lifelong healthy habits. This aligns with Pilay et al. (2023) and Kempler et. al (2023) who emphasise that nutrition education needs to be taught as an interdisciplinary subject to move away from this segmented ideology around nutrition. This overarching message needs to be consistent throughout multiple aspects of student and adolescent lives to outweigh the misconceptions that are so loudly making their way through social media.

### ***Rethinking nutrition education in schools***

Schools play a remarkable role in shaping adolescent knowledge and understanding; however, the results of this research found an overwhelming disconnect between perceived and actual nutritional knowledge. A concerning 64% of boys felt their school's nutrition curriculum was not relevant to their everyday life. This misalignment indicates more than just disinterest but indicates the nutrition curriculum is not providing students with actionable knowledge.

The findings of this survey revealed that for the most part, adolescents actually do have a pretty sound understanding of basic nutrition, however, this knowledge does not always translate into healthy habits. This aligns with prior research from Devine et al. (2023) suggesting knowledge alone does not ultimately lead to a positive change in behaviour. This is likely due to the multiple intricate social factors that influence nutrition choices such as family, peer and coaching influence, as well as misguided information from social media. To amend this misunderstanding, schools must go beyond simple instruction and oversimplified surface-level understanding and weave nutrition education within real life contexts. For

instance, nutrition lessons should investigate how food can directly impact energy levels, sports performance, mood and even mental health.

### ***Making nutrition education practical and interdisciplinary***

There is an opportunity for great education contexts to make nutrition more applicable to everyday life. This includes integrating hands-on learning opportunities that can be incorporated at school and at home. Examples such as having science and food technology teachers work together to incorporate a cooking class that reflects the learning that has happened within the science class, or theoretical healthy and affordable meal planning workshops could bridge the gap between theory and practice.

Additionally, having tasks such as planning for and implementing cooking at home is important for students who feel their nutrition options are limited to what their caregivers make. This is of particular importance as 80% of boys recognised that their family dietary habits have a strong influence on their own food choices. This influence of family on adolescent food choices was recognised consistently throughout literature (Hardcastle et al., 2015; Berge et al., 2016). This family influence can be positive when caregivers demonstrate a balanced diet; however, some students identified instances where this influence can be negative. Two students recognised that they had no control over their nutrition choices as all food choices and preparation of meals were made by their caregivers. This indicates the need for schools to extend their influence beyond the classroom by involving parents and family members in nutrition education. This could be done by developing take-home resources or sending home weekly nutrition challenges to encourage caregivers to involve their sons in the preparation of food and model healthy behaviours.

### ***Leveraging sport and physical health education***

The survey also revealed that 75% of participants engaged in sports with 70% also

recognizing the link between performance and nutrition. This gives a prime opportunity for physical health education teachers as well as sports coaches or trainers to be esteemed nutrition role models. However, this survey has indicated that these coaches are currently reinforcing this oversimplified narrative about nutrition. Schools must ensure that the information being passed on from coach to student is evidence based, not overly simplified and free from misunderstanding or misinterpretation.

If coaches are trained in basic nutrition principles, then they can help to reinforce the unified messages being sent from school and adopt a school-wide approach to the teaching of nutrition. When science teachers, the physical education teachers, and coaches and managers are all working together to deliver a similar consistent message, students are more likely to receive and take away accurate information.

### ***Critical analysis unit and mitigating the impact of social media***

With 93% of participants recognising their prolific use of social media, educators could utilise this information and incorporate the use of social media into a critical analysis unit. The use of social media will not be going away, and adolescents will struggle to rid themselves of these societal pressures. Rather than ignoring this reality, schools should leverage this and develop a curriculum that can help provide adolescents with the tools necessary to tackle this online world. Mazzeo et al. (2024) recognises this same issue with social media, and the desperate need for critical analysis to be taught to adolescents, to help them mitigate their world predominantly online. For example, analysing popular influencer content and teaching tools such as identifying credible sources and using evidence-based data and resources to debunk misinformation could help students to develop critical thinking skills useful to tackle many social media pressures and fostering a more relevant understanding of nutrition.

By addressing the challenges faced with navigating social media, schools and educators can not only play a vital role in developing a more nuanced understanding of nutrition knowledge, enhance nutrition literacy and understand healthy eating under different contexts, but also build online media literacy and savvy. Not only would this be significant and appropriate to teach within the context of nutrition, but critical consumption of media is a life skill that is applicable to all contexts.

### ***Nutrition culture in schools***

Beyond nutrition curriculum content, this study also indicates the need for a school culture reform. Harboring a supportive school culture around healthy eating is integral in showcasing healthy eating habits. A remarkable factor would be starting with a review of the nutritional foods available to buy at the school canteen. Often, unhealthy and low nutritional value foods are quick and easy to manufacture, making them the cheapest option at the canteen. Not only does this availability contradict the information they have been taught in class, but it also provides students with an assumption of the school's ideology around healthy eating. Replacing these unhealthy food choices with affordable nutrient rich options could encourage healthier purchases. 43% of boys recognised this and advocated for healthier changes to the canteen by either reducing the cost of healthy food or increasing the cost of unhealthy food so the convenience and availability of unhealthy food is reduced.

In addition to policy changes to the school canteen, another method of developing a culture of healthy eating is through a positive peer influence campaign. Running a peer-led programme such as appointing a student health ambassador programme can harness the power of peer influence to promote healthy eating (Ragelienė & Grønhøj, 2020). Although only 16% of boys in this survey recognised their peers had influence on their nutrition choices, 54% of students felt the school had a non-existent opinion on healthy eating. This is a missed

opportunity as having dedicated student ambassadors who lead school-based initiatives around healthy eating would provide a platform for healthy eating and add towards a culture of health.

Overall, this study recognised the complex nature of the many social factors that influence adolescent nutrition such as social and environmental factors. Interestingly, 61% of boys recognised the importance of healthy eating and believe to be following a healthy diet. However, their general oversimplification of healthy eating and fixation on protein consumption as a “fix all” for their diet suggests that there is not only a need for better education around nutrition, but the need for a school wide culture reform.

Given these findings, there is an urgent need to move away from this narrow and segmented teaching of nutrition. The way forward requires a comprehensive and balanced approach to the teaching and learning of nutrition. Schools, sports environments and families must collaborate to weave together a more inclusive understanding and challenge the oversimplifications of nutrition for adolescent learners.

## Chapter Six - Conclusion

Nutrition is a key factor in long-term health. Knowing adolescents face several influences on their food choices, it is crucial to consider if we as educators are setting them up to navigate this issue on their own. This study aimed to investigate the key social factors that influenced adolescent dietary habits with a particular focus on school culture and education, family and peer influences, and social media. Stemming from a rising concern in reckless food trends, as well as nutrition health concerns such as obesity and disordered eating patterns I sought to unpack how adolescents view healthy eating, and whether their science-based education is relevant to help them navigate the many social influences that shape their nutrition choices.

This study had two main objectives. Firstly, an examination of *How societal pressures influence the nutrition choices of adolescent boys in a New Zealand single-sex school context?* After considering the significant impact that social media and family dynamics have on adolescents, this research explored these multiple social factors and how adolescents perceived those factors influenced their own nutrition choices. Considering this also gave rise to the second objective, *what are the implications of understanding the nutrition choices of adolescent boys on how we design and deliver nutrition education in single sex boys' schools?* This study considered how school culture and education influence an adolescent's ability to make educated and informed decisions when it comes to their diet and whether educators need to do anything different to challenge their narrative on nutrition.

By looking into and addressing these key objectives, this study contributes to the growing existing literature on the myriad factors influencing nutrition choices of adolescents (in particular, in context for young men). These findings are important for education policy makers, school sports organisations and family involvement with education taking a holistic approach to support and nourish healthy habits.

## **Implications for Educators at the Subject School**

The findings of this study have several implications for educators. One implication that this study has identified is the disconnect between the theoretical understanding of nutrition and the real-life applications. Students identified their science education as not being applicable to their everyday life. Previous studies from Pillay et al. (2023) and Kempler et al. (2023) have recognised this disconnect and suggest embedding nutrition throughout different subjects such as literacy nutrition tasks to develop student confidence and coherency of nutrition. A suggestion for a more collaborative approach to teaching nutrition for the subject school is to teach nutrition across several departments and adopting practical based lessons such as cooking workshops to help bridge the gap between nutrition knowledge and practical skills. This would require departments to work together and align their teaching orders and schemes. This could be possible within the junior school, where there is more flexibility with interpreting and assessing the New Zealand Curriculum.

An example of how this could be carried out was explored previously; science could teach the biological mechanisms of nutrition, physical education could link this absorption to fuelling for sport and performance, social studies could link together the social, cultural and historical importance of food and nutrition and finally, food technology could tie it all together in practical cooking for health lessons.

Building on this collaborative learning environment, schools could reach out to families at home to link in with the importance of family influences on food habits. As family is recognised as a remarkable influence on adolescent nutrition, it makes sense to involve the student with their family in practical and theoretical learnings such as creating a healthy meal at home. Family orientated programmes like this could bridge the gap between the theoretical understanding and practical implementation of nutrition learning. Fun, engaging and

educational home-based activities could also work to improve caregivers understanding of nutrition. This could mitigate the instances where the student feels they are unable to make healthy choices when their caregivers lack of nutrition understanding is the barrier.

This study also recognised the importance of social influences and how adolescent often mimic the habits of those near them to fit in. Prior literature from Ragelienė and Grønhøj (2020) recognise this and suggest a way to utilise this social influence as a means of “positive peer pressure”. The utilisation of peer lead initiatives such as health and wellbeing campaigns or student health ambassadors could encourage a positive school culture around nutrition and influence other adolescents to make healthier food choices. Within the subject school, a head of health and wellbeing could be elected as part of the student board (alongside the existing head of sport, head of culture etc.). This student’s role would be to lead a student committee centred around mental and physical health of the students.

This also leads into another recognised opportunity for improving the culture of the school by making healthy food choices easier and more likely through the school canteen. Remarkably, 43 students recognised the school canteen as adding to a negative or neutral school culture about healthy eating due to the difficulty in purchasing a healthy food option at the school canteen. These students recommend either making healthy food a greater proportion of the options or making unhealthy food more expensive and therefore less accessible. This aligns with the government Healthy School Lunches Programme as a recommendation for school canteens (Ministry of Education, Ka Ora, Ka Ako | Healthy School Lunches Programme, 2024). However, a suggestion to this is the need for this programme to be implemented as a requirement rather than a recommendation to see sufficient changes within schools. Again, this could tie into the student head of health and wellbeing role. Key tasks could include improving visible interest in health and nutrition around the school such as creating posters,

taking student voice feedback to the principal and head of the canteen to improve quality of the food sold at the canteen and speaking in assemblies about links between nutrition, sleep, hydration and mental health (particularly around student examinations).

### **Future research**

While this study has been insightful to the various social, educational and environmental factors that influence adolescent nutrition, the limitation stemming from the scope of a 90-point master's thesis, restricted the time allowance and resources to carry out more in-depth analysis of student interpretation of nutrition and behaviours around food choices. This limitation does not deter from the value of the work, but along with collected data highlight areas where further research could be of benefit to continue the understanding of the complex nature of nutrition choices.

### ***Quantitative approach***

In all the below suggested future research ideas, a great focus is on the collection of qualitative data. This study adopted a mixed-methods approach collecting both quantitative and qualitative data through a survey. However, the nature of a survey means each participant must individually interpret the questions, and self-report the answers. Although this allows for a significant spread of data from a greater number of boys. This also limits the depth of answers from boys. Future studies could utilise qualitative methods such as interviews or focus groups to gain a more comprehensive and nuanced understanding of the myriad influences that affect nutrition choices of adolescents.

### ***Gender exclusions***

Because this research was conducted at a single-sex, all-boys school, the sampling was limited in gender diversity. The overarching key finding of this study was the reductive mindset adolescent boys have about nutrition, and their hyper fixation on protein consumption for muscle development. Considering the focus on muscle development, likely trying to align with male fitness physique goals, it would be interesting to see how this rhetoric holds up at a single-sex girls' school or a co-educational setting. Prior research indicates that female adolescents may be more concerned about thinness, weight loss or other ideologies popular at a given time in the media (Calado et al., 2010). Including females or non-binary students in future research could shed some light on how gender dynamics influence nutrition choices.

### ***Acute snapshot in time***

This study captured an acute snapshot of adolescent nutrition in a single point of time. Year 11 boys are at a specific developmental stage and as these participants mature through different phases, dietary habits and attitudes can evolve. Could this fixation on protein that was found in this study shift in early adulthood as these boys are exposed to more information and different social circles? An existing study looking into the longitudinal behaviours around smoking, physical activity and food choices of adolescents found that earlier consolidation of these habits (recommended before the age of six) are more successful for long term changes (Kelder et al., 2011). Research into this field could provide insight into the long-term lasting effect of nutrition education on adolescent dietary habits and knowledge.

### ***Cultural and socioeconomic considerations***

It is to be acknowledged that there are many factors that influence nutrition choices other than the social and educational factors explored in this survey. Factors such as family income or cultural food practices have a huge impact on adolescent nutrition that this survey did not consider. Economic hardship, for example, can limit a family's ability to provide in season, fresh and nutritious foods for their family (Carter, 2010). Future studies could examine how economic or cultural variables coincide with education and social influences to shape the nutrition habits of adolescents. This research would provide valuable insight into how to reform the curriculum to be more inclusive of the diverse recipients of education in New Zealand classrooms.

### ***Exclusion of pocket money spending habits***

This study did not focus on asking how the participants they spent their own pocket money if they had it. Examining how boys choose to spend their money when given the opportunity would be an interesting comparison to the findings of this research. Would they use their pocket money to fulfil their narrow understanding of nutrition and purchase protein powders and protein bars? Or would their spending habits point to a disconnect between their actions and what they believe to be a healthy diet? This potential research could further guide the education of adolescents and families on how to harbour healthy eating habits. Similar studies have been conducted overseas looking into the link between increased discretionary funds in adolescents and obesity; for example one study in females (Rahmawati et al., 2021), and another in adolescents in India (Sulistyo & Sartika, 2025). However, a male-only focus would be a unique study.

### ***Exploring family food choices***

This study found a key influence on nutrition choices was family habits, additional future research could follow up with an in-depth analysis of these family influences. Interestingly, a minority group of this survey's respondents self-reported that their family influence is negative, because their family provide unhealthy food for them and they have no choice but to eat it. Future research could delve deeper into this perspective, considering these family influences in more detail, opting for qualitative data retrieval methods such as interviews or focus groups. Much existing research has already investigated family influence due to sharing the task of meal preparation (Videon & Manning, 2003). However, there is a gap in considering cultural food traditions. For example, it was found in this study that as the number of people living in a house increase, this tends to decrease the number of meals shared between an adolescent and an adult caregiver. Therefore, parent modelling with different cultural contexts could be further explored.

### ***Examining peer influence***

The literature review section identified peer influence to be a remarkable influence on nutrition choices. However, participants did not self-report a significant recognition of influence from peers. This may have been a theme that could have been developed better in a focus group or interview setting where the interviewer or other focus group members could have bounced off each other's ideas and recognised patterns with peers that did not initially come to mind. Existing research often investigates females or young adolescents and their apparent influence on peers (Kümpel et al., 2013). Has this study uncovered that a single-sex boys' focus produced different results to existing literature? This could be a potential avenue for future research, exploring the ideas of social norms, group activities (within school and community groups such as co-curriculars or church functions) and the implementation of

peer-led initiatives such as student health advocates across a range of single-sex and co-educational settings.

### ***Investigating the changing approach to advertising***

Interestingly, for the most part, participants of this study did not feel marketing affected their nutrition choices significantly. This could point to the changing methods for advertising to the younger generation. Advertisements have adapted as social media influencers are on the rise. “Collaborations” or advertisements as skits from popular influencers may be misunderstood or not recognised as marketing due to not resembling traditional advertising methods.

Existing research has already identified the link between social media use and increased junk food purchases (Chung et al., 2021); however, they did not investigate whether adolescents recognise endorsement as marketing. This could be a future idea for research, taking on a more quantitative approach to identify whether media consumers recognise a modern advertisement when they see one. Topics for this research could include subliminal marketing and recognising influencer endorsed content.

### **Final Reflection**

This research has provided valuable insight into the multifaceted nature of the factors influencing adolescent boys’ nutrition choices. This study highlighted the concerning oversimplification that adolescent boys have about nutrition and their reductive ideology about protein consumption being paramount over a healthy and balanced diet. Throughout the literature review and results from this survey it is apparent the role social factors, education and school culture, social media and family dynamics all have on the shaping of nutrition habits of adolescents.

I was interested in conducting this study after concerns about extreme diet trends and ideas that I had overheard from students' discussions. They often claimed that they had heard and seen these ideas from social media. It made me wonder what students knew about nutrition and where they decide to find their sources when they attempt to learn more about nutrition.

After conducting this research, it is apparent how influenced these adolescents are by social media. It has also become apparent how troubling a segmented curriculum can be when it allows for gaps in students' knowledge. This is particularly concerning when paired with the overconsumption of media, which naturally allows these gaps to be filled from unqualified sources through social media.

Ultimately, this research identifies an urgent need for educators to adopt a more collaborative approach to fully appreciate, explore and educate adolescents on these nuanced factors.

Collaboration is needed between teachers of formal education at school, physical education and sports coaches and whanau to develop a school and community wide culture of a healthy and balanced lifestyle. These findings align with Devine et al. (2023) who recognises knowledge alone is not sufficient to shape long term healthy habits among adolescents. Instead, the teaching and learning of these topics must be multifaceted to represent the interconnectedness of the social and environmental factors influencing nutrition choices.

For this to be successfully implemented, it will be recommended to the target schools that teacher in charge of the different disciplines (science, physical education, health, social studies and food technology) plan their year outline together. That way they can ensure they are teaching their health and nutrition related units at the same time. That way, as students move from their core subjects or chosen options, they are given the same underlying message of eating a balanced and healthy diet across multiple departments. That way, they can view

healthy eating through several different lenses. Lessons that could be taught across the departments could look like this:

- What healthy eating means for your cells and organs and how to fact check scientific (nutrition) information in the media in science
- How healthy eating can influence your physical performance in physical education
- How healthy eating can influence your mood and mental health as well as a critical analysis of the links between social media and mental health in health
- How history and culture shape the diverse foods we eat at home and social settings in social studies
- How to cook and prepare balanced and healthy meals at home in food technology

Another recommendation to attempt to cultivate a culture of balanced eating would include the suggestion of the school electing a student health ambassador as one of the school's head prefects. This role would include mental health and physical wellbeing, including managing the schools messaging and culture around balanced, nutritious eating and hydration and the role that nutrition plays in leading a healthy lifestyle.

Finally, a recommendation will be made to the school's board and principal to consider the contract with the current school canteen. Several students commented on the availability discrepancy between healthy, fresh and nutritious options, compared to deep fried and processed foods. Shifting the tilt in affordability and therefore availability of these options could make students make healthier choices when purchasing food from the canteen.

These three recommendations would solidify the overarching message that the school cares about the health and wellbeing of their students. The consistent messaging across departments, at the canteen and from the culture of the school could paint a picture of healthy

balanced eating. Although this is a diverse topic which is individual to each student, it can be easily portrayed throughout the school by promoting eating a variety of fresh and minimally processed foods, rather than eating for a particular body physique, while being hindered by convenience and taste.

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## Appendices

### Appendix 1: Parent email

Kia ora students and parents/caregivers,

I am a Science and Chemistry teacher at [subject school], and I am also completing a Master of Education through the University of Waikato. I am interested in how we teach nutrition to students and whether we are setting our boys up well, to make healthy life-long choices. I have had approval from the headmaster to complete this research within the school. As well as approval from the Ethical Committee from the University of Waikato. The findings of this survey will be used to amend our teaching of nutrition if appropriate.

I am completing a thesis about social influences and their effects on student nutrition consumption. I am collecting data on Year 11 students about their understanding of nutrition and the societal influences that affect their understanding. A summary of results of this survey will be shared with the school to improve the science curriculum around nutrition.

This data will be collected from all Year 11 students (over the age of 16 years old) who give their consent to participate. The data will be collected through an online survey, during Week 2 of this term. If your son does not wish to participate in this survey, he will not be required to.

Please look over the attached information page and discuss with your son his interest in participating. The attached document outlines the steps to mitigate ethical considerations around the collection and storage of data, which align with the University of Waikato Ethical Guidelines.

Thanks,

Amy Grinter

## Appendix 2: Parent information page

**Dear students, parents and caregivers,**

As part of my Master of Education studies I am conducting research into societal pressures that influence the food choices of adolescent boys. The aim of the research is to understand the various social and cultural factors that affect the nutrition choices made by teenage boys. Specifically, I am interested in how influences from social media, family, peers, and school environments impact what students choose to eat. By gaining insights into these influences, I hope to enhance our approach to teaching nutrition and promoting healthier eating habits among our students.

### **How the Research will be Conducted:**

- The study will involve high school-aged male students (over the age of 16) at [subject school].
- This survey is expected to take approximately 10 minutes to complete and will be administered by your son's science teacher.
- Participation is voluntary, this will be explained to the students both in the survey and by their teacher.
- I will use the survey to collect information about students' food choices, their perceptions of nutrition education at school, and the influence of social factors on their eating habits.
- The study has been approved by the Division of Education Ethics Committee (The University of Waikato) and has been designed to adhere to ethical guidelines to ensure the safety and privacy of all participants.
- All responses will be kept confidential and anonymized.
- The data collected will be kept securely until it is no longer needed (it is required that we keep this data for a minimum period of 5 years), after which it will be deleted.

Your son has the right to decline participation in this survey. This will be made clear to him in the survey. Completion of the survey means that the data cannot be withdrawn, as the responses are anonymous.

As the participants are over the age of 16, consent to participate resides with the student. However, given this research is being conducted at school I wanted to ensure all parents/caregivers are aware of this research.

Feel free to email me with any questions you may have: [agrinter@hbhs.school.nz](mailto:agrinter@hbhs.school.nz)

An additional contact for this research is my research supervisor:

[kirsten.petrie@waikato.ac.nz](mailto:kirsten.petrie@waikato.ac.nz)

Thank you for your support and cooperation.

Amy Grinter  
Teacher of Science and Chemistry  
[Subject school]

### **Appendix 3: Headmaster approval**

**Dear [Associate Principal] and [Principal],**

As part of my Master of Education studies I am conducting research into societal pressures that influence the food choices of adolescent boys. The aim of the research is to understand the various social and cultural factors that affect the nutrition choices made by teenage boys. Specifically, I am interested in how influences from social media, family, peers, and school environments impact what students choose to eat. By gaining insights into these influences, I hope to enhance our approach to teaching nutrition and promoting healthier eating habits among our students.

#### **How the Research will be Conducted:**

- The study will involve high school-aged male students (over the age of 16) at [subject school].
- This survey is expected to take approximately 10 minutes to complete and will be administered by the students' science teacher.
- Participation is voluntary, this will be explained to the students both in the survey and by their teacher.
- I will use the survey to collect information about students' food choices, their perceptions of nutrition education at school, and the influence of social factors on their eating habits.
- The study has been approved by the Division of Education Ethics Committee (The University of Waikato) and has been designed to adhere to ethical guidelines to ensure the safety and privacy of all participants.
- All responses will be kept confidential and anonymized.
- The data collected will be kept securely until it is no longer needed (it is required that we keep this data for a minimum period of 5 years), after which it will be deleted.

Participants have the right to decline participation in this survey. This will be made clear within the survey. Completion of the survey means that the data can not be withdrawn, as the responses are anonymous.

As the participants are over the age of 16, consent to participate resides with the student. However, given this research is being conducted at school I wanted to ensure all parents/caregivers are aware of this research.

Feel free to email me with any questions you may have: [agrinter@hbhs.school.nz](mailto:agrinter@hbhs.school.nz)

An additional contact for this research is my research supervisor:

[kirsten.petrie@waikato.ac.nz](mailto:kirsten.petrie@waikato.ac.nz)

I \_\_\_\_\_ (role: \_\_\_\_\_) consent  
for this research to be conducted at [subject school] within a time frame of 25/9/24 – 6/12/24.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_

## Appendix 4: Survey questions

We are keen to improve our teaching of nutrition, so you are better prepared to make healthy eating choices. To help us, we would appreciate it if you could complete the following questionnaire. It should take about 10 minutes.

It is not compulsory to complete the survey, it is your choice. By completing this survey, you are agreeing to your responses to be used in a Master of Educational Leadership research project. This means your responses to each question will be collated by Miss Grinter, before they are used to assess the science curriculum. Your responses will remain anonymous to your teachers or anyone else who views the results of this survey.

1. What is your age?
  - a. Under 16 years
  - b. 16 years
  - c. 17 years
  - d. 18 years
  
2. What is your ethnicity? (Please select all that apply)
  - a. Māori
  - b. European/Pākehā
  - c. Pacific Islander
  - d. Asian
  - e. Other (please specify)
  
3. Do you have any dietary restrictions or preferences? (Select all that apply)
  - a. Vegetarian
  - b. Vegan
  - c. Gluten-free
  - d. Dairy-free
  - e. No restrictions
  - f. Other (please specify)
  
4. How important is eating healthy to you?
  - a. Not important
  - b. Somewhat important
  - c. Important
  - d. Very important

5. How often do you consider nutritional information when choosing what to eat?
  - a. Never
  - b. Rarely
  - c. Sometimes
  - d. Often
  - e. Always
  
6. Do you think you eat a balanced diet?
  - a. Yes
  - b. No
  - c. Unsure
  
7. Are you a day student or do you live in the hostel?
  - a. Day student
  - b. Boarder

*Day students continue, Boarders skip to Q11*

8. How many people live in your house?
  - a. 2-3
  - b. 4-5
  - c. 6-7
  - d. 8 or more
  
9. How many nights of the week does an adult family member sit and eat dinner with you?
  - a. 0 (never)
  - b. 1-2
  - c. 3-4
  - d. 5-6
  - e. 7 (every night)
  
10. Who usually prepares your meals?
  - a. Myself
  - b. Parents or guardians
  - c. Siblings
  - d. Other (please specify)
  
11. Do your family's food choices influence what you eat?
  - a. Not at all
  - b. A little
  - c. Moderately
  - d. Very much

12. How often do you use social media platforms (e.g., Instagram, TikTok, Snapchat) daily?

- a. Rarely
- b. 1-2 hours
- c. 3-4 hours
- d. 5 or more hours

13. Do you follow any influencers or celebrities who discuss food or nutrition?

- a. Yes
- b. No

*If yes, continue, if no jump to Q16*

14. Who are the main influencers or celebrities that you follow, and what is their main message?

15. Have you ever changed your eating habits based on something you saw on social media?

- a. Yes
- b. No

*If yes, continue, if no jump to Q17*

16. How did you change your eating habits?

*Open ended*

17. Do food advertisements affect your food choices?

- a. Not at all
- b. A little
- c. Moderately
- d. Very much

18. Which type of media has the most influence on your food choices? (Select all that apply)

- a. Social media
- b. TV commercials
- c. Online videos (YouTube, etc.)
- d. Sports endorsements
- e. Celebrity endorsements
- f. Other (please specify)

19. How often do you discuss nutrition or healthy eating in your science classes?
- Never
  - Rarely
  - Sometimes
  - Often
  - Always
20. Do you find the information taught in science classes about nutrition relevant to your everyday life?
- Yes, very relevant
  - Yes, somewhat relevant
  - No, not very relevant
  - No, not relevant at all
21. Have you ever made a food choice because of something you learned in a science class?
- Yes
  - No

*If yes, continue, if no jump to Q23*

22. What food choice did you make as a result of what you learned in science?
23. Who do you think has the biggest influence on your nutrition choices?
24. How would you rate your school's overall environment regarding healthy eating?
- Very supportive of healthy eating
  - Somewhat supportive of healthy eating
  - Neutral
  - Not very supportive of healthy eating
  - Not supportive at all of healthy eating
25. When choosing what to eat, how important are your friends' opinions? (imagine you are buying food with your friends)
- Very important
  - Somewhat important
  - Neutral
  - Not very important
  - Not important at all

26. What factors do you consider most important when deciding what to eat? (Check all that apply)
- Taste
  - Cost
  - Healthiness
  - Convenience
  - Peer influence
  - Family influence
  - Other (please specify)
27. How confident do you feel in your knowledge of nutrition?
- Very confident
  - Somewhat confident
  - Neutral
  - Not very confident
  - Not confident at all
28. Are you currently involved in any sports or athletic activities?
- Yes
  - No

*If yes, continue, if no jump to Q34*

29. If yes, how often do your sports 'coaches' (including other team personnel - manager, trainer, etc) talk to you about nutrition and eating habits?
- Never
  - Rarely
  - Sometimes
  - Often
  - Always
30. How much influence do your sports coaches have on your food choices?
- No influence
  - A little influence
  - Some influence
  - A lot of influence
31. Have your coaches provided you with specific dietary guidelines or advice?
- Yes
  - No
  - Not sure

32. Do you follow any specific dietary advice given by your sports coaches?
- Always
  - Often
  - Sometimes
  - Rarely
  - Never
33. Do you believe that your performance in sports affects your food choices?
- Yes
  - No
  - Not sure
34. Do you purchase any products to supplement your diet (such as vitamins, protein powder etc.)?
35. If you were to eat a healthy meal (and cost was not a factor) what would you choose to eat?
36. What information or understanding did you use to explain your meal?
37. What changes do you think could be made at school to help students make healthier food choices? (this could be about the day school, or the hostel)
38. Is there anything else you would like to share about your food choices or eating habits?