



UiT The Arctic University of Norway

Faculty of health sciences / Department of community medicine

**Weight change desire and dietary habits among young females and males
in Tromsø and Balsfjord: The Fit Future 2 Study**

Master's thesis

Benjamin Colding-Jarkowski

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Benjamin Colding-Jarkowski

Abstract

Background: It is not unusual for adolescents and young adults to have a desire to change their weight – either a desire to gain weight or reduce weight. Young men, on a general basis, want to increase their weight, while young women often want to decrease their weight. It is of concern that a larger number of both men and women with healthy weight wish to change their weight. This raises the question as to whether the reason for the weight change desire might be caused by societal factors, rather than a wish for improved health.

Aim: The first aim of the thesis is to examine how a desire for weight change in young adults in Tromsø and Balsfjord affect their dietary habits. The second aim is to examine if weight change desires and dietary habits differentiate between men and women, and between different categories of body mass index (BMI).

Method: The thesis is a quantitative cross-sectional survey. A total of 777 men and women aged 18-22 years old, from the Fit Futures 2 study (FF2) were included. The students were recruited from upper secondary schools in Tromsø and Balsfjord municipality. Information about anthropometric measures (weight and height), self-reported health and weight change desire, self-reported physical activity, and dietary habits was included. The exposure variable is the desire to change weight, and the outcome variable is dietary habits.

Results: Dietary habits differed according to sex, with females indicating healthier dietary habits, compared to males. Dietary habits also differed according to weight change desires, but not in any concerning way. Participants who had a desire for weight change indicated to taking dietary measures that were beneficial for their weight change desire.

Conclusion: The present thesis did not produce any results that were of major concern, i.e., that a desire for weight change impacts the dietary habits in a negative way, among emerging adults in Northern Norway. Some of the results indicate that participants, both female and male, who have a desire to change their weight are taking dietary measures to achieve their goal. There are certain limitations in the present study, regarding how data on dietary habits and weight change desires were reported, as well as the size of the population, which in turn could explain why the thesis did not result in any major findings.

Abbreviations

kg	Kilograms
m	Metres
BMI	Body mass index
PA	Physical activity
EA	Emerging adulthood
NNR	Nordic Nutrition Recommendation
MJ	Megajoule
µg	Micrograms
SoMe	Social media
FF	Fit Futures
FF1	Fit Futures 1
FF2	Fit Futures 2
FF3	Fit Futures 3
WHO	World Health Organization
SES	Socio-economic status
CI	Confidence interval
REC	Regional Ethics Committee
NSD	Privacy Representative

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1 Introduction

1.1 Overweight and obesity among young adults

Over the last 40-50 years overall adult body mass index (BMI) across the globe has increased. It is estimated that in 2016 more than 1.9 billion adults (18+ years old) globally had overweight (BMI 25.00-29.99 kg/m²), and of these over 650 million had obesity (BMI \geq 30 kg/m²) (1). The prevalence of obesity also nearly tripled during the period of 1975 until 2014, and during the same period global age-standardised mean BMI increased 2-3 kg/m² (2). This increasing trend in overweight and obesity is observed in both adults and younger generations (3). With the increasing focus on overweight and obesity in the world, the media coverage towards weight reduction has become evident. This increasing focus on body weight and health might change people's perceptions of themselves, and even lead normal weight people feel a pressure to change their weight.

1.2 Weight change

1.2.1 Weight reduction

Although several measures to halt the increasing trend in obesity has been proposed, the most common approach is to aim at a negative energy balance, meaning that energy expenditure exceeds energy intake. This can be achieved by two measures: increasing energy expenditure (through i.e., exercise) or lower energy intake (through i.e., dietary restrictions), or a combination of the two (4). Weight reduction is one of the main ways to lower all-cause mortality for people with obesity. When assessing how much weight reduction interventions for adults with obesity affected all-cause mortality, Ma, et al. (5) looked at 34 different trials (21 699 participants) and found a decrease in premature mortality (risk ratio = 0.82). Weight loss can, however, be very difficult to achieve, and even when managing to lose weight it is not uncommon to regain some of the weight lost (6). The media is also continuously increasing the focus on weight loss and different diets, and for many individuals this might be experienced as a constant external pressure to lose weight even though it might not be "needed" (7). Mass media also influence youths towards weight loss desires and/or desires to achieve the "perfect body shape"(8). New weight-loss diets, such as a ketogenic diet, intermittent fasting, the 5:2 diet, etc. are frequently emerging, and most diets suggest being superior to other diets in

achieving weight loss. There is, however, no evidence of a superior, single diet that works better than the rest in weight reduction, and most suggested diets seek to achieve a negative energy balance (9).

1.2.2 Weight increase

The way people gain weight is the opposite as to how a person loses weight – the energy intake exceeds the energy expenditure. Considering the trend of increasing prevalence of overweight and obesity globally, one might assume that there is an ongoing trend of a positive energy balance in most populations. Lack of physical activity (PA) and an increased energy intake from the diet are the main driving factors for a positive energy balance, but there are a lot of additional underlying causes as to why a person gains weight, such as genetic, socioeconomic and cultural factors (10). For some people, however, weight gain is to be desired and a necessity for health. Underweight (BMI < 18.50 kg/m²), like obesity, is associated to higher all-cause mortality (11, 12). Thus, increasing the weight of those who have underweight is beneficial for their health. When it comes to gaining weight in general, the media rarely focus their attention on weight gain in form of an increased energy balanced caused by a higher energy intake. However, the emerging focus on exercise and strength training might contribute to a more common desire to gain weight in the form of muscles.

1.3 Emerging adulthood

In the year 2000, Jeffrey Arnett published an article in the *American Psychologist*, an academic journal of the American Psychological Association (13). The article proposed a new demographical period called “emerging adulthood” (EA). The duration of EA is from the late teens through the twenties (approx. 18-25 years of age), and Arnett explains how this period in life differs from adolescence and young adulthood in that they are adults who are becoming more independent and explore various life possibilities. There are also certain physiological developmental changes in this period of life, both biological as well as cognitive, and Arnett also highlights the changes that usually happens in different types of relationships (e.g., parent-child, romantic, and sexual). The term “emerging adulthood” can be used in developed countries where young people can have a longer period of independent role exploration and describes adults in this age range who do not live in their own home, do not have children, nor are they economically independent – they are emerging on adulthood. This could typically refer to young females and males who are about to finish high school/upper secondary school. The

article also highlights the differences between the genders, in that females tend to have a more active approach to coping with the choices and adjustments of EA, whereas males have a more passive approach (14).

1.3.1 Mental health and eating disorders in emerging adults

Since JJ Arnett's article was published, several studies have been published regarding the mental health of adults in this stage in life. Subjects like suicide, depression and addiction are some of the more frequently occurring topics within the terminology (15-17) of EA. Another topic that is commonly observed in the context of EA is eating disorders. Eating disorders is a common term for conditions such as anorexia nervosa, bulimia nervosa, and binge eating disorder (18). A systematic scoping review from 2020 by Potterton et al. (19) looked at 36 studies ($n=25,745$), utilizing the concept of EA when investigating eating disorders. The review concluded that the concept of EA should be considered when investigating eating disorders. One of these studies, by Gonidakis, et al. (20), looked specifically at the potential gender differences concerning the relationship between EA and eating disorders. They found that EA and eating disorders are associated, especially amongst female participants, with the concept of "identity exploration" being the factor of EA that showed the biggest connection to eating disorder symptomatology.

1.4 Norwegian dietary recommendations

The current evidence-based Norwegian dietary recommendations (published in 2014) (21) are largely based on the Nordic Nutrition Recommendation (NNR) from 2012 (22), as well as a report published by the national council for nutrition in 2011 (23). The dietary guidelines aims at promoting public health and prevent chronic diseases (24). A new version of NNR will be published in 2023 (25), and it is expected that the Norwegian dietary recommendations will be revised accordingly. The Norwegian Directorate of Health have published twelve different guidelines regarding diet and PA, based on the publication in 2014. The twelve guidelines are created for the public, and can be followed by adults, children, youths, elderly, as well as pregnant and breastfeeding females. In short, the dietary guidelines recommend a varied diet with a focus on an increased intake of fruits, vegetables, berries, and fish, and reducing the intake of red and processed meats, salt, and sugar. Certain "substitutions" are also recommended – choosing cereals with a higher fibre content, using oils and soft margarines

instead of butter, picking low-fat dairy products over full-fat ones, and drinking water rather than sugary drinks (26).

1.4.1 Differences between genders

The dietary recommendations (27) in Norway also point to differences between genders, across different age groups. Males often have a larger mass and therefore need more energy. For example: it is recommended that males aged 18-30 years have an energy intake of 11.7-13.2 megajoule (MJ)/day, based on levels of PA, while females aged 18-30 years are recommended to have an energy intake of 9.4-10.5 MJ/day, based on levels of PA. Recommended energy intake also differs between age groups. Additionally, because of the general larger mass of males, compared to females, the recommended intake of most micronutrients (vitamins and minerals) is higher for males. There are, however, two exceptions. Firstly, females in Norway of childbearing potential are recommended to have a higher intake of folate (folic acid) than males, 300 micrograms (μg) vs. 400 μg , and it is also recommended that females who are trying to get pregnant take an additional 400 μg of folate supplementation. Secondly, females in Norway who have their period are recommended to have a higher intake of iron, compared to males – 9-11 μg vs. 15 μg . It is common for these females to also be recommended iron supplementation, where dosage varies based on how much iron is lost through menstruation.

1.4.2 Diet for youths

In Norway there are not specific dietary recommendations for youths/adolescents/young adults, as the general dietary guidelines are meant for all age groups. However, there are some specific “focus areas” presented by the Norwegian Directorate of Health for youths who are in growth and are emerging on adulthood (28). In addition to the general dietary guidelines, youths in Norway are recommended to have extra focus on milk and calcium, caffeinated beverages, and eating disorders. During puberty, usually lasting from around age 11-12 (depending on gender) to about age 17-18 (29), the skeletal mass in a human approximately doubles, with both growth in bone density and bone length (30). A key part of good bone health is having an adequate intake of calcium (and phosphorus) (31), which is why it is recommended for Norwegian youths to have an extra focus on the intake of products that are rich in calcium – mainly dairy products, but also vegetarian alternatives (e.g. plant-based drinks with added calcium). Dietary surveys show that especially younger females are in danger of having an inadequate intake of calcium, probably because they do not consume a lot of dairy products (28). The national dietary

recommendations (27) recommend that both females and males in the age range 18-20 years old should increase the intake of calcium and phosphorus – from 800 milligram (mg) and 600 mg to 900 mg and 700 mg, respectively. Regarding caffeinated beverages, the Norwegian Directorate of Health encourage youths to limit the intake of such products – mainly energy drinks. They also list the negative consequences related to consuming too much caffeine, such as sleep disorders, temporary behavioural changes, and consequences for the heart and blood vessels. A study by Degirmenci, et al., (32) in 2018 sampled 31,091 Norwegian school students aged 12-19 years, to explore the consumption of energy drinks in Norway. The study found that 52.3% of the respondents reported to consuming energy drinks, which supports the argument for limiting the intake of energy drinks among youths in Norway. Finally, eating disorders is something that the Norwegian Directorate of Health touches shortly on when it comes to dietary recommendations for youths in Norway. They refer to the bodily changes that happens during the teen years, and that many become focused on their weight, which sometimes can lead to the development of eating disorders. They also refer to other sites where the reader can read more about eating disorders, and how to get help, through e.g., chat services, phone numbers, and public health services regarding eating disorders.

1.5 Body image and weight change desire

It is common for adolescents and young adults to have a desire to change their weight, either to gain or to reduce weight (33). Such weight change desires also occur in normal weight individuals, which is worrisome. Especially if young individuals with normal weight take measures to reduce their weight. It is reasonable to assume that the desire for weight reduction might be rooted in the increasing overall BMI across the globe and thus, an increasing focus in weight reduction measures. However, some of those reporting to have a weight change desire want to increase their weight, in particular younger males (34).

Examining weight change desires among young adults, rather than older people, is of especial interest as habits established earlier in life tend to follow individuals into adulthood. In addition – potential malnutrition among adolescents might lead to growth stunting, which in turn is associated with impaired cognitive development, among other things (35). External influences such as social media (SoMe), other medias, peers and sports might also be a bigger issue among younger people and could be a contributing factor as to why adolescents and young adults wish to change their weight. If young people with normal weight wish to change their weight, and

this further affects their dietary habits in a negative way, then the desire for weight change is of concern. A review by Rousenfell, et al. (36) in 2020 addressed 30 studies ($n=11,125$), with an aim to look at the potential impact of habitual SoMe engagement, or exposure to image-related content regarding food choices and body image, in adults aged 18-30 years. The review concluded that exposure to image-related content or engagement in SoMe may negatively impact both body image and food choices in young adults. This may be an indication of how SoMe possibly could affect the dietary habits of the participants in the present thesis, in relation to weight change desire.

A desire for weight change is either a desire for weight reduction or weight gain. A desire for weight reduction might be related to overweight and obesity but could also be a result of influence from external factors. An example of this could be the desire to reach the idea of something that is considered “perfect,” through weight reduction. The desire for weight gain could also be related to a person being underweight, but on the other hand – in those with a healthy weight it could be related to wanting to reach a certain “ideal.”

Desires for weight change also vary according to BMI and sex. A study from 2013 (37) including Spanish adolescents found an increasing tendency for a wish for weight reduction in those with higher BMI, but also in females who had a healthy BMI (BMI 18,5-24,9 kg/m²). Several males, both underweight (BMI < 18,5 kg/m²) and with normal weight (BMI = 18,5-24,9 kg/m²), expressed the wish to increase their weight. Studies including young female adults in the university (38), as well as young male adults in college (39), show differences in weight change desires when it comes to sex and BMI. The studies report an inverse linear trend between BMI and body image – meaning that the more BMI increases, the more the self-perceived body image decreases. This is most likely linked to increased fat mass, and not fat free mass (40).

The connection between weight change desires and dietary habits has been studied in other countries (41, 42), but not in Norway. Nor has differences between females and males, when it comes to desires for weight change, and whether this affects their dietary habits.

If the desire for weight change impacts a person’s dietary habits, i.e., that people with underweight or normal weight who want to lose weight have restrictive diets, it will be of concern. On the other hand – if participants with overweight or obesity, who want to lose

weight, do not have a diet corresponding with the national dietary recommendations, then this is also of concern. Because this might result in a further increase in obesity and later an increase in lifestyle related diseases. As such, this project will be important from several perspectives. Data from the cross-sectional, school-based survey Fit Futures (FF) will be used to study these concerns.

This thesis will reveal whether weight change desires (potentially unjustified) are associated with changes in dietary habits among young adults. The findings might also shed light on potential challenges related to body image pressure among young adults and adolescents.

2 Aim

In this thesis the aim was to investigate if and how different desires for weight change are associated with dietary habits of young adults (18-22 years old). Furthermore, the aim was to investigate whether the association between weight change desires and dietary habits differ according to sex and categories of BMI.

2.1 Research questions

The research questions for the thesis are as follows:

1. Examine whether the different desires for weight change are associated with different dietary habits.
2. Compare dietary habits between males and females and examine how these habits are affected by desires for weight change.
3. Examine whether there are differences in association between desires for weight change and dietary habits, between different categories of BMI.

3 Material and methods

3.1 Fit Futures 2

Fit Futures (FF) is a population-based health survey study which included students in the upper secondary school at eight upper secondary schools in Tromsø and Balsfjord municipality, in northern Norway (43). The study is conducted by the University of Tromsø and aims to collect data from individuals at different stages in life – from mid-teens till mid-twenties. The first “wave” of the survey was conducted in 2010-2011, when the participants were approximately 15-16 years old, with students in the 1st year of upper secondary school. The first wave had a response rate of 92%. The second wave of the survey (FF2) was an extension of the first (FF1) and was conducted in the school year of 2012-2013, including students in the 3rd year, when the students were on average 17-18 years old. A total of 868 students participated in FF2 (a response rate of 77%). Since FF2 was conducted at the same schools as FF1, many of the participants in FF2 were the same as those who participated in FF1, with addition of those who had started studying at the given schools in the space between FF1 and FF2. In 2020 a third wave, FF3, initiated, with an aim to bring back the same participants who participated in FF1 and/or FF2, about eight years after FF2 ended. FF3 had a response rate of about 60%.

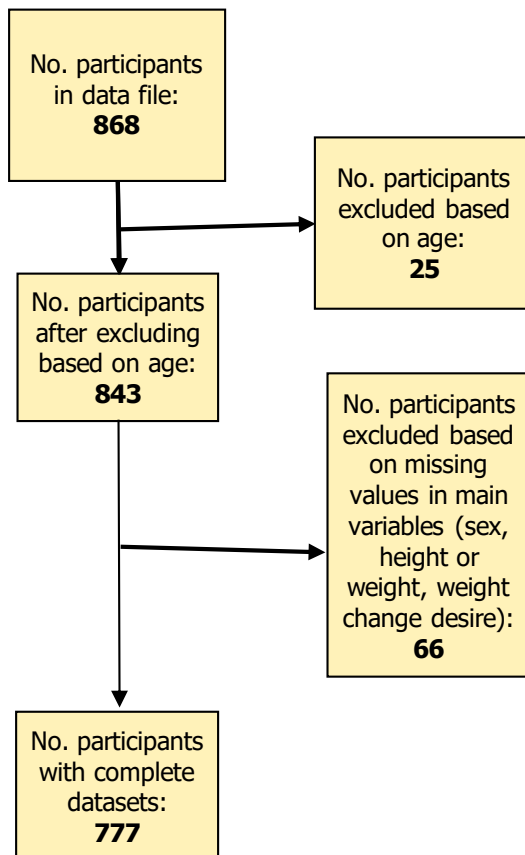
For all the waves of the FF study, participation was voluntary, but those who participated were given time off from school. The survey itself, excluding the questionnaire, took half a school day. In addition, interviews, blood samples and clinical examinations were performed. Weight and height were measured by trained research nurses at the Clinical Research Unit using standardized procedures, with light clothes and without shoes, using a Jenix DS 102 Stadiometer (Dong Sahn Seoul, Korea). Data included in this thesis was collected through the questionnaire and clinical examinations.

3.2 Variables and exclusion criteria

The main variables included were sex, height, weight, and weight change desire. Participants with missing information on these variables were excluded ($n=66$). Sex was reported as male or female, height was measured in centimetres (cm) and weight in kilograms (kg). Weight change desire was reported as a desire to increase weight, decrease weight, or no desire to change weight. Additionally – the target age group was participants aged 18 to 22 years, and participants younger or older than this were excluded ($n=25$). After exclusion, a total of 777 participants with complete information was included in the analyses. A complete overview of the exclusion is presented in Figure 1.

A variable for BMI (kg/m^2) was created based on weight in kilograms divided by height in meters squared and was included in the analyses. The participants were also grouped into BMI-categories based on the World Health Organizations (WHO) classification of BMI for adults (underweight $<18.50 \text{ kg}/\text{m}^2$, normal weight $18.50\text{-}24.99 \text{ kg}/\text{m}^2$, overweight $25.00\text{-}29.99 \text{ kg}/\text{m}^2$ and obese $\geq 30.00 \text{ kg}/\text{m}^2$) (44).

Figure 1 - Flow chart for exclusion criteria



A total of 25 dietary variables were included, but four of these were excluded because they were supplements (cod liver oil and/or vitamins or minerals) or food products that were not regarded as relevant for this project (canned food and sugar free chewing gum). A total of 21 dietary variables were therefore included for analyses. However, participants were not excluded based on missing values in these variables. Because several participants were missing information on only single dietary variables but had information on the remaining variables. The number of missing cases in the dietary variables varied from two (fruit, extra semi-skimmed milk, and junk food) to 29 (dinner) participants (0.003% to 0.04% of the total cases). All the 25 dietary variables, and their respective questions, can be found in Appendix 1.

3.3 Statistical analyses

All analyses were performed using the statistical software SPSS version 28.0 and conducted for females and males separately. With a confidence interval (CI) of 95%, p-values equal to or

below 0.05 were considered significant. Results that presented significant p-values can be found in the text, as well as Tables 1-15, while results that did not present significant p-values can be found in Supplementary Tables 1-7.

Descriptive statistics of the main variables were used to present demographics for the participants. To check for differences in the main variables, Chi Square Tests and Independent Samples T Tests were executed and p-values were given (Table 1).

To check for differences in the different dietary variables between male and female participants, binary logistic regressions was carried out. Females were used as reference.

To check for differences in dietary variables between the different desires for weight change we used Kruskal Wallis' Tests.

Descriptive statistics of weight change wishes between different BMI-categories is presented in Table 2. The main concerns regarding weight change desires were considered, in this thesis, to be when participants with normal weight wish to change their weight. The most common weight change desire among females is wanting to lose weight, and wanting to gain weight is the most rare, while among males it is normally evenly split among wanting to gain and lose weight, while the rest have no weight change desire (34, 45). It is nonetheless rarer for males to want to lose weight than it is for females. Thus, binary logistic regressions were performed to compare the dietary habits of females with under- and normal weight who had a desire to lose weight ($n=135$), with under- and normal weight female participants with no weight change desire ($n=191$) (reference category). Only one female participant had underweight in combination with a desire to lose weight and was included in the analyses because of the initially low n in this group (190).

Binary logistic regressions were also performed to compare the dietary habits of males with over- and normal weight who had a desire to gain weight ($n=67$), with over- and normal weight male participants with no weight change desire ($n=157$) (reference category). Only six male participants had overweight (zero male participants had obesity) in combination with a desire to gain weight and was included in the analyses because of the initially low n in this group ($n=61$).

Two other groups were also considered of particular interest – the females who wished to gain weight and the males who wished to lose weight. For the purpose of this thesis, female and male participants were named “expected” and “unexpected”, according to their weight change desires, based on body ideals and what is most commonly reported. For females, “expected” was regarded as wanting to lose weight, while “unexpected” was regarded as wanting to gain weight. For males, it was the opposite – “expected” meant wanting to gain weight, and “unexpected” meant wanting to lose weight. Binary logistic regression was carried out to check for characteristics of the participants in these two groups, with the rest of the respective genders’ population as reference. This was done to attempt to find out if there were any reasons as to why these females wanted to gain weight and the males wanted to lose weight.

Self-reported health and self-reported PA were included as confounding variables in the binary logistic regression. One reason for considering adjustment for PA is that people who are more physically active tend to have a "healthier" diet - this means, among other things, an intake of more fruit and vegetables, and at the same time less saturated fat (46). One can also assume that people with a greater amount of PA have a higher caloric intake as a result of higher energy expenditure. A reason for including self-reported health as a confounding variable is that younger people who to a greater extent "follow" a Mediterranean diet, which is a diet similar to what the Norwegian dietary guidelines recommend, also have better self-reported health (47).

3.4 Ethics and data safety

Data in this thesis is unidentifiable and the master's student and supervisors do not have the opportunity to re-identify individuals based on the included data. The FF survey was approved by the Regional Ethics Committee (REC) and the Privacy Representative (NSD). In FF2, a broad consent was given by the participants for further use of data (REC North 2011/1702). The present master’s thesis project was approved by REC South-East in 2021, application no. 321359 (Appendix 2). Furthermore, the use of the data for this thesis was approved by the FF administration. All the data has been kept on a computer with two factor authentication and will be deleted after the completion of this project.

4 Results

4.1 Main variables

A total of 777 participants reported data on all the main variables (Table 1). A total of 437 of these participants were females and 340 were males. Mean BMI was 23.1 kg/m² and 23.4 kg/m² for females and males, respectively, and there was no significant difference in mean BMI between the two groups. There was, however, a significant difference in distribution between BMI-categories, between females and males ($p < 0.001$), with males having a larger percentage of their population having underweight and overweight, while females had a larger percentage of their population having normal weight. Both females and males had about the same percentage of their population having obesity. Approximately 49% of the females and 50% of the males had no desire for weight change. About 47% of the females had a desire to lose weight and 4% had a desire to gain weight. Among the males about 24% had a desire to lose weight and 26% had a desire to gain weight. There was a significant difference in weight change wish between females and males ($p < 0.001$), with females having an even split among wanting to lose weight and no weight change wish, while males had an even split among wanting to lose weight and wanting to gain weight.

Table 1 - Descriptive statistics of participants

Variable	Female (n=437)	Male (n=340)	p^a
Age (years)	18.4 ± 0.8	18.4 ± 0.7	0.446
Height (cm)	165.8 ± 6.6	179.5 ± 6.5	<0.001
Weight (kg)	63.5 ± 11.8	75.3 ± 14.4	<0.001
BMI (kg/m²)	23.1 ± 4.2	23.4 ± 4.1	0.425
BMI groups (WHO-classification)^b	-	-	<0.001
Underweight (<18.50 kg/m ²)	19 (4.3)	28 (8.2)	
Normal weight (18.50-24.99 kg/m ²)	326 (74.6)	218 (64.1)	
Overweight (25.00-29.99 kg/m ²)	60 (13.7)	68 (20.0)	
Obesity (30.00+ kg/m ²)	32 (7.3)	26 (7.6)	
Weight change wish	-	-	<0.001
Yes, I try to lose weight	206 (47.1)	83 (24.4)	
No	212 (48.5)	169 (49.7)	
Yes, I try to put on weight	19 (4.3)	88 (25.9)	

^aChi-Square Test for categorical variables and Independent-Samples T Test for continuous variables.

Table 2 - Weight change wish between BMI-categories

Females (n=437)	Weight change wish			Total
BMI groups (WHO-classification) ^b	Yes, I try to lose weight	No	Yes, I try to put on weight	
Underweight (<18.50 kg/m ²)	1 (5.3)	9 (47.4)	9 (47.4)	19 (100)
Normal weight (18.50-24.99 kg/m ²)	134 (41.1)	182 (55.8)	10 (3.1)	326 (100)
Overweight (25.00-29.99 kg/m ²)	44 (73.3)	16 (26.7)	0 (0.0)	60 (100)
Obesity (30.00+ kg/m ²)	27 (84.4)	5 (15.6)	0 (0.0)	32 (100)
Males (n=340)	Weight change wish			Total
BMI groups (WHO-classification) ^b	Yes, I try to lose weight	No	Yes, I try to put on weight	
Underweight (<18.50 kg/m ²)	0 (0.0)	7 (25.0)	21 (75.0)	28 (100)
Normal weight (18.50-24.99 kg/m ²)	26 (11.9)	131 (60.1)	61 (28.0)	218 (100)
Overweight (25.00-29.99 kg/m ²)	36 (52.9)	26 (38.2)	6 (8.8)	68 (100)
Obesity (30.00+ kg/m ²)	21 (80.8)	5 (19.2)	0 (0.0)	26 (100)

About 39% (135 out of 347 participants) of females with under- and normal weight reported that they wanted to lose weight (Table 2). Among the males with under- and normal weight about 11% (26 out of 246 participants) reported that they wanted to lose weight. Approximately 2% (10 out of 418 participants) of the females with overweight, normal weight or obesity reported that they wanted to gain weight. Among the males with overweight, normal weight or obesity about 21% (67 out of 312 participants) reported that they wanted to gain weight.

4.2 Dietary variables

4.2.1 Females vs. males

Females tend to bring lunch to school more often ($p < 0.001$) compared to the males, but the males reported to eating dinner more often ($p < 0.001$) compared to the females. Females also reported to having a higher intake of fruit ($p < 0.001$), vegetables ($p = 0.014$), water ($p = 0.002$) and sweets ($p < 0.001$), compared to the males. The males reported a higher intake of fruit juice ($p = 0.009$), full-fat dairy drinks ($p < 0.001$), fat-reduced dairy drinks ($p < 0.001$), cheese ($p = 0.003$), diluted syrups sweetened with sugar ($p < 0.001$), soft drinks sweetened with sugar ($p < 0.001$) and junk food ($p < 0.001$), compared to the females. For the remaining eight dietary variables no significant differences were observed.

4.2.2 Weight change desire and diet

When comparing different groups of weight change desires among the female participants a significant difference was only observed in one dietary variable. The results indicated that female participants who wanted to gain weight had a lower intake of skimmed milk (sweet or sour) compared to those who wanted to either lose weight or had no weight change desire ($p=0.045$) (Table 3).

Table 3 - Weight change wish in relation to intake of skimmed milk (Females)

Variable	Weight change wish			p^a
Skimmed milk (sweet or sour) (n=432)	Lose weight (n=203)	No wish (n=210)	Put on weight (n=19)	0.045
Rarely/never	148 (72.9)	172 (81.9)	15 (78.9)	
1-6 glasses/units per week	23 (11.3)	22 (10.5)	3 (15.8)	
1 glass/unit per day	15 (7.4)	9 (4.3)	1 (5.3)	
2-3 glasses/units per day	17 (8.4)	6 (2.9)	0 (0.0)	
4+ glasses/units per day	0 (0.0)	1 (0.5)	0 (0.0)	

^a p -value from Kruskal Wallis' test

When comparing between the different groups of weight change desires among male participants, a significant difference was observed in intake of one dietary variable – artificially sweetened soft drinks. The results indicated that male participants who wanted to lose weight had a higher intake of artificially sweetened soft drinks compared to those who wanted to either gain weight or had no weight change desire ($p=0.010$) (Table 4).

Table 4 - Weight change desires in relation to intake of artificially sweetened soft drinks (Males)

Variable	Weight change wish			p^a
Soft drinks, artificial sweetened (n=338)	Lose weight (n=83)	No wish (n=168)	Put on weight (n=87)	0.010
Rarely/never	40 (48.2)	107 (63.7)	55 (63.2)	
1-6 glasses per week	23 (27.7)	49 (29.2)	26 (29.9)	
1 glass per day	11 (13.3)	8 (4.8)	3 (3.4)	
2-3 glasses per day	7 (8.4)	4 (2.4)	2 (2.3)	
4+ glasses per day	2 (2.4)	0 (0.0)	1 (1.1)	

^a p -value from Kruskal Wallis' test

4.2.2.1 Diet between BMI-categories and weight change desires

When comparing the dietary habits of females with under- or normal weight, who either reported a desire to lose weight or had no desire to change their weight, those who wanted to lose weight reported a significant lower frequency of dinner ($p=0.007$) (Table 5). The same group also reported a higher intake of skimmed milk (sweet or sour) ($p=0.036$) (Table 6).

Table 5 – Dietary habits of under- and normal weight females who want to lose weight, or have no weight change desire: Meal timing

Variable	Under- and normal weight females		<i>p</i> ^a	OR	CI (95%)
Breakfast (n=326)	Wants to lose weight (n=135)	No weight change desire (n=191)	0.073		
Rarely/never	16 (11.9)	19 (9.9)			
1-3 times per week	23 (17.0)	28 (14.7)			
4-6 times per week	39 (28.9)	35 (18.3)			
Every day	57 (42.2)	109 (57.1)			
Dinner (n=310)	Wants to lose weight (n=126)	No weight change desire (n=184)	0.007	0.657	0.483 - 0.894
Rarely/never	2 (1.6)	3 (1.6)			
1-3 times per week	20 (15.9)	13 (7.1)			
4-6 times per week	45 (35.7)	55 (29.9)			
Every day	59 (46.8)	113 (61.4)			
Brought lunch (n=325)	Wants to lose weight (n=135)	No weight change desire (n=190)	0.083		
Rarely/never	31 (23.0)	30 (15.8)			
1-3 times per week	26 (19.3)	29 (15.3)			
4-6 times per week	31 (23.0)	58 (30.5)			
Every day	47 (34.8)	73 (38.4)			

^a*p*-value from binary logistic regression

Table 6 - Dietary habits of under- and normal weight females who want to lose weight, or have no weight change desire: Dairy

Variable	Under- and normal weight females		<i>p</i> ^a	OR	CI (95%)
Full fat drinks (n=324)	Wants to lose weight (n=135)	No weight change desire (n=189)	0.877		
Rarely/never	86 (63.7)	106 (56.1)			
1-6 glasses/units per week	34 (25.2)	70 (37.0)			
1 glass/unit per day	11 (8.1)	11 (5.8)			
2-3 glasses/units per day	3 (2.2)	1 (0.5)			
4+ glasses/units per day	1 (0.7)	1 (0.5)			
Fat-reduced drinks (n=323)	Wants to lose weight (n=134)	No weight change desire (n=189)	0.949		
Rarely/never	54 (40.3)	73 (38.6)			
1-6 glasses/units per week	46 (34.3)	74 (39.2)			
1 glass/unit per day	24 (17.9)	27 (14.3)			
2-3 glasses/units per day	9 (6.7)	13 (6.9)			
4+ glasses/units per day	1 (0.7)	2 (1.1)			
Skimmed milk (sweet or sour) (n=322)	Wants to lose weight (n=132)	No weight change desire (n=190)	0.036	1.327	1.019 - 1.730
Rarely/never	97 (73.5)	155 (81.6)			
1-6 glasses/units per week	14 (10.6)	20 (10.5)			
1 glass/unit per day	10 (7.6)	8 (4.2)			
2-3 glasses/units per day	11 (8.3)	6 (3.2)			
4+ glasses/units per day	0 (0.0)	1 (0.5)			
Extra semi-skimmed milk (n=325)	Wants to lose weight (n=135)	No weight change desire (n=190)	0.574		
Rarely/never	63 (46.7)	85 (44.7)			
1-6 glasses/units per week	36 (26.7)	45 (23.7)			
1 glass/unit per day	18 (13.3)	32 (16.8)			
2-3 glasses/units per day	15 (11.1)	26 (13.7)			
4+ glasses/units per day	3 (2.2)	2 (1.1)			
Cheese (all kinds) (n=326)	Wants to lose weight (n=135)	No weight change desire (n=191)	0.206		
Rarely/never	4 (3.0)	8 (4.2)			
1-3 times per month	20 (14.8)	34 (17.8)			
1-3 times per week	54 (40.0)	76 (39.8)			
4-6 times per week	38 (28.1)	55 (28.8)			
Every day	19 (14.1)	18 (9.4)			

^a*p*-value from binary logistic regression

When comparing the dietary habits of males with over- or normal weight, who either reported a desire to gain weight or had no desire to change their weight, those who wanted to gain weight reported a significant higher intake of full-fat dairy drinks ($p < 0.001$) and extra semi-skimmed milk ($p = 0.015$) (Table 7).

Table 7 - Dietary habits of over- and normal weight males who want to gain weight, or have no weight change desire: Dairy

Variable	Over- and normal weight males		p^a	OR	CI (95%)
Full fat drinks (n=239)	Wants to gain weight (n=66)	No weight change desire (n=173)	<0.001	1.624	1.225 - 2.153
Rarely/never	26 (39.4)	91 (52.6)			
1-6 glasses/units per week	20 (30.3)	63 (36.4)			
1 glass/unit per day	11 (16.7)	11 (6.4)			
2-3 glasses/units per day	3 (4.5)	7 (4.0)			
4+ glasses/units per day	6 (9.1)	1 (0.6)			
Fat-reduced drinks (n=239)	Wants to gain weight (n=66)	No weight change desire (n=173)	0.181		
Rarely/never	15 (22.7)	58 (33.5)			
1-6 glasses/units per week	21 (31.8)	45 (26.0)			
1 glass/unit per day	11 (16.7)	31 (17.9)			
2-3 glasses/units per day	13 (19.7)	28 (16.2)			
4+ glasses/units per day	6 (9.1)	11 (6.4)			
Skimmed milk (sweet or sour) (n=236)	Wants to gain weight (n=65)	No weight change desire (n=171)	0.747		
Rarely/never	51 (78.5)	130 (76.0)			
1-6 glasses/units per week	7 (10.8)	24 (14.0)			
1 glass/unit per day	2 (3.1)	5 (2.9)			
2-3 glasses/units per day	5 (7.7)	6 (3.5)			
4+ glasses/units per day	0 (0.0)	6 (3.5)			
Extra semi-skimmed milk (n=239)	Wants to gain weight (n=67)	No weight change desire (n=172)	0.015	1.318	1.055 - 1.646
Rarely/never	29 (43.3)	96 (55.8)			
1-6 glasses/units per week	12 (17.9)	30 (17.4)			
1 glass/unit per day	12 (17.9)	26 (15.1)			
2-3 glasses/units per day	6 (9.0)	16 (9.3)			
4+ glasses/units per day	8 (11.9)	4 (2.3)			
Cheese (all kinds) (n=239)	Wants to gain weight (n=66)	No weight change desire (n=173)	0.796		
Rarely/never	1 (1.5)	5 (2.9)			
1-3 times per month	9 (13.6)	20 (11.6)			
1-3 times per week	23 (34.8)	68 (39.3)			
4-6 times per week	26 (39.4)	60 (34.7)			
Every day	7 (10.6)	20 (11.6)			

^a p -value from binary logistic regression

4.2.2.2 Females and males with unexpected weight change desires

A total of 19 females reported that they wanted to gain weight, and 83 males reported that they wanted to lose weight. Characteristics of these two groups can be found in Table 8, with a focus on self-perceived health and PA. These two variables were also included as confounding variables in the binary logistic regressions.

Table 8 – Females and males with unexpected weight change desires: Descriptive statistics of participants

Variable	Females who want to gain weight (n=19)	Males who want to lose weight (n=83)
Age (years)	18.8 ± 1.1	18.4 ± 0.8
Height (cm)	167.0 ± 6.8	179.0 ± 6.7
Weight (kg)	52.3 ± 4.9	87.3 ± 16.0
BMI (kg/m²)	18.8 ± 1.7	27.2 ± 4.3
BMI groups (WHO-classification^b)	-	-
Underweight (<18.50 kg/m ²)	9 (47.4)	0 (0.0)
Normal weight (18.50-24.99 kg/m ²)	10 (52.6)	26 (31.3)
Overweight (25.00-29.99 kg/m ²)	0 (0.0)	36 (43.4)
Obesity (30.00+ kg/m ²)	0 (0.0)	21 (25.3)
Self-percieved health (Health)	-	-
Very bad	0 (0.0)	0 (0.0)
Bad	1 (5.3)	6 (7.3)
Neither good nor bad	8 (42.1)	23 (28.0)
Good	9 (47.4)	41 (50.0)
Excellent	1 (5.3)	12 (14.6)
Self-percieved physical activity (PA)	-	-
Reading, watching TV, or other sedentary activity	4 (21.1)	21 (25.3)
Walking, cycling, or other forms of exercise at least 4 hours a week	7 (36.8)	20 (24.1)
Participation in recreational sports, heavy outdoor activities, snow clearing etc	8 (42.1)	31 (37.3)
Participation in hard training or sports competitions, regularly several times a week	0 (0.0)	11 (13.3)

With the females who wanted to either lose weight or had no weight change desire as a reference (n=418), the females who wanted to gain weight (n=19) reported a significantly higher intake of sugary sweetened soft drinks (Table 9). When adjusting for self-perceived health and PA, both separately and together, the difference in intake were reduced. There was a significant difference reported in the intake of chocolate & sweets, when adjusting for both self-perceived health and PA, with the females who wanted to gain weight reporting a higher intake (Table 10). There was also borderline significance when adjusting for the two confounding variables separately.

Table 9 - Females and males with unexpected weight change desires: Soft drinks, sugar sweetened (Females)

Soft drinks, sugar sweetened (SSW)			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Soft drinks, SSW	0,010	1,850	1,161 - 2,948
Soft drinks, SSW + Health	0,028	1,698	1,058 - 2,727
Soft drinks, SSW + PA	0,024	1,769	1,079 - 2,900
Soft drinks, SSW + Health + PA	0,035	1,702	1,038 - 2,789

Table 10 - Females and males with unexpected weight change desires: Chocolate & sweets (Females)

Chocolate & sweets			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Chocolate & sweets	0,083	0,618	0,358 - 1,065
Chocolate & sweets + Health	0,054	0,587	0,342 - 1,008
Chocolate & sweets + PA	0,057	0,590	0,343 - 1,015
Chocolate & sweets + Health + PA	0,048	0,580	0,338 - 0,995

With the males who wanted to either gain weight or had no weight change desire as a reference ($n=257$), the males who wanted to lose weight ($n=83$) reported a significantly lower intake of full-fat dairy drinks (Table 11) and fat-reduced dairy drinks (Table 12). They also reported a significantly higher intake of artificially sweetened diluted syrups (Table 13) and artificially sweetened soft drinks (Table 14). The males who wanted to lose weight also reported to bringing lunch to school more rarely (Table 15).

Table 11 - Females and males with unexpected weight change desires: Full-fat dairy drinks (Males)

Full fat drinks			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Full fat drinks	0,012	0,657	0,473 - 0,912
Full fat drinks + Health	0,028	0,690	0,495 - 0,961
Full fat drinks + PA	0,015	0,660	0,472 - 0,922
Full fat drinks + Health + PA	0,022	0,674	0,481 - 0,944

Table 12 - Females and males with unexpected weight change desires: Fat-reduced dairy drinks (Males)

Fat-reduced drinks			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Fat-reduced drinks	0,006	0,735	0,590 - 0,915
Fat-reduced drinks + Health	0,008	0,737	0,588 - 0,923
Fat-reduced drinks + PA	0,007	0,738	0,591 - 0,922
Fat-reduced drinks + Health + PA	0,007	0,732	0,584 - 0,917

Table 13 - Females and males with unexpected weight change desires: Artificially sweetened diluted syrups (Males)

Diluted syrups, artificial sweetned (ASW)			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Diluted syrups, ASW	0,043	1,353	1,009 - 1,815
Diluted syrups, ASW + Health	0,089	1,300	0,961 - 1,760
Diluted syrups, ASW + PA	0,042	1,358	1,012 - 1,823
Diluted syrups, ASW + Health + PA	0,091	1,298	0,959 - 1,758

Table 14 - Females and males with unexpected weight change desires: Artificially sweetened soft drinks (Males)

Soft drinks, artificial sweetned (ASW)			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Soft drinks, ASW	<0,001	1,710	1,296 - 2,255
Soft drinks, ASW + Health	<0,001	1,732	1,309 - 2,290
Soft drinks, ASW + PA	<0,001	1,703	1,291 - 2,247
Soft drinks, ASW + Health + PA	<0,001	1,742	1,315 - 2,306

Table 15 - Females and males with unexpected weight change desires: Brought lunch to school (Males)

Brought lunch			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Brought lunch	0,030	0,800	0,654 - 0,979
Brought lunch + Health	0,055	0,816	0,662 - 1,005
Brought lunch + PA	0,043	0,805	0,652 - 0,993
Brought lunch + Health + PA	0,043	0,802	0,648 - 0,993

5 Discussion

The results from this thesis showed some differences in dietary variables, both between sexes and weight change desires. There are indications that participants who have a desire to change their weight might make dietary adjustments in order to achieve this. The results also show that the female participants may have overall healthier dietary habits, compared to the males.

Using data from the FF2 study, with a high response rate of 77%, also made a good foundation for drawing conclusions on the given population from the presented results. The dietary variables given by the FF2 study had a varying number of “answer options”, e.g., there was a 1-4 scale for frequency of dinner, but a 1-7 scale for intake of fish. Preliminary analyses revealed, however, that combining answers, e.g., making the scale for intake of fish into a 1-4 scale, did not provide different results.

5.1 Comparison of females and males

5.1.1 BMI and weight change desire

The mean BMI was not significantly different between the females and the males, but the difference between BMI-categories was. However, even though the difference between BMI-categories was statistically different, the distribution was somewhat similar, with most of participants in each gender having normal weight. Studies done on somewhat the same age group in Scandinavian countries show similar results regarding mean BMI (48-50). This could be explained by the relatively small sample size and limited age range. On the other hand, the differences in distribution of BMI could help to explain the distribution of weight change desire between female and male participants. For the males – about 25% of the participants had either overweight or obesity, and about 25% of the participants had a desire to lose weight. For the females – 19 participants had underweight, and 19 participants had a desire to put on weight. Among females it is common to find about an even split between wanting to lose weight and having no weight change desire, while among males it is common to find an even split among wanting to lose weight and gain weight (34, 45), which falls in line with the results found in this thesis.

Considering the increased all-cause mortality associated with underweight and obesity (11, 12), one could “hope” that the younger generation had a desire to either be normal- or overweight. However, 41.1% ($n=134$) of the females with normal weight and 11.9% ($n=26$) of the males

with normal weight in this study reported a desire to lose weight. Additionally, one female participant with underweight also wanted to lose weight. The fact that more than 1/3 of the normal weight female participants wanted to lose weight is worrisome. This corresponds to previous findings among adolescents (37) and young adults (40-42). Males also seem to have two types of body ideals – either being lean and slender or being big and muscular, which could explain why 28% ($n=61$) of the males with normal weight and 8.8% ($n=6$) of the males with overweight had a desire to increase their weight.

5.1.2 Dinner and brought lunch

There are national guidelines in Norway regarding food and meals in upper secondary school (51). These guidelines state, among other things, that the presence of school cafeterias in upper secondary schools in Norway contribute to the decreasing frequency of brought school lunches, but that it is still quite common for these pupils to bring their own lunch. The fact that the females in this thesis brought lunch to school more often than the males (Supplementary Tables 1) was interesting, and no previous studies looking at gender differences regarding brought school lunch were found. However, a study published by Wolfson, et al. (52) in 2021 looked at the global frequency of cooking lunch at home at all ages, and showed a higher frequency for females, compared to males, in Norway. These results are somewhat similar to the findings in this thesis but comparing the frequency of cooking lunch at home and bringing lunch to school is speculative.

Previous studies have found that skipping dinner is more common in females than in males aged 18-30 years (53). In this thesis close to half of all female participants reported as to not eating dinner every day, and close to half of all the female participants also reported as to wanting to lose weight. Some studies show that having a higher caloric intake at dinner time might lead to weight gain (54, 55), and that people who generally eat more of their calories later in the day make poorer dietary choices (56, 57). Additionally, having a more even distribution of intake of calories throughout the day could help to have more even levels of appetite regulating hormones (58, 59), especially in people with overweight and obesity. On the other hand, one study including university students in Japan (60) showed that skipping dinner was associated with overweight and/or obesity in both females and males, while skipping breakfast and lunch was not. The bottom line is, however, that in order to achieve weight loss one must be in a caloric deficit (energy expenditure > energy intake), so it does not matter if the calories

consumed in a day are consumed at night, in the morning or throughout the day (4, 61, 62). Another aspect of data reported, is the question of when dinner is – females might eat around what is considered dinner time, but do not consider their meal to be a dinner, maybe because they do not cook the meal or because the meal is not hot.

5.1.3 Fruit, vegetables, and fruit juice

The females in this study consumed more fruits and vegetables than the male, while the males consumed more fruit juice than the females. There are both individual and socioenvironmental factors that contribute to in what extent a person emerging on adulthood consumes fruits and/or vegetables (63), but several studies have reported that females consume more fruits and/or vegetables than males, across age groups (64-66). One study, by Nour, et al. (67), done on young Australian adults also found that females consumed more fruits than males but that males consumed more fruit juice than the females – results similar to what is presented in this thesis. Additionally, Nour, et al. reported that when combining fruit and fruit juice, fruit juice constituted a bigger percentage of fruit intake in males and decreased the difference in intake between the two sexes. The same results are expected to be found if done with the data in this thesis.

In Norway, the National Directorate of Health recommends that fruits and vegetables should be a part of every meal, and that citizens of Norway consume (at least) five portions per day (26). Each portion corresponds to approximately 100 grams, and three out of five portions should be vegetables. Additionally, one of the portions can be fruit juice, but only one portion. It is difficult to estimate whether the participants in this thesis follow the national guidelines regarding fruit and vegetables, as the food questionnaire did not offer answers in the form of grams, nor was there questions specifically targeting the national recommended dietary guidelines. However, one could assume that the females follow the guidelines to a greater extent, as they reported a higher intake of both fruit and vegetables.

5.1.4 Dairy

The intake of dairy products is important for skeletal growth, and listed as a focus area for youths in Norway, according to the Norwegian Directorate of Health (28). It is also stated in this recommendation that females are more likely to have an inadequate intake of calcium, where dairy is the main source in a typical Norwegian diet. For the participants in this thesis,

the males had a significant higher intake of three categories of dairy products, compared to the females, which further confirms the concern regarding the lacking dairy intake among young Norwegian females. Similar findings have also been seen elsewhere in the world (68), with results actually showing an increasing trend in adequate calcium intake with age – from adolescent age to early adulthood, where females have the largest increase. The recommendation to the public regarding dairy products, from the Norwegian Directorate of Health, is to have low-fat dairy products as a part of the daily diet (26). They also state that a daily intake of low-fat dairy products is equal to three portions per day, and list a number of examples of what a portion could be equal to (69).

The variables that show a significant difference between the female and male participants show that males consume more dairy products than the females, and this may indicate that more males follow the national recommendation for intake of dairy products. However, the category of “full-fat drinks” does not fall under the recommendation, as it is “low-fat” dairy products that are recommended to be a daily part of one’s diet, and “cheese” is not categorised as to being full-fat or low-fat. Both categories show a significant difference between the sexes, but do not necessarily contribute to more of the males following the national recommendation. Only the “fat-reduced drinks” category shows a significant difference and could be linked to males following the dietary guideline regarding dairy to a greater extent, compared to females.

5.1.5 Water

In Norway, one of the recommended dietary guidelines given by the Directorate of Health is to choose water as the go-to liquid to quench one’s thirst (26). They estimate that a moderately active adult needs about 2-2.5 litres of liquid per day, where 1-1.5 litres of liquid come from drinking, and 0.7-1 litres come from solid foods (70). The guideline does not only revolve around drinking water, but also restricting the intake of liquids with a lot of sugar in them. Soft drinks, diluted syrups, iced tea, and fruit juice are among the liquids listed that water should replace, as they usually contribute with unnecessary calories and are not nutrient dense. In addition, these liquids usually also have a low pH, which can be damaging to the tooth enamel. This last claim also applies to similar liquids that are artificially sweetened.

When asked how often the participants in this thesis drank water, the females reported a significantly higher intake than the males. With 4+ glasses being the highest rating of intake,

and assuming one glass of water is equal to about 200 millilitres (ml), about 55% of the females reported drinking 800+ ml of water, while about 44% of the males drank 800+ ml of water. No studies were found comparing water intake between females and males, and it is therefore difficult to draw any conclusions as to why the females in this thesis had a higher intake. One thing to note is, however, that the males in this thesis reported a significantly higher intake of various amounts of other liquids, when compared to the females, notably liquids/drinks containing calories. The males reported to drinking more fruit juice, full-fat dairy drinks, and fat-reduced drinks. Fat-reduced drinks are mentioned as being “okay” in the guideline if the fat content does not exceed 0.7%. The males also reported to drinking more soft drinks and diluted syrups, sweetened with sugar, than the females. When it comes to the reported intake of artificially sweetened liquids/drinks, however, no significant difference was found. These findings could indicate that males more often chose a caloric drink, compared to the females, rather than choosing water. This is not in line with the national dietary recommendation, and it is possible to conclude that more of the females in this thesis follow the guideline, compared to the males.

5.1.6 Sugary drinks, sweets, and junk food

Similar results regarding the higher intake of sugar-sweetened soft drinks in males, compared to females, have also been reported in other studies. A study conducted in 2021 by Lee, et al. (71) looked at the gender differences in healthy and unhealthy food consumption among young American adults. This study found that young males were more likely to drink sugar-sweetened soft drinks, compared to females. Another study done on young Finns, aged 3-18 years, looked at the longitudinal changes in intake of sweets and sugar-sweetened soft drinks during a 21-year period with a baseline set in 1980 (72). Both in 1980, among the 15–18-year-olds, as well as 21 years later, among those who were 3-6 years old in 1980, males were seen to more frequently drink sugar-sweetened soft drinks compared to the females.

In the questionnaire given to the participants included in this thesis there was a question regarding intake of sugar-sweetened diluted syrups. The consumption of diluted syrups (= *saft*, in Norwegian) is something that is common in Norway, which is why the question was included, but no studies were found on the subject. These diluted syrups can be sweetened with either sugar or artificial sweeteners but regarding artificially sweetened syrups (and soft drinks), there was no significant difference between the females and the males in this thesis. The males

did, however, report to consuming more sugar-sweetened diluted syrups than the females, which means that the males overall reported to consuming more sugary drinks.

One of the dietary recommendations by the Directorate of Health in Norway is to avoid foods and drinks which contain larger amounts of sugar (26). In detail, this means to limit the energy consumed from added sugar to 10% of one's daily energy intake (73). They estimate that more than 50% of children and youths in Norway exceed this recommended limit, and it is therefore not unlikely that some of the participants in this thesis fall into this group. Drinks containing caffeine, as well as artificially sweetened drinks, are also highlighted in this recommendation. The recommendation also mentions that artificially sweetened beverages, such as sodas and diluted syrups, also can be damaging to the tooth enamel, as they have the same pH and acid content as their sugar-sweetened counterparts. In addition to this, sodas and energy drinks containing caffeine, regardless of type of sweetener used, can be harmful to one's health if ingested in larger amounts. Other drinks containing caffeine, such as coffee and tea, are no better.

5.2 Dietary habits and weight change desires

One would wish to assume that the desires for weight change in this thesis are based on a wish for better health, however, in a previous study based on data from FF2 no association was found between weight change wishes and self-reported health, i.e., those who wished to change their weight reported good health (74). This could indicate that the desire for weight change is based on external influence, rather than a wish for better health and prevention of lifestyle diseases and risk factors.

Diet may also play a part in having "good health". Compared to the dietary recommendations given by the Norwegian Directorate of Health (26), one could make the argument that the female participants in the present thesis have a healthier diet, compared to the males, as they seem to a greater extent follow the dietary guidelines. There are indications that more of the females follow the national dietary guidelines regarding fruit and vegetables, water/liquids, and have a reduced intake of foods and beverages with added sugar, compared to the males. Additionally, the females also reported to consuming junk food less frequently than the males. The only dietary guideline that the males might "outperform" the females on, is that they seem to consume enough dairy products to have an adequate intake of calcium. It is notably also

already a known fact in Norway that young females seem to have an inadequate intake of calcium (28), so these results are not surprising. Similar results are also reported elsewhere in the world, and a study by Lee, et al. (71) on young adults (mean age = 26) showed that female participants had healthier eating habits, compared to the males in the study. This conclusion is based on that the females reported to consuming more “healthy foods”, i.e., fruits and vegetables, and less “unhealthy foods”, i.e., fast food and soft drinks/sodas, compared to the males.

However, the females in the study by Lee, et al. also reported to being more depressed than the males. Depression among adolescents has previously been linked to body image dissatisfaction (16), and having a positive body image has been reported to having significant implications for health and well-being in adults (mean age = 20) (75). Similar studies have also produced the same results when looking at young females and males separately (76) (77), and the females also reported a negative relationship between both body image and depression, as well as body image and eating disorders.

The fact that young females report a healthy diet and an overall good health, even though they are susceptible to having depression and a poor body image/a frequent desire to change their weight, might indicate that mental health is not considered a part of having “good health”, when being self-assessed by young female adults.

5.2.1 Female dietary habits in relation to weight change desires

The Kruskal Wallis’ tests performed on the association between the three categories of weight change desire, and the included dietary variables, only presented a significant difference in intake of skimmed milk (sweet or sour). Since a Kruskal Wallis’ test do not say anything about the trend of the difference, but only that there is a difference, the results are up for interpretation, and one may only say that the results “indicate” something. When looking at Table 3, however, the p-value ($p=0.045$) seems to trend towards that those who wish to lose weight consume more sweet or sour skimmed milk than the two other groups of weight change desire. Since the p-value is borderline significant, and the interpretation of a Kruskal Wallis’ test only shows a difference between all three categories, there might not actually be a difference, and with a larger population one might not find any significant difference.

5.2.1.1 Desire to lose weight (normal- and underweight)

A desire for weight loss is perhaps the most “expected” desire for weight change that is found among females, especially among young adults and adolescents (37, 38, 78). There also seems to be a decreased trend to want to lose weight when females are older (40+ years) (79), compared to when they are around 17-20 years old. Another study, done on adolescents in Brazil (80), showed that about 54% of females were unsatisfied with their body weight. These results are also similar to what is presented in this thesis, as about 51% (47.1%+4.3%) of the female participants had a desire to change their weight (Table 1). In addition to this, the Brazilian study showed an increasing trend in body weight dissatisfaction with age – about 42% in ages 12-13 years, and about 50% in ages 16-17 years. There seems to be an overall trend that around half of all young females are not satisfied with their body image and/or body weight, which is a worrying trend.

The binary logistic regression comparing the dietary habits of normal- and underweight females who wanted to lose weight, with those who had no weight change desire, produced the same result as what was thought to be the case from the Kruskal Wallis’ tests – those who wanted to lose weight consumed more sweet or sour skimmed milk. Again, there is no logical reason as to why this is the case, and it does not necessarily indicate any worrying trend.

A lower frequency of dinner was reported among females, when compared to males, and among all the females, about 56% reported to eating dinner every day. Among the normal- and underweight females who wanted to lose weight, only about 47% reported to eating dinner every day. In the Polish study by Trafalska, et al., referenced by Kapka-Skrzypczak, et al. in English (81), done on university students aged 19-26 years, the males ate dinner/supper more frequently than the females (78.4% vs. 63.8%). When asked about the reasoning for missing/skipping meals in general, 24.4% of females gave dieting as a reason. These results are similar to what is reported in the present thesis, where there is an association, in female participants, between wanting to lose weight and not eating dinner. Another study, done on adolescents in Spain (37), showed that among “normal-fat” females, normal-fat being to have normal- or underweight and a normal amount of fat mass, only about 25% of the females ate five or more meals throughout the day. This is including snacks, which could indicate that the remaining 75% might be skipping some larger meals daily, one of which could be dinner. Additionally, among the same females ($n=567$), about 48% reported to wanting a thinner body,

when asked. One might wonder if there is a connection here – between wanting to lose weight and skipping meals. These results are similar to what is presented in this thesis, where approximately 41% of the females with normal weight wanted to lose weight (Table 2), and about 42% and 47% reported to eating breakfast and dinner every day, respectively (Table 5).

This trend, that a desire to lose weight is associated with a lower frequency of dinner might be fragmentary, but if this is a part of a larger picture it would be a cause of concern and should be followed up with more research, possibly with larger populations and with questions asked why specifically dinner is the meal to be skipped.

5.2.1.2 Desire to gain weight

A female being unsatisfied with her body weight and/or body image does not necessarily relate to wanting to lose weight, even though most studies, including the present thesis, seem to show that there is a larger proportion of those who want to lose weight, compared to those who want to gain weight. The findings in this thesis also might show a connection between females who want to gain weight and their BMI, as nine out of the 19 participants who wanted to gain weight had underweight. However, since the group of females who wanted to gain weight was so small ($n=19$), the results presented need to be taken with a grain of salt.

The study by Bibiloni, et al. (37) that looked at “normal-fat” female adolescent also reported that 61 (9.3%) of these 657 normal-fat girls wanted a thicker body. When compared to the 19 (5.5%) female participants in the present thesis, with normal- or underweight weight who also wanted to gain weight, there are differences in the results. There are also differences in how the questions and answers about the subject were given. Bibiloni, et al., directly used the Stunkard scale (82), a 1-9 figure rating scale, to give participants either a positive (wanted to be thinner) or negative (wanted to be thicker) value, based on the difference between the participants’ answers to which body shape they wished to have, in comparison to which body shape they actually had. In the questionnaire (Appendix 1) given to the participants of FF2, the question regarding weight change was its own separate question. However, the question in the questionnaire prior to the question about weight change, was a question where participants were to circle around which body shape they had, according to the Stunkard scale. How much this influenced the answers given about weight change is unknown, but one might start to wonder if the answer given to a question about one’s body shape influences the answer given when asked if one wants to change their weight, when the latter is asked immediately after the first.

Future studies should maybe take this into account – questions about weight change desire should come separate of questions about body types.

Another aspect that might impact the prevalence of weight change desires among females are cultural and/or geographical differences. It seems that more of the female, Spanish adolescents in the study by Bibiloni, et al. (37), had a desire to gain their weight, compared to the female, Norwegian participants in the present thesis. A study by Wardle, et al. (83) looked at the prevalence of university students aged 17-30 years across 22 countries ($n=18,512$) in Europe, Asia, and South-America, who were trying to lose weight. This study found large differences in prevalence, with the highest prevalence in the Asian countries Japan and Korea (70% and 77%, respectively), and the lowest prevalence in countries in south-western Europe, with Portugal and Spain having the lowest prevalences (29% and 38%, respectively). The only Nordic country included in this study was Iceland, with a prevalence of 55% of women wanting to lose weight. These results may indicate, if one is to flip the question around, one might expect the results to be opposite – with the highest prevalence of females who want to gain weight in Portugal and Spain, and the lowest prevalence in Japan and Korea.

Regarding the differences in dietary habits, when comparing the female participants ($n=19$) who wanted to gain weight and the rest of the female participants ($n=418$) who either wanted to lose weight or had no weight change desire, no findings were of major concern. There was a significant difference observed in the intake of sugar-sweetened soft drinks, with the females who wanted to gain weight having a larger intake. This larger intake may be beneficial for those females who wanted to gain weight, as it may increase the total caloric intake, but an overall large intake of sugar-sweetened sodas is not recommended according to the national dietary guidelines. Self-perceived health and PA were added to the model to better identify these females. This resulted in a slight decline in difference between the two groups, when adding these covariables either separate or collectively, but the declination in OR did not decrease in any major way. This indicates that these participants' self-perceived health and/or PA did not in any major way have an impact on their higher intake of sugar-sweetened sodas. There were also borderline significant differences observed in the intake of sweets (e.g., chocolate). There is, however, difficult to draw any conclusions from the differences found in this sample, as the results reported from this low n does not represent a general population of young adult females who want to gain weight.

5.2.2 Male dietary habits in relation to weight change desires

Kruskal Wallis' test was used to check for significant differences in dietary habits, between the three categories of weight change desire, in the male participants. These tests only produced a significant p-value for intake of artificially sweetened soft drinks. Again – a Kruskal Wallis' test does not say anything about the trend of the p-value, but when looking at the distribution of intake of artificially sweetened soft drinks (Table 4), there are indications that the males who wanted to lose weight consumed more, compared to the two other groups. This group of males ($n=83$) make up about a quarter of the male participants in this thesis, so if the results are generalizable, one might argue that males who want to lose weight consume significantly more artificially sweetened soft drinks, compared to those who have no desire of weight change or want gain weight. In 5.2.2.2 one can look further into the comparison of dietary habits between the male participants who wanted to lose weight, and these two other groups.

Previous studies show conflicting results regarding the distribution of if males want to gain weight or lose weight. An older study from 1987 (84) showed about an even distribution between the male freshman students who wanted to gain weight (45%) and those who wanted to lose weight (40%), which are results similar to what is presented in this thesis (25.9% and 24.4%, respectively). However, the study from 1987 had a relatively low n (=226 male and female participants, in total), and the present thesis only had a total of 340 male participants. A larger study from 2019, done on American (34) adolescents, show an increasing trend of males wanting to gain weight, with 29.6% of the 7,749 male participants reporting a desire for weight gain. Also, when adjusting for BMI and fat-mass, under-, normal- and overweight adolescent males reported a higher prevalence of wanting to gain weight, when compared to the females in the same study (37). 39.1% of the “normal-fat” normal- and underweight males in the study reported that they wanted a thicker body, as well as 10.5% of the normal-fat overweight males.

Like with females, there also seems to be cultural/geographical differences in desires for weight loss, in males. The study by Wardle, et al. (83), that looked at the prevalence of weight loss desire in university students across 22 countries, found similar results among the males as they did the females. That being, Asian countries having a higher prevalence of males trying to lose weight, with Japan having the highest prevalence (39%), and countries in western Europe having a lower prevalence, with France and Portugal having the lowest prevalences (10% and

13%, respectively). Again, the only Nordic country (Iceland) reported a similar prevalence of weight loss desire (27%) as what is presented in this thesis (24.4%).

SoMe can negatively impact one's body image and/or food choices (36). When looking at the impact of male body "ideals" on SoMe, studies have found that males who are dissatisfied with their bodies have an increased risk of negative self-evaluation (85), and frequent exposure to pictures of ideal male bodies, that being males with either very muscular or very lean bodies (86, 87), on Instagram could be potentially harmful to males' body image (88). Longitudinal studies also show that males with a distorted body image are at higher risk of developing depressive symptoms, persisting from adolescent age into early adulthood (77). Males do, however, seem to display higher levels of body satisfaction, compared to females, at all ages (89). The fact that males show higher levels of body satisfaction does not necessarily mean that female body dissatisfaction is more worrisome, or that male body dissatisfaction should not be taken seriously.

5.2.2.1 Desire to gain weight (normal- and overweight)

In this thesis the males who had normal- or overweight are referred to as the "expected" group of males, regarding weight change desire. This is based on previous literature regarding the male body ideal, and that gaining muscle often involves gaining weight. Additionally, the prevalence of weight gain desire is higher among males compared to females, both in previous studies and in the present thesis. Compared to the study by Bibiloni, et al. (37), however, there are no measurements of fat mass or fat-free mass in the present thesis, but desired weight gain among the normal- and overweight participants is considered to be a desire to gain fat-free mass (i.e., muscle mass).

The dietary differences between normal- and overweight males that want to gain weight, and those who either want to lose weight or have no weight change desire, are revolved around dairy products. The males in general already have a reported higher intake of full-fat dairy products, when compared to females. A higher intake of these products is also reported in these males who want to gain weight, when compared to those who did not have a desire to gain weight. Additionally, the same males also reported a higher intake of extra semi-skimmed milk. A review from 2012, by Abargouei, et al (90), looked at the effect of dairy consumption on weight and body composition in adults, from randomized control trials ($n=40$). The review concluded that an increased intake of dairy products resulted in an increased reduction in fat

mass, gain in fat-free mass, and reduction in waste circumference, compared to controls. This can be explained by dairy products having a high protein content, and thus aiding in the prevention of muscle atrophy (91, 92). High-dairy weight loss diets also resulted in greater weight loss, reduction in fat mass, promotion in fat-free mass, and additional reduction in waste circumference, when compared to control groups. However, without energy restriction, an increased dairy intake does not significantly affect weight, fat mass, fat-free mass, or waste circumference, in intervention or control groups.

The somewhat increased dairy intake among the normal- and overweight males who wanted to gain weight, might be beneficial for those who want to achieve a body that is more like the male body ideal – a body with low fat mass, and high muscle mass. However, an increased dairy intake will not make a difference regarding their weight or body composition, if it in turns results in an overall increased energy intake, compared their energy expenditure. It is also worth noting, regarding full-fat dairy products, that even small increases in intake will increase one's energy intake, and consuming larger amounts of full-fat dairy products may also largely increase one's intake of saturated fat, which is not ideal.

5.2.2.2 Desire to lose weight

The males who wanted to lose weight in this thesis were referred to as “unexpected”, largely based on the previous statements regarding male body ideals. It is, however, maybe not expected that males with overweight or obesity have a desire to lose weight, especially considering the health benefits of weight loss on those who have obesity. A total of 83 males in this thesis reported to wanting to lose weight, and of these, 21 (25%) had obesity and 36 (43%) had overweight. Compared to a previous study (37), similar results were produced, as most of the male adolescents in the study by Bibiloni, et al. who had obesity reported wanting a thinner body. Also, among the “overfat” and “normal-fat” males with overweight, as well as the overfat males with normal- or underweight, a majority of the participants reported the body desire.

Regarding the dietary habits of the males who wanted to lose weight, in the present thesis, they reported a lower intake of both full-fat and fat-reduced dairy drinks. As their reported desire was to lose weight, one might expect them to have a lower intake of full-fat dairy drinks, however, it might be surprising that they also had a lower intake of the fat-reduced dairy drinks. A higher intake of dairy products can be beneficial in weight loss, as it can help in losing more

fat mass and waist circumference, and maintaining more fat-free mass (muscle mass) (90). Considering that there were not reported any significant differences in the other dietary variables regarding dairy product, there are no immediate indications that the males who reported a desire to lose weight have an insufficient intake of dairy products (i.e., calcium intake). Adjusting for the covariables did not seem to impact the difference in intake in any major way.

The males who wanted to lose weight reported a higher intake of both artificially sweetened soft drinks and diluted syrups. The p-values regarding diluted syrups were, however, only borderline significant, and it is therefore hard to draw any conclusions from this reported difference, as a results from a larger population might not point to any significant difference. The intake of artificially sweetened soft drinks was, on the other hand, clearly significant different – between males who reported to wanting to lose weight, and those who did not. If this means that those who wished to lose weight replace their sugar-sweetened soft drinks with artificially sweetened drinks, then this would be beneficial to weight loss, as it would directly reduce their caloric intake. However, research show conflicting clinical results regarding the use of artificial sweeteners, and in what way it is beneficial for weight loss (93-95). That being said – in a completely controlled environment, where variables such as diet and physical activity are equal between an intervention and a control group, the intervention group who substitutes sugar-sweetened beverages with artificially sweetened beverages will lose weight, if it lowers their caloric intake to be less than their energy expenditure. There is therefore a valid argument that these males who want to lose weight should continue consuming artificially sweetened soft drinks, rather than sugar-sweetened soft drinks. The covariables did not do anything notable to the reported difference in intake.

The males who wanted to lose weight also reported a borderline significant in the frequency of brought lunch, but this difference might not be reported in a larger population. If it were to be that the males who want to lose weight do not eat lunch, this may not be beneficial towards their weight loss, as there is research that argues for an increased meal frequency being beneficial towards weight loss and body composition (96). Meal frequency will in this case only be a factor that may be beneficial to weight loss, but if the participants do not expend more calories than they consume, then weight loss is not possible. It should also be noted that a lower frequency of brought lunch does not necessarily mean that the participants skip lunch – it could

just mean that they acquire food for lunch through e.g., the school cafeteria or a local grocery store.

Overall, the males who reported to wanting to lose weight seem to be doing some dietary adjustments to achieve this goal, through a decreased intake of full-fat dairy products and a higher intake of artificially sweetened soft drinks. One might have expected significant differences in other dietary variables, such as an increased intake of fruits and vegetables, or a reduced intake of sugary foods and drinks, as well as junk food, but significant differences in these variables were not reported. The bottom line is, however, that if the male participants who want to lose weight do not manage to achieve a calorie deficit, then they will not lose any weight.

5.2.3 Comparison with similar studies

Previous studies done on the relationship between dietary habits and body image/weight change desires in either adolescents or young adults suggest that both male and females who are not satisfied with their body, i.e., have a desire to change their weight, tend to have more restrictive diets (97) or diets of lower quality (41, 42). This seems to be prevalent among those with either obesity or overweight (41, 81, 97), especially in those who have a desire to lose weight (37). The present thesis does not report the same findings – that a desire for weight change leads to a diet of poorer quality. The only exception might be the fact that the females who wanted to lose weight reported to eating dinner less frequently. A similar result was reported by Bibiloni, et al. (37), where the adolescent females who wished to be thinner reported a lower meal frequency, compared to the rest.

5.3 Strengths and limitations

The FF2 study had a response rate of 77%, which is one of the strengths of this thesis – there is a low occurrence of non-response bias, which increases the generalizability of the results. Additionally, the schools included in the study are from both urban and rural areas of Northern Norway, which also increases the generalizability, as cultural and geographical differences between participants might not influence the reported results. Since the anthropometric variables (height and weight) were measured by trained research nurses at the Clinical Research Unit, there is no form of reporting bias for BMI in the present thesis.

The rest of the variables were, however, self-reported. Previous studies (98-100) suggest that food frequency questionnaires may be a reliable source for gathering data on dietary habits, across different age groups, but there is always the element of “human error”. That being – not reporting what is the truth. For this thesis, this could to a large degree influence the results, as participants could not report their actual diet, or not report their actual weight change desire. This could for example be males who might want to lose weight, but do not report it, as it may not be in line with the male body ideal. Additionally, cases of eating disorders might not be picked up, as no psychological variables were included, and participants with an eating disorder might to an even larger extent, not report their actual dietary habits. There are also limitations in the questionnaire itself, e.g., there is no questions about red or processed meat, and this questionnaire might not give a complete picture of the participants’ dietary habits. A measurement of socio-economic status (SES) was also considered for this thesis, as SES often appears to influence dietary patterns (101-104), but there was no valid measure of SES in the FF2 study. Another limiting factor for the results presented in this thesis is the low *n*. Some of the groups looked at, e.g., the females who wanted to gain weight, was such a small group (*n*=19) that it is difficult to draw any conclusions from the results and differences found.

5.3.1 Generalizability and implications

The limitations listed could be contributing factors as to why the present thesis did not result in any major findings. Future research on the subject should perhaps not use self-reported data, to eliminate the source of self-reporting bias or look at larger populations. Studies should, however, continue to look at individuals from both urban and rural areas, and strive to get a high response-rate. The results presented in this thesis imply that a desire for weight change does not impact the dietary habits of emerging adults in Northern Norway, in any major way. There are, however, some indications that those who wish to change their weight are taking certain dietary measures in order to achieve their goal, but if these measures are enough is impossible to say, and more research is needed.

6 Conclusion

The present thesis did not produce any results that were of major concern, i.e., that a desire for weight change impacts the dietary habits in a negative way, among emerging adults in Northern Norway. The female participants who reported a desire to lose weight did, however, report a lower frequency of dinner, which could be a worrying trend if this is a part of a larger picture, and should be followed up with more research, with larger populations and with questions asked why specifically dinner is the meal that is skipped.

Some of the results indicate that participants, both female and male, who have a desire to change their weight are taking dietary measures to achieve their goal. It is difficult to say whether these measures result in participants achieving their weight goal, but a study done on FF3 could reveal if the same participants have managed to either gain or lose weight.

There are certain limitations in the present study, regarding how data on dietary habits and weight change desires were reported, as well as the size of the population, which in turn could explain why the thesis did not result in any major findings.

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Supplementary Tables 1 - Dietary variables in relation to sex

Variable	Sex		p	OR	CI (95%)
Breakfast (n=774)	Female (n=437)	Male (n=337)	0.209		
Rarely/never	48 (11.0)	48 (14.2)			
1-3 times per week	75 (17.2)	55 (16.3)			
4-6 times per week	102 (23.3)	84 (24.9)			
Every day	212 (48.5)	150 (44.5)			
Dinner (n=748)	Female (n=419)	Male (n=329)	<0.001	1.764	1.399 - 2.225
Rarely/never	8 (1.9)	1 (0.3)			
1-3 times per week	42 (10.0)	15 (4.6)			
4-6 times per week	135 (32.2)	76 (23.1)			
Every day	234 (55.8)	237 (72.0)			
Brought lunch (n=773)	Female (n=436)	Male (n=337)	<0.001	0.777	0.689 - 0.877
Rarely/never	87 (20.0)	129 (38.3)			
1-3 times per week	78 (17.9)	44 (13.1)			
4-6 times per week	128 (29.4)	66 (19.6)			
Every day	143 (32.8)	98 (29.1)			

Variable	Sex		p	OR	CI (95%)
Fat fish (e.g salmon, trout, mackerel, herring) (n=774)	Female (n=433)	Male (n=336)	0.559		
Rarely/never	70 (16.2)	49 (14.6)			
1-3 times per month	178 (41.1)	144 (42.9)			
1-3 times per week	165 (38.1)	124 (36.9)			
4-6 times per week	18 (4.2)	14 (4.2)			
Every day	2 (0.5)	5 (1.5)			
Lean fish (e.g. cod, saithe, haddock) (n=764)	Female (n=429)	Male (n=335)	0.133		
Rarely/never	100 (23.3)	53 (15.8)			
1-3 times per month	177 (41.3)	163 (48.7)			
1-3 times per week	140 (32.6)	108 (32.2)			
4-6 times per week	12 (2.8)	9 (2.7)			
Every day	0 (0.0)	2 (0.6)			

Variable	Sex		p	OR	CI (95%)
Fruit (n=775)	Female (n=436)	Male (n=339)	<0.001	0.769	0.689 - 0.857
Rarely/never	23 (3.0)	16 (4.7)			
1-3 times per month	79 (10.2)	51 (15.0)			
1-3 times per week	212 (27.4)	97 (28.6)			
4-6 times per week	168 (21.7)	74 (21.8)			
1-2 times per day	203 (26.2)	69 (20.4)			
3-4 times per day	64 (8.3)	21 (6.2)			
5+ times per day	26 (3.4)	11 (3.2)			
Vegetables (n=772)	Female (n=436)	Male (n=339)	0.014	0.861	0.764 - 0.971
Rarely/never	10 (2.3)	7 (2.1)			
1-3 times per month	22 (5.1)	24 (7.1)			
1-3 times per week	85 (19.5)	70 (20.8)			
4-6 times per week	133 (30.6)	132 (39.2)			
1-2 times per day	132 (30.3)	79 (23.4)			
3-4 times per day	40 (9.2)	16 (4.7)			
5+ times per day	13 (3.0)	9 (2.7)			
Fruit juice (n=773)	Female (n=436)	Male (n=337)	0.009	1.230	1.053 - 1.436
Rarely/never	104 (23.9)	61 (18.1)			
1-6 glasses per week	217 (49.8)	157 (46.6)			
1 glass per day	72 (16.5)	79 (23.4)			
2-3 glasses per day	40 (9.2)	35 (10.4)			
4+ glasses per day	3 (0.7)	5 (1.5)			

Variable	Sex		<i>p</i>	<i>OR</i>	<i>CI (95%)</i>
Full-fat dairy drinks (whole milk, kefir and yoghurt) (n=773)	Female (n=434)	Male (n=339)	<0.001	1.356	1.136 - 1.620
Rarely/never	267 (61.5)	183 (54.0)			
1-6 glasses/units per week	135 (31.1)	106 (31.3)			
1 glass/unit per day	25 (5.8)	31 (9.1)			
2-3 glasses/units per day	4 (0.9)	12 (3.5)			
4+ glasses/units per day	3 (0.7)	7 (2.1)			
Fat-reduced dairy drinks (semi-skimmed milk, cultura and fat-reduced yoghurt) (n=772)	Female (n=433)	Male (n=339)	<0.001	1.363	1.196 - 1.554
Rarely/never	171 (39.5)	114 (33.6)			
1-6 glasses/units per week	160 (37.0)	94 (27.7)			
1 glass/unit per day	66 (15.2)	58 (17.1)			
2-3 glasses/units per day	30 (6.9)	56 (16.5)			
4+ glasses/units per day	6 (1.4)	17 (5.0)			
Skimmed milk (sweet or sour) (n=768)	Female (n=432)	Male (n=336)	0.607		
Rarely/never	335 (77.5)	257 (76.5)			
1-6 glasses/units per week	48 (11.1)	43 (12.8)			
1 glass/unit per day	25 (5.8)	14 (4.2)			
2-3 glasses/units per day	23 (5.3)	15 (4.5)			
4+ glasses/units per day	1 (0.2)	7 (2.1)			
Extra semi-skimmed milk (n=775)	Female (n=436)	Male (n=339)	0.780		
Rarely/never	211 (48.4)	173 (51.0)			
1-6 glasses/units per week	101 (23.2)	66 (19.5)			
1 glass/unit per day	70 (16.1)	53 (15.6)			
2-3 glasses/units per day	49 (11.2)	35 (10.3)			
4+ glasses/units per day	5 (1.1)	12 (3.5)			
Cheese (all kinds) (n=774)	Female (n=436)	Male (n=338)	0.003	1.254	1.078 - 1.459
Rarely/never	18 (4.1)	7 (2.1)			
1-3 times per month	79 (18.1)	35 (10.4)			
1-3 times per week	176 (40.4)	143 (42.3)			
4-6 times per week	118 (27.1)	116 (34.3)			
Every day	45 (10.3)	37 (10.9)			

Variable	Sex		<i>p</i>	<i>OR</i>	<i>CI (95%)</i>
Water (n=774)	Female (n=434)	Male (n=340)	0.002	0.778	0.662 - 0.915
Rarely/never	4 (0.9)	5 (1.5)			
1-6 glasses per week	12 (2.8)	21 (6.2)			
1 glass per day	40 (9.2)	32 (9.4)			
2-3 glasses per day	140 (32.3)	133 (39.1)			
4+ glasses per day	238 (54.8)	149 (43.8)			

Variable	Sex		p	OR	CI (95%)
Diluted syrups, sugar sweetened (n=771)	Female (n=434)	Male (n=337)	<0.001	1.770	1.413 - 2.217
Rarely/never	567 (73.5)	214 (63.5)			
1-6 glasses per week	152 (19.7)	89 (26.4)			
1 glass per day	35 (4.5)	22 (6.5)			
2-3 glasses per day	13 (1.7)	10 (3.0)			
4+ glasses per day	4 (0.5)	2 (0.6)			
Soft drinks, sugar sweetened (n=774)	Female (n=436)	Male (n=338)	<0.001	2.112	1.744 - 2.557
Rarely/never	198 (45.4)	70 (20.7)			
1-6 glasses per week	205 (47.0)	186 (55.0)			
1 glass per day	20 (4.6)	40 (11.8)			
2-3 glasses per day	9 (2.1)	33 (9.8)			
4+ glasses per day	4 (0.9)	9 (2.7)			
Sweets (e.g. chocolate, candy) (n=772)	Female (n=433)	Male (n=339)	<0.001	0.751	0.635 - 0.890
Rarely/never	38 (8.8)	48 (14.2)			
1-3 times per month	116 (26.8)	114 (33.6)			
1-3 times per week	227 (52.4)	144 (42.5)			
4-6 times per week	44 (10.2)	30 (8.8)			
Every day	8 (1.8)	3 (0.9)			
Snacks (e.g. chips, biscuits, cakes, buns) (n=774)	Female (n=436)	Male (n=338)	0.316		
Rarely/never	39 (8.9)	37 (10.9)			
1-3 times per month	149 (34.2)	119 (35.2)			
1-3 times per week	212 (48.6)	157 (46.4)			
4-6 times per week	31 (7.1)	21 (6.2)			
Every day	5 (1.1)	4 (1.2)			

Variable	Sex		p	OR	CI (95%)
Junkfood (e.g. pizza, hamburger, hot dogs) (n=775)	Female (n=437)	Male (n=338)	<0.001	1.755	1.429 - 2.154
Rarely/never	54 (12.4)	24 (7.1)			
1-3 times per month	241 (55.1)	140 (41.4)			
1-3 times per week	131 (30.0)	151 (44.7)			
4-6 times per week	10 (2.3)	20 (5.9)			
Every day	1 (0.2)	3 (0.9)			

Variable	Sex		p	OR	CI (95%)
Diluted syrups, artificial sweetened (n=771)	Female (n=433)	Male (n=338)	0.674		
Rarely/never	266 (61.4)	220 (65.1)			
1-6 glasses per week	140 (32.3)	84 (24.9)			
1 glass per day	19 (4.4)	21 (6.2)			
2-3 glasses per day	7 (1.6)	12 (3.6)			
4+ glasses per day	1 (0.2)	1 (0.3)			
Soft drinks, artificial sweetened (n=770)	Female (n=432)	Male (n=338)	0.491		
Rarely/never	221 (51.2)	202 (59.8)			
1-6 glasses per week	177 (41.0)	98 (29.0)			
1 glass per day	18 (4.2)	22 (6.5)			
2-3 glasses per day	13 (3.0)	13 (3.8)			
4+ glasses per day	3 (0.7)	3 (0.9)			

Supplementary Tables 2 - Dietary variables in relation to weight change wish (females)

<i>Variable</i>	Weight change wish			<i>p</i>
Breakfast (n=437)	Lose weight (n=206)	No wish (n=212)	Put on weight (n=19)	0.057
Rarely/never	25 (12.1)	21 (9.9)	2 (10.5)	
1-3 times per week	37 (18.0)	33 (15.6)	5 (26.3)	
4-6 times per week	57 (27.7)	41 (19.3)	4 (21.1)	
Every day	87 (42.2)	117 (52.2)	8 (42.1)	
Dinner (n=419)	Lose weight (n=195)	No wish (n=205)	Put on weight (n=19)	0.100
Rarely/never	4 (2.1)	3 (1.5)	1 (5.3)	
1-3 times per week	27 (13.8)	15 (7.3)	0 (0.0)	
4-6 times per week	67 (34.4)	65 (31.7)	3 (15.8)	
Every day	97 (49.7)	122 (59.5)	15 (78.9)	
Brought lunch (n=436)	Lose weight (n=206)	No wish (n=211)	Put on weight (n=19)	0.240
Rarely/never	47 (22.8)	35 (16.6)	5 (26.3)	
1-3 times per week	40 (19.4)	34 (16.1)	4 (21.1)	
4-6 times per week	57 (27.7)	67 (31.8)	4 (21.1)	
Every day	62 (30.1)	75 (35.5)	6 (31.6)	

<i>Variable</i>	Weight change wish			<i>p</i>
Fat fish (n=433)	Lose weight (n=203)	No wish (n=212)	Put on weight (n=18)	0.485
Rarely/never	36 (17.7)	29 (13.7)	5 (27.8)	
1-3 times per month	78 (38.4)	92 (43.4)	8 (44.4)	
1-3 times per week	77 (37.9)	84 (39.6)	4 (22.2)	
4-6 times per week	11 (5.4)	6 (2.8)	1 (5.6)	
Every day	1 (0.5)	1 (0.5)	0 (0.0)	
Lean fish (n=429)	Lose weight (n=203)	No wish (n=208)	Put on weight (n=18)	0.240
Rarely/never	47 (23.2)	44 (21.2)	9 (50.0)	
1-3 times per month	77 (37.9)	97 (46.6)	3 (16.7)	
1-3 times per week	74 (36.5)	60 (28.8)	6 (33.3)	
4-6 times per week	5 (2.5)	7 (3.4)	0 (0.0)	
Every day	0 (0.0)	0 (0.0)	0 (0.0)	

<i>Variable</i>	Weight change wish			<i>p</i>
Fruits (n=436)	Lose weight (n=206)	No wish (n=211)	Put on weight (n=19)	0.183
Rarely/never	1 (0.5)	5 (2.4)	1 (5.3)	
1-3 times per month	11 (5.3)	15 (7.1)	2 (10.5)	
1-3 times per week	54 (26.2)	56 (26.5)	5 (26.3)	
4-6 times per week	50 (24.3)	40 (19.0)	4 (21.1)	
1-2 times per day	62 (30.1)	67 (31.8)	5 (26.3)	
3-4 times per day	17 (8.3)	24 (11.4)	2 (10.5)	
5+ times per day	11 (5.3)	4 (1.9)	0 (0.0)	
Vegetables (n=435)	Lose weight (n=206)	No wish (n=210)	Put on weight (n=19)	0.348
Rarely/never	3 (1.5)	6 (2.9)	1 (5.3)	
1-3 times per month	7 (3.4)	13 (6.2)	2 (10.5)	
1-3 times per week	38 (18.4)	40 (19.0)	7 (36.8)	
4-6 times per week	65 (31.6)	65 (31.0)	3 (15.8)	
1-2 times per day	63 (30.6)	65 (31.0)	4 (21.1)	
3-4 times per day	20 (9.7)	18 (8.6)	2 (10.5)	
5+ times per day	10 (4.9)	3 (1.4)	0 (0.0)	
Fruit juice (n=436)	Lose weight (n=206)	No wish (n=211)	Put on weight (n=19)	0.107
Rarely/never	56 (27.2)	40 (19.0)	8 (42.1)	
1-6 glasses per week	99 (48.1)	114 (54.0)	4 (21.1)	
1 glass per day	33 (16.0)	37 (17.5)	2 (10.5)	
2-3 glasses per day	15 (7.3)	20 (9.5)	5 (26.3)	
4+ glasses per day	3 (1.5)	0 (0.0)	0 (0.0)	

<i>Variable</i>	Weight change wish			<i>p</i>
Full-fat dairy drinks (n=434)	Lose weight (n=205)	No wish (n=210)	Put on weight (n=19)	0.082
Rarely/never	137 (66.8)	119 (56.7)	11 (57.9)	
1-6 glasses/units per week	51 (24.9)	78 (37.1)	6 (31.6)	
1 glass/unit per day	12 (5.9)	11 (5.2)	2 (10.5)	
2-3 glasses/units per day	3 (1.5)	1 (0.5)	0 (0.0)	
4+ glasses/units per day	2 (1.0)	1 (0.5)	0 (0.0)	
Fat-reduced dairy drinks (n=433)	Lose weight (n=205)	No wish (n=210)	Put on weight (n=18)	0.932
Rarely/never	83 (40.5)	82 (39.0)	6 (33.3)	
1-6 glasses/units per week	72 (35.1)	82 (39.0)	6 (33.3)	
1 glass/unit per day	34 (16.6)	30 (14.3)	2 (11.1)	
2-3 glasses/units per day	14 (6.8)	14 (6.7)	2 (11.1)	
4+ glasses/units per day	2 (1.0)	2 (1.0)	2 (11.1)	
Skimmed milk (n=432)	Lose weight (n=203)	No wish (n=210)	Put on weight (n=19)	0.045
Rarely/never	148 (72.9)	172 (81.9)	15 (78.9)	
1-6 glasses/units per week	23 (11.3)	22 (10.5)	3 (15.8)	
1 glass/unit per day	15 (7.4)	9 (4.3)	1 (5.3)	
2-3 glasses/units per day	17 (8.4)	6 (2.9)	0 (0.0)	
4+ glasses/units per day	0 (0.0)	1 (0.5)	0 (0.0)	
Extra semi-skimmed milk (n=436)	Lose weight (n=206)	No wish (n=211)	Put on weight (n=19)	0.920
Rarely/never	99 (48.1)	100 (47.4)	12 (63.2)	
1-6 glasses/units per week	49 (23.8)	48 (22.7)	4 (21.1)	
1 glass/unit per day	34 (16.5)	34 (16.1)	2 (10.5)	
2-3 glasses/units per day	21 (10.2)	27 (12.8)	1 (5.3)	
4+ glasses/units per day	3 (1.5)	2 (0.9)	0 (0.0)	
Cheese (n=436)	Lose weight (n=206)	No wish (n=212)	Put on weight (n=18)	0.893
Rarely/never	9 (4.4)	8 (3.8)	1 (5.6)	
1-3 times per month	36 (17.5)	41 (19.3)	2 (11.1)	
1-3 times per week	86 (41.7)	85 (40.1)	5 (27.8)	
4-6 times per week	52 (25.2)	59 (27.8)	7 (38.9)	
Every day	23 (11.2)	19 (9.0)	3 (16.7)	

<i>Variable</i>	Weight change wish			<i>p</i>
Water (n=434)	Lose weight (n=204)	No wish (n=211)	Put on weight (n=19)	0.342
Rarely/never	3 (1.5)	1 (0.5)	0 (0.0)	
1-6 glasses per week	5 (2.5)	7 (3.3)	0 (0.0)	
1 glass per day	19 (9.3)	17 (8.1)	4 (21.1)	
2-3 glasses per day	57 (27.9)	76 (36.0)	7 (36.8)	
4+ glasses per day	120 (58.8)	110 (52.1)	8 (42.1)	

<i>Variable</i>	Weight change wish			<i>p</i>
Diluted syrups, sugar sweetened (n=434)	Lose weight (n=205)	No wish (n=210)	Put on weight (n=19)	0.767
Rarely/never	164 (80.0)	173 (82.4)	16 (84.2)	
1-6 glasses per week	31 (15.1)	30 (14.3)	2 (10.5)	
1 glass per day	8 (3.9)	4 (1.9)	1 (5.3)	
2-3 glasses per day	1 (0.5)	2 (1.0)	0 (0.0)	
4+ glasses per day	1 (0.5)	1 (0.5)	0 (0.0)	
Soft drinks, sugar sweetened (n=436)	Lose weight (n=206)	No wish (n=211)	Put on weight (n=19)	0.262
Rarely/never	102 (49.5)	90 (42.7)	6 (31.6)	
1-6 glasses per week	88 (42.7)	108 (51.2)	9 (47.4)	
1 glass per day	10 (4.9)	9 (4.3)	1 (5.3)	
2-3 glasses per day	3 (1.5)	4 (1.9)	2 (10.5)	
4+ glasses per day	3 (1.5)	0 (0.0)	1 (5.3)	
Chocolate & sweets (n=433)	Lose weight (n=204)	No wish (n=210)	Put on weight (n=19)	0.471
Rarely/never	19 (9.3)	14 (6.7)	5 (26.3)	
1-3 times per month	55 (27.0)	55 (26.2)	6 (31.6)	
1-3 times per week	105 (51.0)	118 (56.2)	5 (26.3)	
4-6 times per week	24 (11.8)	18 (8.6)	2 (10.5)	
Every day	2 (1.0)	5 (2.4)	1 (5.3)	
Snacks (n=436)	Lose weight (n=206)	No wish (n=211)	Put on weight (n=19)	0.566
Rarely/never	21 (10.2)	16 (7.6)	2 (10.5)	
1-3 times per month	65 (31.6)	76 (36.0)	8 (42.1)	
1-3 times per week	100 (48.5)	104 (49.3)	8 (42.1)	
4-6 times per week	18 (8.7)	12 (5.7)	1 (5.3)	
Every day	2 (1.0)	3 (1.4)	0 (0.0)	

<i>Variable</i>	Weight change wish			<i>p</i>
Junkfood (n=437)	Lose weight (n=206)	No wish (n=212)	Put on weight (n=19)	0.325
Rarely/never	30 (14.6)	21 (9.9)	3 (15.8)	
1-3 times per month	107 (51.9)	123 (58.0)	11 (57.9)	
1-3 times per week	62 (30.1)	65 (30.7)	4 (21.1)	
4-6 times per week	6 (2.9)	3 (1.4)	1 (5.3)	
Every day	1 (0.5)	0 (0.0)	0 (0.0)	

<i>Variable</i>	Weight change wish			<i>p</i>
Diluted syrups, artificial sweetened (n=433)	Lose weight (n=204)	No wish (n=210)	Put on weight (n=19)	0.296
Rarely/never	122 (59.8)	131 (62.4)	13 (68.4)	
1-6 glasses per week	66 (32.4)	70 (33.3)	4 (21.1)	
1 glass per day	13 (6.4)	5 (2.4)	1 (5.3)	
2-3 glasses per day	3 (1.5)	3 (1.4)	1 (5.3)	
4+ glasses per day	0 (0.0)	1 (0.5)	0 (0.0)	
Soft drinks, artificial sweetened (n=432)	Lose weight (n=204)	No wish (n=210)	Put on weight (n=18)	0.384
Rarely/never	98 (48.0)	111 (52.9)	12 (66.7)	
1-6 glasses per week	88 (43.1)	86 (41.0)	3 (16.7)	
1 glass per day	8 (3.9)	8 (3.8)	2 (11.1)	
2-3 glasses per day	7 (3.4)	5 (2.4)	1 (5.6)	
4+ glasses per day	3 (1.5)	0 (0.0)	0 (0.0)	

Supplementary Tables 3 - Dietary variables in relation to weight change wish (males)

<i>Variable</i>	Weight change wish			<i>p</i>
Breakfast (n=337)	Lose weight (n=81)	No wish (n=168)	Put on weight (n=88)	0.834
Rarely/never	13 (16.0)	22 (13.1)	13 (14.8)	
1-3 times per week	18 (22.2)	28 (16.7)	9 (10.2)	
4-6 times per week	19 (23.5)	43 (25.6)	22 (25.0)	
Every day	31 (38.3)	75 (44.6)	44 (50.0)	
Dinner (n=329)	Lose weight (n=79)	No wish (n=165)	Put on weight (n=85)	0.888
Rarely/never	0 (0.0)	0 (0.0)	1 (1.2)	
1-3 times per week	4 (5.1)	8 (4.8)	3 (3.5)	
4-6 times per week	20 (25.3)	36 (21.8)	20 (23.5)	
Every day	55 (69.6)	121 (73.3)	61 (71.8)	
Brought lunch (n=337)	Lose weight (n=83)	No wish (n=169)	Put on weight (n=85)	0.126
Rarely/never	37 (44.6)	60 (35.5)	32 (37.6)	
1-3 times per week	11 (13.3)	23 (13.6)	10 (11.8)	
4-6 times per week	22 (26.5)	31 (18.3)	13 (15.3)	
Every day	13 (15.7)	55 (32.5)	30 (35.3)	

<i>Variable</i>	Weight change wish			<i>p</i>
Fat fish (n=336)	Lose weight (n=80)	No wish (n=169)	Put on weight (n=87)	0.728
Rarely/never	11 (13.8)	21 (12.4)	17 (19.5)	
1-3 times per month	35 (43.8)	76 (45.0)	33 (37.9)	
1-3 times per week	30 (37.5)	66 (39.1)	28 (32.2)	
4-6 times per week	3 (3.8)	5 (3.0)	6 (6.9)	
Every day	1 (1.3)	1 (0.6)	3 (3.4)	
Lean fish (n=335)	Lose weight (n=81)	No wish (n=169)	Put on weight (n=85)	0.492
Rarely/never	7 (8.6)	28 (16.6)	18 (21.2)	
1-3 times per month	50 (61.7)	78 (46.2)	35 (41.2)	
1-3 times per week	22 (27.2)	58 (34.3)	28 (32.9)	
4-6 times per week	1 (1.2)	4 (2.4)	4 (4.7)	
Every day	1 (1.2)	1 (0.6)	0 (0.0)	

<i>Variable</i>	Weight change wish			<i>p</i>
Fruits (n=339)	Lose weight (n=83)	No wish (n=168)	Put on weight (n=88)	0.512
Rarely/never	5 (6.0)	9 (5.4)	2 (2.3)	
1-3 times per month	11 (13.3)	24 (14.3)	16 (18.2)	
1-3 times per week	28 (33.7)	50 (29.8)	19 (21.6)	
4-6 times per week	20 (24.1)	34 (20.2)	20 (22.7)	
1-2 times per day	13 (15.7)	28 (16.7)	28 (31.8)	
3-4 times per day	4 (4.8)	15 (8.9)	2 (2.3)	
5+ times per day	2 (2.4)	8 (4.8)	1 (1.1)	
Vegetables (n=337)	Lose weight (n=82)	No wish (n=167)	Put on weight (n=88)	0.956
Rarely/never	3 (3.7)	3 (1.8)	1 (1.1)	
1-3 times per month	6 (7.3)	10 (6.0)	8 (9.1)	
1-3 times per week	18 (22.0)	35 (21.0)	17 (9.3)	
4-6 times per week	36 (43.9)	66 (39.5)	30 (34.1)	
1-2 times per day	14 (17.1)	40 (24.0)	25 (28.4)	
3-4 times per day	3 (3.7)	8 (4.8)	5 (5.7)	
5+ times per day	2 (2.4)	5 (3.0)	2 (2.3)	
Fruit juice (n=337)	Lose weight (n=83)	No wish (n=167)	Put on weight (n=87)	0.934
Rarely/never	13 (15.7)	32 (19.2)	16 (18.4)	
1-6 glasses per week	41 (49.4)	78 (46.7)	38 (43.7)	
1 glass per day	20 (24.1)	36 (21.6)	23 (26.4)	
2-3 glasses per day	7 (8.4)	18 (10.8)	10 (11.5)	
4+ glasses per day	2 (2.4)	3 (1.8)	0 (0.0)	

<i>Variable</i>	Weight change wish			<i>p</i>
Full-fat dairy drinks (n=339)	Lose weight (n=83)	No wish (n=169)	Put on weight (n=87)	0.539
Rarely/never	53 (63.9)	91 (53.8)	39 (44.8)	
1-6 glasses/units per week	23 (27.7)	58 (34.3)	25 (28.7)	
1 glass/unit per day	6 (7.2)	12 (7.1)	13 (14.9)	
2-3 glasses/units per day	1 (1.2)	7 (4.1)	4 (4.6)	
4+ glasses/units per day	0 (0.0)	1 (0.6)	6 (6.9)	
Fat-reduced dairy drinks (n=339)	Lose weight (n=83)	No wish (n=169)	Put on weight (n=87)	0.246
Rarely/never	32 (38.6)	57 (33.7)	25 (28.7)	
1-6 glasses/units per week	29 (34.9)	43 (25.4)	22 (25.3)	
1 glass/unit per day	13 (15.7)	29 (17.2)	16 (18.4)	
2-3 glasses/units per day	9 (10.8)	29 (17.2)	18 (20.7)	
4+ glasses/units per day	0 (0.0)	11 (6.5)	6 (6.9)	
Skimmed milk (n=336)	Lose weight (n=83)	No wish (n=167)	Put on weight (n=86)	0.150
Rarely/never	60 (72.3)	128 (76.6)	69 (80.2)	
1-6 glasses/units per week	14 (16.9)	22 (13.2)	7 (8.1)	
1 glass/unit per day	7 (8.4)	5 (3.0)	2 (2.3)	
2-3 glasses/units per day	2 (2.4)	6 (3.6)	7 (8.1)	
4+ glasses/units per day	0 (0.0)	6 (3.6)	1 (1.2)	
Extra semi-skimmed milk (n=339)	Lose weight (n=83)	No wish (n=168)	Put on weight (n=88)	0.930
Rarely/never	41 (49.4)	88 (52.4)	44 (50.0)	
1-6 glasses/units per week	17 (20.5)	35 (20.8)	14 (15.9)	
1 glass/unit per day	14 (16.9)	25 (14.9)	14 (15.9)	
2-3 glasses/units per day	11 (13.3)	16 (9.5)	8 (9.1)	
4+ glasses/units per day	0 (0.0)	4 (2.4)	8 (9.1)	
Cheese (n=338)	Lose weight (n=82)	No wish (n=169)	Put on weight (n=87)	0.111
Rarely/never	0 (0.0)	6 (3.6)	1 (1.1)	
1-3 times per month	8 (9.8)	14 (8.3)	13 (14.9)	
1-3 times per week	44 (53.7)	67 (39.6)	32 (36.8)	
4-6 times per week	23 (28.0)	61 (36.1)	32 (36.8)	
Every day	7 (8.5)	21 (12.4)	9 (10.3)	

<i>Variable</i>	Weight change wish			<i>p</i>
Water (n=340)	Lose weight (n=83)	No wish (n=169)	Put on weight (n=88)	0.604
Rarely/never	0 (0.0)	4 (2.4)	1 (1.1)	
1-6 glasses per week	4 (4.8)	11 (6.5)	6 (6.8)	
1 glass per day	7 (8.4)	13 (7.7)	12 (13.6)	
2-3 glasses per day	37 (44.6)	68 (40.2)	38 (31.8)	
4+ glasses per day	35 (42.2)	73 (43.2)	41 (46.6)	

<i>Variable</i>	Weight change wish			<i>p</i>
Diluted syrups, sugar sweetned (n=337)	Lose weight (n=82)	No wish (n=168)	Put on weight (n=87)	0.545
Rarely/never	49 (59.8)	109 (64.9)	56 (64.4)	
1-6 glasses per week	24 (29.3)	43 (25.6)	22 (25.3)	
1 glass per day	7 (8.5)	8 (4.8)	7 (8.0)	
2-3 glasses per day	2 (2.4)	7 (4.2)	1 (1.1)	
4+ glasses per day	0 (0.0)	1 (0.6)	1 (1.1)	
Soft drinks, sugar sweetned (n=338)	Lose weight (n=83)	No wish (n=167)	Put on weight (n=88)	0.289
Rarely/never	17 (20.5)	33 (19.8)	20 (22.7)	
1-6 glasses per week	43 (51.8)	98 (58.7)	45 (51.1)	
1 glass per day	8 (9.6)	21 (12.6)	11 (12.5)	
2-3 glasses per day	11 (13.3)	12 (7.2)	10 (11.4)	
4+ glasses per day	4 (4.8)	3 (1.8)	2 (2.3)	
Chocolate & sweets (n=339)	Lose weight (n=82)	No wish (n=169)	Put on weight (n=88)	0.220
Rarely/never	10 (12.2)	22 (13.0)	16 (18.2)	
1-3 times per month	26 (31.7)	61 (36.1)	27 (30.7)	
1-3 times per week	38 (46.3)	68 (40.2)	38 (43.2)	
4-6 times per week	6 (7.3)	18 (10.7)	6 (6.8)	
Every day	2 (2.4)	0 (0.0)	1 (1.1)	
Snacks (n=338)	Lose weight (n=82)	No wish (n=168)	Put on weight (n=88)	0.324
Rarely/never	7 (8.5)	19 (11.3)	11 (12.5)	
1-3 times per month	30 (36.6)	56 (33.3)	33 (37.5)	
1-3 times per week	39 (47.6)	81 (48.2)	37 (42.0)	
4-6 times per week	4 (4.9)	12 (7.1)	5 (5.7)	
Every day	2 (2.4)	0 (0.0)	2 (2.3)	

<i>Variable</i>	Weight change wish			<i>p</i>
Junkfood (n=338)	Lose weight (n=82)	No wish (n=169)	Put on weight (n=87)	0.409
Rarely/never	8 (9.8)	9 (5.3)	7 (8.0)	
1-3 times per month	35 (42.7)	73 (43.2)	32 (36.8)	
1-3 times per week	34 (41.5)	76 (45.0)	41 (47.1)	
4-6 times per week	4 (4.9)	11 (6.5)	5 (5.7)	
Every day	1 (1.2)	0 (0.0)	2 (2.3)	

<i>Variable</i>	Weight change wish			<i>p</i>
Diluted syrups, artificial sweetened (n=338)	Lose weight (n=82)	No wish (n=169)	Put on weight (n=87)	0.249
Rarely/never	44 (53.7)	115 (68.0)	61 (70.1)	
1-6 glasses per week	26 (31.7)	36 (21.3)	22 (25.3)	
1 glass per day	9 (11.0)	10 (5.9)	2 (2.3)	
2-3 glasses per day	3 (3.7)	7 (4.1)	2 (2.3)	
4+ glasses per day	0 (0.0)	1 (0.6)	0 (0.0)	
Soft drinks, artificial sweetened (n=338)	Lose weight (n=83)	No wish (n=168)	Put on weight (n=87)	0.010
Rarely/never	40 (48.2)	107 (63.7)	55 (63.2)	
1-6 glasses per week	23 (27.7)	49 (29.2)	26 (29.9)	
1 glass per day	11 (13.3)	8 (4.8)	3 (3.4)	
2-3 glasses per day	7 (8.4)	4 (2.4)	2 (2.3)	
4+ glasses per day	2 (2.4)	0 (0.0)	1 (1.1)	

Supplementary Tables 4 - Dietary variables in relation to weight change desire (expected females)

Variable	Under- and normal weight females		p	OR	CI (95%)
Breakfast (n=326)	Wants to lose weight (n=135)	No weight change desire (n=191)	0.073		
Rarely/never	16 (11.9)	19 (9.9)			
1-3 times per week	23 (17.0)	28 (14.7)			
4-6 times per week	39 (28.9)	35 (18.3)			
Every day	57 (42.2)	109 (57.1)			
Dinner (n=310)	Wants to lose weight (n=126)	No weight change desire (n=184)	0.007	0.657	0.483 - 0.894
Rarely/never	2 (1.6)	3 (1.6)			
1-3 times per week	20 (15.9)	13 (7.1)			
4-6 times per week	45 (35.7)	55 (29.9)			
Every day	59 (46.8)	113 (61.4)			
Brought lunch (n=325)	Wants to lose weight (n=135)	No weight change desire (n=190)	0.083		
Rarely/never	31 (23.0)	30 (15.8)			
1-3 times per week	26 (19.3)	29 (15.3)			
4-6 times per week	31 (23.0)	58 (30.5)			
Every day	47 (34.8)	73 (38.4)			

Variable	Under- and normal weight females		p	OR	CI (95%)
Fat fish (n=324)	Wants to lose weight (n=133)	No weight change desire (n=191)	0.205		
Rarely/never	18 (13.5)	27 (14.1)			
1-3 times per month	51 (38.3)	84 (44.0)			
1-3 times per week	55 (41.4)	74 (38.7)			
4-6 times per week	8 (6.0)	6 (3.1)			
Every day	1 (0.8)	0 (0.0)			
Lean fish (n=319)	Wants to lose weight (n=132)	No weight change desire (n=187)	0.382		
Rarely/never	30 (22.7)	41 (21.9)			
1-3 times per month	47 (35.6)	86 (46.0)			
1-3 times per week	51 (38.6)	53 (28.3)			
4-6 times per week	4 (3.0)	7 (3.7)			
Every day	0 (0.0)	0 (0.0)			

Variable	Under- and normal weight females		p	OR	CI (95%)
Fruit (n=325)	Wants to lose weight (n=135)	No weight change desire (n=190)	0.109		
Rarely/never	1 (0.7)	4 (2.1)			
1-3 times per month	5 (3.7)	15 (7.9)			
1-3 times per week	31 (23.0)	50 (26.3)			
4-6 times per week	33 (24.4)	33 (17.4)			
1-2 times per day	44 (32.6)	62 (32.6)			
3-4 times per day	13 (9.6)	22 (11.6)			
5+ times per day	8 (5.9)	4 (2.1)			
Vegetables (n=324)	Wants to lose weight (n=135)	No weight change desire (n=189)	0.110		
Rarely/never	3 (2.2)	6 (3.2)			
1-3 times per month	5 (3.7)	11 (5.8)			
1-3 times per week	21 (15.6)	34 (18.0)			
4-6 times per week	44 (32.6)	58 (30.7)			
1-2 times per day	40 (29.6)	60 (31.7)			
3-4 times per day	15 (11.1)	17 (9.0)			
5+ times per day	7 (5.2)	3 (1.6)			
Fruit juice (n=325)	Wants to lose weight (n=135)	No weight change desire (n=191)	0.735		
Rarely/never	37 (27.4)	38 (20.0)			
1-6 glasses per week	62 (45.9)	102 (53.7)			
1 glass per day	21 (15.6)	33 (17.4)			
2-3 glasses per day	13 (9.6)	17 (8.9)			
4+ glasses per day	2 (1.5)	0 (0.0)			

Variable	Under- and normal weight females		p	OR	CI (95%)
Full-fat dairy drinks (n=324)	Wants to lose weight (n=135)	No weight change desire (n=189)	0.877		
Rarely/never	86 (63.7)	106 (56.1)			
1-6 glasses/units per week	34 (25.2)	70 (37.0)			
1 glass/unit per day	11 (8.1)	11 (5.8)			
2-3 glasses/units per day	3 (2.2)	1 (0.5)			
4+ glasses/units per day	1 (0.7)	1 (0.5)			
Fat-reduced dairy drinks (n=323)	Wants to lose weight (n=134)	No weight change desire (n=189)	0.949		
Rarely/never	54 (40.3)	73 (38.6)			
1-6 glasses/units per week	46 (34.3)	74 (39.2)			
1 glass/unit per day	24 (17.9)	27 (14.3)			
2-3 glasses/units per day	9 (6.7)	13 (6.9)			
4+ glasses/units per day	1 (0.7)	2 (1.1)			
Skimmed milk (sweet or sour) (n=322)	Wants to lose weight (n=132)	No weight change desire (n=190)	0.036	1.327	1.019 - 1.730
Rarely/never	97 (73.5)	155 (81.6)			
1-6 glasses/units per week	14 (10.6)	20 (10.5)			
1 glass/unit per day	10 (7.6)	8 (4.2)			
2-3 glasses/units per day	11 (8.3)	6 (3.2)			
4+ glasses/units per day	0 (0.0)	1 (0.5)			
Extra semi-skimmed milk (n=325)	Wants to lose weight (n=135)	No weight change desire (n=190)	0.574		
Rarely/never	63 (46.7)	85 (44.7)			
1-6 glasses/units per week	36 (26.7)	45 (23.7)			
1 glass/unit per day	18 (13.3)	32 (16.8)			
2-3 glasses/units per day	15 (11.1)	26 (13.7)			
4+ glasses/units per day	3 (2.2)	2 (1.1)			
Cheese (all kinds) (n=326)	Wants to lose weight (n=135)	No weight change desire (n=191)	0.206		
Rarely/never	4 (3.0)	8 (4.2)			
1-3 times per month	20 (14.8)	34 (17.8)			
1-3 times per week	54 (40.0)	76 (39.8)			
4-6 times per week	38 (28.1)	55 (28.8)			
Every day	19 (14.1)	18 (9.4)			

Variable	Under- and normal weight females		p	OR	CI (95%)
Water (n=324)	Wants to lose weight (n=134)	No weight change desire (n=190)	0.922		
Rarely/never	2 (1.5)	1 (0.5)			
1-6 glasses per week	2 (1.5)	6 (3.2)			
1 glass per day	14 (10.4)	15 (7.9)			
2-3 glasses per day	40 (29.9)	66 (34.7)			
4+ glasses per day	76 (56.7)	102 (53.7)			

Variable	Under- and normal weight females		p	OR	CI (95%)
Diluted syrups, sugar sweetened (n=323)	Wants to lose weight (n=134)	No weight change desire (n=189)	0.799		
Rarely/never	112 (83.6)	153 (81.0)			
1-6 glasses per week	16 (11.9)	29 (15.3)			
1 glass per day	4 (3.0)	4 (2.1)			
2-3 glasses per day	1 (0.7)	2 (1.1)			
4+ glasses per day	1 (0.7)	1 (0.5)			
Soft drinks, sugar sweetened (n=326)	Wants to lose weight (n=135)	No weight change desire (n=191)	0.144		
Rarely/never	75 (55.6)	79 (41.4)			
1-6 glasses per week	49 (36.3)	100 (52.4)			
1 glass per day	8 (5.9)	8 (4.2)			
2-3 glasses per day	2 (1.5)	4 (2.1)			
4+ glasses per day	1 (0.7)	0 (0.0)			
Sweets (n=322)	Wants to lose weight (n=133)	No weight change desire (n=189)	0.431		
Rarely/never	13 (9.8)	13 (6.9)			
1-3 times per month	37 (27.8)	49 (25.9)			
1-3 times per week	64 (48.1)	105 (55.0)			
4-6 times per week	18 (13.5)	18 (9.5)			
Every day	1 (0.8)	5 (2.6)			
Snacks (n=325)	Wants to lose weight (n=135)	No weight change desire (n=190)	0.670		
Rarely/never	14 (10.4)	14 (7.4)			
1-3 times per month	43 (31.9)	71 (37.4)			
1-3 times per week	62 (45.9)	91 (47.9)			
4-6 times per week	14 (10.4)	11 (5.8)			
Every day	2 (1.5)	3 (1.6)			

<i>Variable</i>	Under- and normal weight females		<i>p</i>	<i>OR</i>	<i>CI (95%)</i>
Junkfood (n=326)	Wants to lose weight (n=135)	No weight change desire (n=191)	0.918		
Rarely/never	22 (16.3)	19 (9.9)			
1-3 times per month	69 (51.1)	112 (58.6)			
1-3 times per week	37 (27.4)	57 (29.8)			
4-6 times per week	6 (4.4)	3 (1.6)			
Every day	1 (0.7)	0 (0.0)			

<i>Variable</i>	Under- and normal weight females		<i>p</i>	<i>OR</i>	<i>CI (95%)</i>
Diluted syrups, artificial sweetened (n=322)	Wants to lose weight (n=133)	No weight change desire (n=189)	0.190		
Rarely/never	90 (67.7)	117 (61.9)			
1-6 glasses per week	38 (28.6)	63 (33.3)			
1 glass per day	5 (3.8)	5 (2.6)			
2-3 glasses per day	0 (0.0)	3 (1.6)			
4+ glasses per day	0 (0.0)	1 (0.5)			
Soft drinks, artificial sweetened (n=322)	Wants to lose weight (n=133)	No weight change desire (n=189)	0.310		
Rarely/never	72 (54.1)	103 (54.5)			
1-6 glasses per week	50 (37.6)	76 (40.2)			
1 glass per day	5 (3.8)	7 (3.7)			
2-3 glasses per day	3 (2.3)	3 (1.6)			
4+ glasses per day	3 (2.3)	0 (0.0)			

Supplementary Tables 5 - Dietary variables in relation to weight change desire (expected males)

Variable	Over- and normal weight males		p	OR	CI (95%)
Breakfast (n=239)	Wants to gain weight (n=67)	No weight change desire (n=172)	0.837		
Rarely/never	12 (17.9)	20 (11.6)			
1-3 times per week	6 (9.0)	29 (16.9)			
4-6 times per week	18 (26.9)	46 (26.7)			
Every day	31 (46.3)	77 (44.8)			
Dinner (n=235)	Wants to gain weight (n=65)	No weight change desire (n=170)	0.852		
Rarely/never	1 (1.5)	0 (0.0)			
1-3 times per week	3 (4.6)	9 (5.3)			
4-6 times per week	15 (23.1)	42 (24.7)			
Every day	46 (70.8)	119 (70.0)			
Brought lunch (n=237)	Wants to gain weight (n=64)	No weight change desire (n=173)	0.549		
Rarely/never	20 (31.3)	58 (33.5)			
1-3 times per week	9 (14.1)	24 (13.9)			
4-6 times per week	10 (15.6)	35 (20.2)			
Every day	25 (39.1)	56 (32.4)			

Variable	Over- and normal weight males		p	OR	CI (95%)
Fat fish (n=239)	Wants to gain weight (n=66)	No weight change desire (n=173)	0.443		
Rarely/never	12 (18.2)	21 (12.1)			
1-3 times per month	24 (36.4)	78 (45.1)			
1-3 times per week	22 (33.3)	68 (39.3)			
4-6 times per week	5 (7.6)	5 (2.9)			
Every day	3 (4.5)	1 (0.6)			
Lean fish (n=240)	Wants to gain weight (n=67)	No weight change desire (n=173)	0.989		
Rarely/never	13 (19.4)	29 (16.8)			
1-3 times per month	29 (43.3)	82 (47.4)			
1-3 times per week	22 (32.8)	57 (32.9)			
4-6 times per week	3 (4.5)	4 (2.3)			
Every day	0 (0.0)	1 (0.6)			

Variable	Over- and normal weight males		p	OR	CI (95%)
Fruit (n=240)	Wants to gain weight (n=67)	No weight change desire (n=173)	0.632		
Rarely/never	1 (1.5)	10 (5.8)			
1-3 times per month	11 (16.4)	20 (11.6)			
1-3 times per week	14 (20.9)	52 (30.1)			
4-6 times per week	15 (22.4)	39 (22.5)			
1-2 times per day	23 (34.3)	29 (16.8)			
3-4 times per day	2 (3.0)	16 (9.2)			
5+ times per day	1 (1.5)	7 (4.0)			
Vegetables (n=238)	Wants to gain weight (n=67)	No weight change desire (n=171)	0.440		
Rarely/never	1 (1.5)	3 (1.8)			
1-3 times per month	4 (6.0)	11 (6.4)			
1-3 times per week	15 (22.4)	36 (21.1)			
4-6 times per week	19 (28.4)	65 (38.0)			
1-2 times per day	21 (31.3)	43 (25.1)			
3-4 times per day	5 (7.5)	9 (5.3)			
5+ times per day	2 (3.0)	4 (2.3)			
Fruit juice (n=238)	Wants to gain weight (n=66)	No weight change desire (n=172)	0.355		
Rarely/never	8 (12.1)	31 (18.0)			
1-6 glasses per week	29 (43.9)	83 (48.3)			
1 glass per day	21 (31.8)	34 (19.8)			
2-3 glasses per day	8 (12.1)	21 (12.2)			
4+ glasses per day	0 (0.0)	3 (1.7)			

Variable	Over- and normal weight males		p	OR	CI (95%)
Full-fat dairy drinks (n=239)	Wants to gain weight (n=66)	No weight change desire (n=173)	<0.001	1.624	1.225 - 2.153
Rarely/never	26 (39.4)	91 (52.6)			
1-6 glasses/units per week	20 (30.3)	63 (36.4)			
1 glass/unit per day	11 (16.7)	11 (6.4)			
2-3 glasses/units per day	3 (4.5)	7 (4.0)			
4+ glasses/units per day	6 (9.1)	1 (0.6)			
Fat-reduced dairy drinks (n=239)	Wants to gain weight (n=66)	No weight change desire (n=173)	0.181		
Rarely/never	15 (22.7)	58 (33.5)			
1-6 glasses/units per week	21 (31.8)	45 (26.0)			
1 glass/unit per day	11 (16.7)	31 (17.9)			
2-3 glasses/units per day	13 (19.7)	28 (16.2)			
4+ glasses/units per day	6 (9.1)	11 (6.4)			
Skimmed milk (sweet or sour) (n=236)	Wants to gain weight (n=65)	No weight change desire (n=171)	0.747		
Rarely/never	51 (78.5)	130 (76.0)			
1-6 glasses/units per week	7 (10.8)	24 (14.0)			
1 glass/unit per day	2 (3.1)	5 (2.9)			
2-3 glasses/units per day	5 (7.7)	6 (3.5)			
4+ glasses/units per day	0 (0.0)	6 (3.5)			
Extra semi-skimmed milk (n=239)	Wants to gain weight (n=67)	No weight change desire (n=172)	0.015	1.318	1.055 - 1.646
Rarely/never	29 (43.3)	96 (55.8)			
1-6 glasses/units per week	12 (17.9)	30 (17.4)			
1 glass/unit per day	12 (17.9)	26 (15.1)			
2-3 glasses/units per day	6 (9.0)	16 (9.3)			
4+ glasses/units per day	8 (11.9)	4 (2.3)			
Cheese (all kinds) (n=239)	Wants to gain weight (n=66)	No weight change desire (n=173)	0.796		
Rarely/never	1 (1.5)	5 (2.9)			
1-3 times per month	9 (13.6)	20 (11.6)			
1-3 times per week	23 (34.8)	68 (39.3)			
4-6 times per week	26 (39.4)	60 (34.7)			
Every day	7 (10.6)	20 (11.6)			

Variable	Over- and normal weight males		p	OR	CI (95%)
Water (n=240)	Wants to gain weight (n=67)	No weight change desire (n=173)	0.296		
Rarely/never	0 (0.0)	4 (2.3)			
1-6 glasses per week	4 (6.0)	12 (6.9)			
1 glass per day	8 (11.9)	13 (7.5)			
2-3 glasses per day	20 (29.9)	71 (41.0)			
4+ glasses per day	35 (52.2)	73 (42.2)			

Variable	Over- and normal weight males		p	OR	CI (95%)
Diluted syrups, sugar sweetened (n=239)	Wants to gain weight (n=67)	No weight change desire (n=172)	0.406		
Rarely/never	39 (58.2)	115 (66.9)			
1-6 glasses per week	20 (29.9)	42 (24.4)			
1 glass per day	7 (10.4)	7 (4.1)			
2-3 glasses per day	0 (0.0)	7 (4.1)			
4+ glasses per day	1 (1.5)	1 (0.6)			
Soft drinks, sugar sweetened (n=238)	Wants to gain weight (n=67)	No weight change desire (n=171)	0.313		
Rarely/never	17 (25.4)	44 (25.7)			
1-6 glasses per week	33 (49.3)	96 (56.1)			
1 glass per day	8 (11.9)	18 (10.5)			
2-3 glasses per day	8 (11.9)	10 (5.8)			
4+ glasses per day	1 (1.5)	3 (1.8)			
Sweets (n=240)	Wants to gain weight (n=67)	No weight change desire (n=173)	0.389		
Rarely/never	14 (20.9)	22 (12.7)			
1-3 times per month	20 (29.9)	63 (36.4)			
1-3 times per week	27 (40.3)	71 (41.0)			
4-6 times per week	6 (9.0)	17 (9.8)			
Every day	0 (0.0)	0 (0.0)			
Snacks (n=239)	Wants to gain weight (n=67)	No weight change desire (n=172)	0.407		
Rarely/never	10 (14.9)	20 (11.6)			
1-3 times per month	26 (38.8)	58 (33.7)			
1-3 times per week	26 (38.8)	82 (47.7)			
4-6 times per week	4 (6.0)	12 (7.0)			
Every day	1 (1.5)	0 (0.0)			

<i>Variable</i>	Over- and normal weight males		<i>p</i>	<i>OR</i>	<i>CI (95%)</i>
Junkfood (n =239)	Wants to gain weight (n =66)	No weight change desire (n =173)	0.715		
Rarely/never	6 (9.1)	10 (5.8)			
1-3 times per month	26 (39.4)	78 (45.1)			
1-3 times per week	29 (43.9)	75 (43.4)			
4-6 times per week	3 (4.5)	10 (5.8)			
Every day	2 (3.0)	0 (0.0)			

<i>Variable</i>	Over- and normal weight males		<i>p</i>	<i>OR</i>	<i>CI (95%)</i>
Diluted syrups, artificial sweetened (n =239)	Wants to gain weight (n =66)	No weight change desire (n =173)	0.811		
Rarely/never	41 (62.1)	114 (65.9)			
1-6 glasses per week	21 (31.8)	41 (23.7)			
1 glass per day	2 (3.0)	10 (5.8)			
2-3 glasses per day	2 (3.0)	7 (4.0)			
4+ glasses per day	0 (0.0)	1 (0.6)			
Soft drinks, artificial sweetened (n =238)	Wants to gain weight (n =66)	No weight change desire (n =172)	0.482		
Rarely/never	39 (59.1)	108 (62.8)			
1-6 glasses per week	21 (31.8)	51 (29.7)			
1 glass per day	3 (4.5)	7 (4.1)			
2-3 glasses per day	2 (3.0)	6 (3.5)			
4+ glasses per day	1 (1.5)	0 (0.0)			

Supplementary Tables 6 – Dietary variables in relation to weight change desire, with confounding variables (unexpected females)

Breakfast			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Breakfast	0,532	0,874	0,573 - 1,334
Breakfast + Health	0,648	0,905	0,591 - 1,387
Breakfast + PA	0,744	0,930	0,600 - 1,440
Breakfast + Health + PA	0,728	0,925	0,596 - 1,436

Dinner			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Dinner	0,123	1,898	0,841 - 4,283
Dinner + Health	0,102	1,990	0,872 - 4,542
Dinner + PA	0,111	1,956	0,858 - 4,459
Dinner + Health + PA	0,102	1,998	0,872 - 4,577

Brought lunch			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Brought lunch	0,495	0,868	0,579 - 1,302
Brought lunch + Health	0,640	0,906	0,599 - 1,370
Brought lunch + PA	0,660	0,912	0,605 - 1,375
Brought lunch + Health + PA	0,700	0,921	0,606 - 1,400

Fat fish			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Fat fish	0,163	0,653	0,359 - 1,189
Fat fish + Health	0,238	0,698	0,385 - 1,267
Fat fish + PA	0,191	0,669	0,366 - 1,222
Fat fish + Health + PA	0,240	0,699	0,385 - 1,270

Lean fish			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Lean fish	0,094	0,591	0,319 - 1,093
Lean fish + Health	0,126	0,619	0,335 - 1,145
Lean fish + PA	0,097	0,594	0,321 - 1,099
Lean fish + Health + PA	0,124	0,617	0,334 - 1,141

Fruits			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Fruits	0,260	0,813	0,566 - 1,166
Fruits + Health	0,451	0,867	0,598 - 1,257
Fruits + PA	0,426	0,855	0,583 - 1,256
Fruits + Health + PA	0,511	0,878	0,595 - 1,294

Vegetables			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Vegetables	0,056	0,699	0,484 - 1,010
Vegetables + Health	0,130	0,784	0,514 - 1,090
Vegetables + PA	0,096	0,724	0,494 - 1,059
Vegetables + Health + PA	0,148	0,753	0,513 - 1,106

Fruit juice			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Fruit juice	0,694	1,105	0,673 - 1,812
Fruit juice + Health	0,794	1,068	0,650 - 1,757
Fruit juice + PA	0,776	1,075	0,653 - 1,771
Fruit juice + Health + PA	0,820	1,060	0,643 - 1,747

Full-fat dairy drinks			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Full fat drinks	0,779	1,092	0,590 - 2,024
Full fat drinks + Health	0,575	1,199	0,635 - 2,264
Full fat drinks + PA	0,785	1,089	0,590 - 2,012
Full fat drinks + Health + PA	0,595	1,188	0,630 - 2,239

Fat-reduced dairy drinks			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Fat-reduced drinks	0,082	1,461	0,953 - 2,242
Fat-reduced drinks + Health	0,051	1,539	0,997 - 2,376
Fat-reduced drinks + PA	0,068	1,495	0,971 - 2,302
Fat-reduced drinks + Health + PA	0,051	1,543	0,997 - 2,387

Skimmed milk			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Skimmed milk	0,485	0,786	0,400 - 1,545
Skimmed milk + Health	0,534	0,804	0,404 - 1,599
Skimmed milk + PA	0,536	0,807	0,408 - 1,593
Skimmed milk + Health + PA	0,546	0,808	0,406 - 1,611

Extra semi-skimmed milk			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Extra semi-skimmed milk	0,153	0,687	0,410 - 1,150
Extra semi-skimmed milk + Health	0,224	0,725	0,432 - 1,218
Extra semi-skimmed milk + PA	0,217	0,719	0,425 - 1,214
Extra semi-skimmed milk + Health + PA	0,248	0,734	0,434 - 1,241

Cheese			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Cheese	0,212	1,362	0,838 - 2,212
Cheese + Health	0,143	1,456	0,881 - 2,407
Cheese + PA	0,191	1,391	0,848 - 2,283
Cheese + Health + PA	0,145	1,456	0,879 - 2,413

Water			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Water	0,386	0,805	0,492 - 1,316
Water + Health	0,631	0,887	0,543 - 1,449
Water + PA	0,578	0,864	0,516 - 1,446
Water + Health + PA	0,702	0,906	0,546 - 1,502

Diluted syrups, sugar sweetned (SSW)			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Diluted syrups, SSW	0,797	0,893	0,377 - 2,113
Diluted syrups, SSW + Health	0,712	0,849	0,357 - 2,023
Diluted syrups, SSW + PA	0,725	0,857	0,363 - 2,025
Diluted syrups, SSW + Health + PA	0,693	0,839	0,352 - 2,000

Soft drinks, sugar sweetned (SSW)			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Soft drinks, SSW	0,010	1,850	1,161 - 2,948
Soft drinks, SSW + Health	0,028	1,698	1,058 - 2,727
Soft drinks, SSW + PA	0,024	1,769	1,079 - 2,900
Soft drinks, SSW + Health + PA	0,035	1,702	1,038 - 2,789

Chocolate & sweets			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Chocolate & sweets	0,083	0,618	0,358 - 1,065
Chocolate & sweets + Health	0,054	0,587	0,342 - 1,008
Chocolate & sweets + PA	0,057	0,590	0,343 - 1,015
Chocolate & sweets + Health + PA	0,048	0,580	0,338 - 0,995

Snacks			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Snacks	0,394	0,778	0,437 - 1,386
Snacks + Health	0,285	0,726	0,404 - 1,306
Snacks + PA	0,264	0,715	0,398 - 1,287
Snacks + Health + PA	0,249	0,707	0,392 - 1,275

Junkfood			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Junkfood	0,649	0,856	0,438 - 1,672
Junkfood + Health	0,426	0,758	0,383 - 1,500
Junkfood + PA	0,489	0,787	0,400 - 1,551
Junkfood + Health + PA	0,400	0,746	0,377 - 1,476

Diluted syrups, artificial sweetened (ASW)			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Diluted syrups, ASW	0,975	1,011	0,516 - 1,982
Diluted syrups, ASW + Health	0,859	0,938	0,466 - 1,889
Diluted syrups, ASW + PA	0,995	1,002	0,509 - 1,973
Diluted syrups, ASW + Health + PA	0,871	0,944	0,469 - 1,899

Soft drinks, artificial sweetened (ASW)			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Soft drinks, ASW	0,753	0,900	0,469 - 1,730
Soft drinks, ASW + Health	0,699	0,880	0,462 - 1,679
Soft drinks, ASW + PA	0,741	0,896	0,468 - 1,717
Soft drinks, ASW + Health + PA	0,692	0,877	0,460 - 1,676

Supplementary Tables 7 - Dietary variables in relation to weight change desire, with confounding variables (unexpected males)

Breakfast			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Breakfast	0,135	0,842	0,673 - 1,055
Breakfast + Health	0,214	0,864	0,686 - 1,088
Breakfast + PA	0,190	0,855	0,676 - 1,081
Breakfast + Health + PA	0,185	0,852	0,673 - 1,080

Dinner			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Dinner	0,682	0,914	0,594 - 1,406
Dinner + Health	0,719	0,923	0,598 - 1,426
Dinner + PA	0,737	0,928	0,601 - 1,433
Dinner + Health + PA	0,707	0,920	0,595 - 1,422

Brought lunch			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Brought lunch	0,030	0,800	0,654 - 0,979
Brought lunch + Health	0,055	0,816	0,662 - 1,005
Brought lunch + PA	0,043	0,805	0,652 - 0,993
Brought lunch + Health + PA	0,043	0,802	0,648 - 0,993

Fat fish			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Fat fish	0,988	0,998	0,738 - 1,349
Fat fish + Health	0,729	1,057	0,774 - 1,442
Fat fish + PA	0,827	1,036	0,756 - 1,419
Fat fish + Health + PA	0,772	1,048	0,762 - 1,441

Lean fish			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Lean fish	0,881	1,025	0,740 - 1,421
Lean fish + Health	0,684	1,072	0,768 - 1,495
Lean fish + PA	0,774	1,050	0,754 - 1,463
Lean fish + Health + PA	0,703	1,067	0,764 - 1,491

Fruits			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Fruits	0,250	0,900	0,753 - 1,077
Fruits + Health	0,478	0,934	0,774 - 1,127
Fruits + PA	0,350	0,913	0,755 - 1,105
Fruits + Health + PA	0,420	0,923	0,759 - 1,122

Vegetables			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Vegetables	0,164	0,857	0,690 - 1,065
Vegetables + Health	0,369	0,901	0,719 - 1,130
Vegetables + PA	0,201	0,864	0,690 - 1,081
Vegetables + Health + PA	0,322	0,890	0,707 - 1,121

Fruit juice			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Fruit juice	0,825	1,030	0,791 - 1,342
Fruit juice + Health	0,755	1,044	0,796 - 1,369
Fruit juice + PA	0,710	1,052	0,805 - 1,375
Fruit juice + Health + PA	0,773	1,041	0,792 - 1,368

Full-fat dairy drinks			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Full fat drinks	0,012	0,657	0,473 - 0,912
Full fat drinks + Health	0,028	0,690	0,495 - 0,961
Full fat drinks + PA	0,015	0,660	0,472 - 0,922
Full fat drinks + Health + PA	0,022	0,674	0,481 - 0,944

Fat-reduced dairy drinks			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Fat-reduced drinks	0,006	0,735	0,590 - 0,915
Fat-reduced drinks + Health	0,008	0,737	0,588 - 0,923
Fat-reduced drinks + PA	0,007	0,738	0,591 - 0,922
Fat-reduced drinks + Health + PA	0,007	0,732	0,584 - 0,917

Skimmed milk			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Skimmed milk	0,829	0,970	0,738 - 1,276
Skimmed milk + Health	0,841	1,029	0,779 - 1,359
Skimmed milk + PA	0,959	0,993	0,749 - 1,316
Skimmed milk + Health + PA	0,895	1,019	0,768 - 1,352

Extra semi-skimmed milk			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Extra semi-skimmed milk	0,867	0,982	0,796 - 1,212
Extra semi-skimmed milk + Health	0,883	0,984	0,792 - 1,222
Extra semi-skimmed milk + PA	0,949	0,993	0,802 - 1,229
Extra semi-skimmed milk + Health + PA	0,855	0,980	0,788 - 1,218

Cheese			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Cheese	0,459	0,900	0,681 - 1,189
Cheese + Health	0,477	0,903	0,681 - 1,197
Cheese + PA	0,516	0,911	0,687 - 1,207
Cheese + Health + PA	0,440	0,894	0,673 - 1,188

Water			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Water	0,472	1,105	0,842 - 1,451
Water + Health	0,182	1,217	0,912 - 1,625
Water + PA	0,331	1,152	0,866 - 1,531
Water + Health + PA	0,192	1,215	0,907 - 1,628

Diluted syrups, sugar sweetened (SSW)			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Diluted syrups, SSW	0,702	1,062	0,781 - 1,444
Diluted syrups, SSW + Health	0,572	1,093	0,803 - 1,489
Diluted syrups, SSW + PA	0,702	1,062	0,781 - 1,444
Diluted syrups, SSW + Health + PA	0,561	1,096	0,804 - 1,494

Soft drinks, sugar sweetened (SSW)			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Soft drinks, SSW	0,211	1,173	0,913 - 1,507
Soft drinks, SSW + Health	0,353	1,130	0,873 - 1,462
Soft drinks, SSW + PA	0,252	1,160	0,900 - 1,496
Soft drinks, SSW + Health + PA	0,321	1,141	0,879 - 1,481

Chocolate & sweets			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Chocolate & sweets	0,377	1,137	0,855 - 1,513
Chocolate & sweets + Health	0,406	1,130	0,847 - 1,509
Chocolate & sweets + PA	0,399	1,131	0,850 - 1,507
Chocolate & sweets + Health + PA	0,405	1,130	0,847 - 1,508

Snacks			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Snacks	0,556	1,096	0,808 - 1,488
Snacks + Health	0,786	1,044	0,767 - 1,420
Snacks + PA	0,603	1,085	0,797 - 1,477
Snacks + Health + PA	0,763	1,048	0,771 - 1,426

Junkfood			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Junkfood	0,336	0,849	0,607 - 1,186
Junkfood + Health	0,307	0,839	0,598 - 1,175
Junkfood + PA	0,329	0,846	0,605 - 1,184
Junkfood + Health + PA	0,305	0,838	0,599 - 1,174

Diluted syrups, artificial sweetened (ASW)			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Diluted syrups, ASW	0,043	1,353	1,009 - 1,815
Diluted syrups, ASW + Health	0,089	1,300	0,961 - 1,760
Diluted syrups, ASW + PA	0,042	1,358	1,012 - 1,823
Diluted syrups, ASW + Health + PA	0,091	1,298	0,959 - 1,758

Soft drinks, artificial sweetened (ASW)			
Variables included	<i>p</i>	Exp(B)	CI (95%)
Soft drinks, ASW	<0,001	1,710	1,296 - 2,255
Soft drinks, ASW + Health	<0,001	1,732	1,309 - 2,290
Soft drinks, ASW + PA	<0,001	1,703	1,291 - 2,247
Soft drinks, ASW + Health + PA	<0,001	1,742	1,315 - 2,306

List of Appendixes

Appendix 1: FF2 Questionnaire (included variables) i
Appendix 2: REC approval no.321359 v

19.06.2012

FIT FUTURES II

TROMSØUNDERSØKELSEN

SPØRRESKJEMA (FYLLES UT I QUESTBACK)
VERSJON 19. JUNI 2012

Nummerering av spørsmål følger nummer i FF-1, deretter tillegg av nye spørsmål.

GUL MARKERING: Endringer i Fit futures jamfør Protokoll datert 03092010



1. Er du:
Jente Gutt

33. Gjør du for tiden noe forsøk på å endre kroppsvekten din?

- a. Nei
- b. Ja, jeg forsøker å legge på meg
- c. Ja, jeg forsøker å slanke meg

Hvis ikke Nei

34. Hvilken vekt vil du være tilfreds med (din trivselsvekt)?

[Antall hele kilo]

KOSTHOLD

57. Hvor ofte pleier du å spise følgende måltider i løpet av en uke? (et svar mulig for hver)

	Hver dag	4-6 ganger pr. uke	1-3 ganger pr. uke	Sjelden eller aldri
Frokost				
Middag				

58. Hvor ofte spiser du matpakke hjemmefra på skolen?

Hver dag	3-4 ganger pr. uke	1-2 ganger pr. uke	Sjelden / aldri
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59. Hvor ofte spiser du vanligvis disse matvarene?

	Sjelden/ aldri	1-3 gang per mnd	1-3 gang per uke	4-6 gang per uke	Hver dag
Ost (alle typer)					
Feit fisk (f.eks laks, ørret, makrell, sild)					
Mager fisk (f.eks torsk, sei, hyse)					
Pizza, hamburger eller pølser					
Hermetisert mat (fra metallbokser)					

Godteri (f.eks
sjokolade, drops)
Snacks og søtsaker
(f.eks potetgull,
kake, kjeks, bolle)
Sukkerfri
tyggegummi

60. Hvor ofte spiser du vanligvis

	Sjelden/aldri	1-3 ganger per mnd	1-3 ganger per uke	4-6 ganger per uke	1-2 ganger per dag	3-4 ganger per dag	5 eller flere ganger per dag
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frukt
grønnsaker

61. Hvor mye drikker du vanligvis av følgende?

	Sjelden/ aldri	1-6 glass per uke	1 glass per dag	2-3 glass per dag	4 glass eller mer per dag
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Helmelk, kefir, yoghurt
Lettmelk, cultura,
lettyoghurt
Skummet melk (sur/søt)
Ekstra lett melk
Juice
Saft med sukker
Lettsaft, kunstig søtet
Brus med sukker (1/2 liters
flaske = 2 glass)
Lettbrus, kunstig søtet (1/2
liters flaske = 2 glass)
Vann

62. Bruker du følgende kosttilskudd?

	Ja, daglig	Iblant	Nei
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Tran, trankapsler, fiskeoljekapsler
Vitamin og/eller mineralttilskudd

13. Hvordan vurderer du din egen helse sånn i alminnelighet?

Meget god

God

Verken god eller dårlig

Dårlig

Meget dårlig

46. Hvilken beskrivelse passer best når det gjelder din fysiske aktivitet på fritida det siste året?

Sitter ved PC/TV, leser eller annen stillesittende aktivitet

Spaserer, sykler eller beveger deg på annen måte minst 4 timer i uken (her skal du også regne med tur til/fra skolen, shopping, søndagsturer med mer)

Driver med idrett/trening, tyngre utearbeid, snømåking eller liknende minst 4 timer i uka

Trener hardt eller driver konkurranseidrett regelmessig og flere ganger i uka



Region:	Søknadsholder:	Telefon:	Vår dato:	Vår referanse:
REK sør-øst B	Ingrid Darnsen	22845523	14.10.2021	321359

Anne-Sofie Saud

Prosjektsøknad: Sammenhengen mellom vektendringens ønske og kostvaner blant unge voksne

Søknadsnummer: 321359

Forskningsansvarlig institusjon: UiT Norges arktiske universitet

Prosjektsøknad godkjennes

Søkers beskrivelse

Formålet med prosjektet er å undersøke om vektendringens ønske er assosiert med kosthold i en populasjon av ungdomsunge voksne. Det vil også undersøkes om det er kjønnsforskjeller når disse faktorene.

Vi viser til søknad om forhåndsgodkjenning av ovennevnte forskningsprosjekt. Søknaden ble behandlet av Regional komité for medisinsk og helsefaglig forskningsetikk (REK sør-øst B) i møtet 15.09.2021. Vurderingen er gjort med hjemmel i helseforskningsloven § 10, jf. forskningsetikkloven § 10.

REKs vurdering

Prosjektet har som formål å undersøke om ulike ønsker om vektendring er assosiert med ulike kostvaner. Det vil også gjøres sammenlikning av menn og kvinners kostvaner. For å se på dette vil man henyte data fra Fit Futures 2, en helseundersøkelse som ligger innunder Tromsøundersøkelsen, der 868 elever fra 3. året i videregående skole deltok.

Komiteen anser det foreliggende samtykket fra Fit Futures 2 som dekkende for den omsøkte studien, og har ingen innvendinger til prosjektet slik det er fremlagt.

Vedtak

REK har gjort en helhetlig forskningsetisk vurdering av alle prosjektets sider. Prosjektet godkjennes med hjemmel i helseforskningsloven § 10.

Godkjenningen er gitt under forutsetning av at prosjektet gjennomføres slik det er beskrevet i søknad og protokoll, og de bestemmelser som følger av helseforskningsloven med forskrifter.

