Dietary intake in adults with severe mental illness, receiving outpatient treatment in a Scandinavian clinic

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Abstract

Introduction: Life expectancy in severe mental illness (SMI) populations is severely reduced when compared to the general population, and cardiovascular disease (CVD) is the main contributor to premature death. Lifestyle diseases known to increase CVD risk, such as diabetes type 2 and obesity, are highly prevalent in SMI populations. Several antipsychotics increase the risk of several cardiometabolic risk factors, such as obesity by affecting appetite. Further, SMI itself can also affect the ability to maintain a healthy diet. Few studies on diet in this population have been conducted, but unhealthy eating habits have been suggested. Food based dietary guidelines (FBDG) are developed to decrease risk of lifestyle related diseases such as CVDs. In this study, we hypothesized low adherence to the Norwegian FBDGs in an SMI outpatient population. To our knowledge, this is the first study to give a detailed description of dietary habits in a Scandinavian outpatient SMI population. **Materials and methods**: In this study, we included adult outpatients diagnosed with SMI (schizophrenia-/psychosis-/bipolar affective disorder), treated at Asker District Psychiatric Center, Norway. Adherence to Norwegian FBDGs were assessed by a digital food frequency questionnaire (DIGIKOST-FFQ). The FFQ was completed twice, in one-month intervals, subsequent to an initial 24h recall interview providing estimates on calculated nutrient intake. Measurements of body mass index (BMI kg/m^2) were performed, and biomarkers relevant to diet and CVD were retrieved**. Results**: Twenty-five SMI patients were included (male n=13, female n=12). Mean age was 40 years (±SD 13). 44% of the overall population were obese (BMI >30 kg/m^2) and the mean BMI was 30 kg/m^2. Pooled mean diet score was 8.2 (±SD 2.9), corresponding intermediate overall adherence to FBDGs. Overall adherence to FBDGs was low in 47% and 21% in the first and second completion of the FFQ respectively. In both completions >50% reported intakes with low adherence to FBDGs regarding unsalted nuts, processed meats and foods rich in fats and sugars. This was also true for FBDG regarding fruits and berries as well as drinks with added sugars in the first completion of the DIGIKOST-FFQ. Calculated nutrient intakes were similar to that reported by the general Norwegian population in the NORKOST 3 report. **Conclusion:** Blood markers related to CVD-risks indicate a need for lifestyle intervention at the least according to ESC/EAS guidelines of 2021. Although more studies including larger study samples should be conducted, this study found poor dietary habits in SMI individuals concerning several FBDGs with known effects on CVD-risk.

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Abbreviations

ACVD: Atherosclerotic cardiovascular disease

AP: Antipsychotic

ApoB: Apolipoprotein B

BW: Bodyweight

CVD: Cardiovascular disease

DPS: District Psychiatric Clinic

F/SGA AP: First- / Second generation antipsychotics

FFQ: Food frequency questionnaire

HbA1c: glycated hemoglobin

HDL: High density lipoprotein

HDL-C: High density lipoprotein cholesterol

IDF: International Diabetes Federation

IDL: Intermediate density lipoprotein

LDL: Low density lipoprotein

LDL-C: Low density lipoprotein cholesterol

PA: Physical activity

SMI: Severe mental illness

T2DM: Type 2 Diabetes mellitus

TC: Total Cholesterol

TG: Triglycerides

VLDL: Very low density lipoprotein

1 Introduction

1.1 Severe mental illness

Disease and conditions in which thoughts and emotions are affected are considered mental illnesses (1). Including diagnoses ranging from organic- to substance abuse related and eating disorders, the specter of the term is broad with great heterogeneity in clinical outcomes and manifestations (2). Disorders where the individuals level of function is highly reduced due to psychiatric symptoms are deemed severe (3) (p.17).

Schizophrenia, other psychosis-related disorders and bipolar affective disorders, are considered severe as symptoms affect the individuals' life to an extent that reduces level of function in such a way. In schizophrenia, this impairment is consequential of symptoms both additive and reductive to normal functioning, which is the basis of categorization of symptoms as positive and negative. Common positive symptoms are delusions and hallucinations, while speech impairment, joylessness, loss of initiative and blunted affect are defined as negative (3, 4) (p. 364). Other psychosis-related disorders can affect the patient's life similarly, with common symptoms being delusions, hallucinations, perplexity and emotional instability (3) (p. 393).

In bipolar affective disorder, a reduced level of function is caused by both depression, manic and hypomanic episodes with loss of energy, initiative and interest, as well as anxiety (3, 5) (p. 466). In bipolar affective disorder type one, manic episodes with poor judgement, loss of attention, impulsiveness and in some cases irritability are more pronounced. Whereas in bipolar affective disorder type two, symptoms as in episodes of manic nature will be present, but to a lesser extent (3) (p. 475). However in both subgroups, longer periods with depressive symptoms are the main causes of severity in this disease (3) (p. 475).

The causes of SMIs such as schizophrenia and other psychosis-related disorders are not fully understood. Genetic-, in utero- and environmental factors have been identified as etiologic factors (6-10). Similarly, etiology in bipolar affective disorder is uncertain, however in these disorders genetic- and environmental factors have also been suggested (9-11). Additionally, many other factors are discussed, e.g. dysbiosis in the gut microbiome which is one emerging field of interest in terms of understanding the pathophysiology in SMI (12, 13).

With no established differences between genders, the lifetime prevalence globally is estimated to be 0.4% for schizophrenia and other psychosis related disorders (14, 15) and up to 1% for bipolar affective disorder (5). Although late-onset SMI occur, development of schizophrenia is usually between late adolescence and early adulthood (4) similarly to bipolar disorders which emerge in the early twenties (5). Due to this early onset, the severity of symptoms and likelihood of a chronic course, schizophrenia and bipolar disorder were in 2019 the 20th and 28th leading causes of years lived with disease, respectively (16).

1.1.1 SMI Treatment course in Norway

The treatment course in SMI has undergone drastic changes over the last fifty years, with deinstitutionalization and transition to community based care (3) (p. 57). Psychiatric hospitalization is now mostly relevant when symptoms require urgent care and stabilization, and in 2021, schizophrenia- and related disorders, as well as affective disorders, accounted for 25% and 22% of the contacts in inpatient psychiatric institutions in Norway (17)

The aims in SMI treatment are to be user oriented in terms of participation- and satisfaction, as well as focused on consequent and coordinated courses. As the basis for this, pharmaceutical-, psychoeducational- and cognitive behavioral therapy and family intervention is recommended (18). Further and with defined procedures for ensuring attention, improved care for somatic health is an additional SMI treatment course goal (18-20).

Dietary therapy in SMI treatment

With goals of improving the quality of treatment and meeting the needs for preventive strategies, several guidelines including dietary counselling have been developed for groups of SMI (21-25).

Recommendations from The Norwegian Directorate for Health regarding somatic health are for that reason highly relevant to all clinical personnel involved in the treatment of this group of patients. In these, it is established that as a part of providing adequate health care, cardiometabolic risk factors must be assessed and considered (26). In the guidelines, “The Heart Healthy” algorithm (**appendix 1**) is proposed as a suiting tool for unveiling somatic risk factors for CVD, with defined appropriate interventions.

“Heart Healthy” and its implicated attention to somatic health in SMI patients, is defined as an integrated part of the treatment course in the Clinic for Psychiatry and Substance Abuse, Oslo University Hospital (27). However, a recent study from Norway including 264 in- and outpatients, found that only half were screened adequately, although high cardiometabolic risk was found in 87% (28). This finding is consistent with studies from other countries, where levels of screening have been found variable in terms of adequacy (29-31). This inadequacy is also reflected through the lack of both a Clinical Nutritionist and dietary therapy as an integrated part of SMI treatment course in Norway. Both of which are in spite of recommendations in Norwegian official guidelines on treatment of individuals with psychosis related illness regarding dietary guidance early on in the course of treatment (20).

1.1.2 Medication - Antipsychotics

Schizophrenia and related diseases have been treated pharmaceutically since 1950s, when the first generation of antipsychotic agents (FGAs), chlorpromazine and reserpine, and later haloperidol, were discovered (32). However, introduction to clinical use unveiled extrapyramidal side effects such as acute Parkinson like symptoms and other involuntary movements (32). This led to the discovery of clozapine and thereby a second generation of antipsychotics (SGAs) (32). Although doubts about the safety of clozapine delayed its acceptance, the drug was marketed in the early 1990s as effectiveness in treatment of both positive and negative symptoms was seen, as well as a lack of extrapyramidal side effects (32). Thereafter, several other SGAs were developed; risperidone, olanzapine and quetiapine (32).

Antipsychotics interact with multiple receptors in the brain (33) and are effective in the treatment of symptoms in both acute and chronic schizophrenia (34, 35), as well as bipolar affective disorders (36). However, several side effects have been displayed (35) the main concern being cardiometabolic. This includes an elevated risk of weight gain, especially by SGAs Olanzapine and Clozapine (37). Prescribed populations have shown weight gains >7% of baseline weight after 52 weeks of treatment in up to 82% of patients receiving Olanzapine (38). Similar findings were seen in 50% and 58% of those medicated with Quetiapine and Risperidone respectively (39).

Olanzapine, Clozapine and Quetiapine have additionally been found to increase cholesterol levels as well as triglycerides (TG) (37). A higher total- and low density lipoprotein (LDL)-cholesterol level was seen in AP treated patients, when compared to non-AP treated (40). Additionally, SGAs have shown to induce glucose-intolerance and diabetes both consequential to associated weight gains as well as independently (41).

The underlying mechanisms of AP induced metabolic side effects are not established (42) although they are known to interact with multiple receptors involved in the regulation of appetite as well as affecting associated hormones (41). Further, the sedative effects of APs could be assumed to affect levels of engagement in physical activity (41).

1.1.3 Mortality and morbidity in severe mental illness

Life expectancy in SMI populations is severely reduced, with studies reporting a life expectancy up to 20 years less than that of the general population (43, 44). This mortality gap seems to be widening as the life expectancy in the general population increases (45) Further, several somatic illnesses are more frequently seen in SMI populations (46) and it has been suggested that 50% of all deaths in patients with schizophrenia and bipolar affective disorders are potentially preventable through public health interventions (47).

Although SMIs are associated with an increased risk of suicide, premature mortality in SMI populations is mainly due to non-communicable diseases; Cardiovascular Diseases (CVD) being the most frequently reported (45, 48, 49). When compared to the general population, SMI individuals have an increased risk of 78% for developing a CVD (50). Similarly, an increased risk of 53% for having- and 85% for dying from a CVD, respectively, is also present (50). Based on this severely increased risk, The European Society of Cardiovascular Disease/European Atherosclerosis society (ESC/EAS) recommend the use of an SMI diagnosis as an individual modifier for risk estimation of atherosclerotic CVD (ASCVD) (51).

In addition to the obvious burden of psychiatric symptoms, SMIs impact socioeconomic status (52) and quality of life (53) Further, experiencing stigma is common, not only as personal stigma and from the general public (54, 55), but also to some extent from health care professionals (56). The latter being one of the reported barriers for contacting health care institution due to somatic symptoms and ailments (57). This, structural limitations in

provision of health care (58) and the competing demand for attention to psychiatric symptoms may be reasons why poor quality of medical care in SMI is common (59), adding to the disparities in the health care provided (60).

1.2 Cardiovascular disease

Cardiovascular disease encompasses coronary heart-, cerebrovascular-, peripheral arterial-, rheumatic heart- and congenital heart disease as well as deep vein thrombosis and pulmonary embolism (61). It is the leading global cause of death, years of life lost and disability adjusted life years (62), with atherosclerotic cardiovascular diseases (ACVD) being the main contributor (63). In Norway, age-adjusted CVD mortality is decreasing, yet the 2nd leading cause of death after cancer (64).

The relationship between diet and CVD has been broadly studied and both convincing and probable causal relationships have been found (65) as reflected by the 50% of CVD deaths attributed dietary factors (66).

Alterations in dietary composition of fatty acids have been shown to reduce the risk of CVD similarly to that of pharmaceutical treatment (67). Through replacement of saturated fatty acids (SFA) with polyunsaturated fatty acids (PUFA), a reduction low density lipoprotein (LDL) can be expected (67) with causal beneficial effects on ACVD risk (68), further described in the following.

Atherosclerosis

ACVDs include ischemic heart disease- and stroke, as well as peripheral vascular disease (69). The cause, atherosclerosis, is defined as the buildup of plaque in the arteries through the process of atherogenesis (70), with consequential constriction and reduced blood flow through the arterial lumen, blood clot formation and calcification of the vessels. Progression of ACVD is facilitated by a combination of Apolipoprotein B (ApoB) containing lipoprotein particles and other factors with cumulative effects (71), manifesting clinically mainly as myocardial infarctions or ischemic stroke. As the pathogenesis is complicated, the following is merely a summary.

After the metabolism of certain lipoproteins, remnant particles are small enough to enter the intima by crossing endothelial walls of the vessels (72). There, modification and oxidation of the remnants lead to internalization and immune cell signaling. Subsequent uptake of the oxidized particles by macrophages lead to development of proinflammatory foam cells, recognized as fatty streaks in the arteries (72). The growth of the plaque then progresses as this cycle repeats, as increases in foam cells and inflammation lead to consequential constriction of the arteries and development of rupturable fibrous caps (71).

With an established causal relationship, ApoB is considered to be the major protein component of the atherogenic lipoproteins (68, 73). For this reason, the ApoB containing lipoproteins very low density lipoprotein (VLDL), intermediate density lipoprotein (IDL) and LDL are considered necessary for the initiation and progression of this arterial disease (74). Conversely, high density lipoprotein (HDL) is inversely correlated with risk of CVD events. Its role in reverse cholesterol transportation has been suggested as a possible mechanism, although no reduction of CVD events has been found by pharmaceutical elevation, as seen in drug therapy for lowering LDL (51, 75).

1.2.1 ACVD risk factors

ACVD risk factors have been broadly studied. In this section the most frequently occurring and established factors are presented, categorized as modifiable or non- modifiable based on whether or not measures can be taken to alter its presence or severity.

Non-modifiable

Genetics and increasing age and male gender increase the risk of coronary artery disease and are considered major risk factors for ACVDs (71, 72). Socioeconomic status and social deprivation is also associated with an increased risk (76), with lower levels of education and income, social support and access to health care being social determinants (77).

Modifiable

Several modifiable risk factors are known to have significant associations with cardiovascular disease, in both males and females (78). These are illustrated in **figure 1**, and further described in this section.

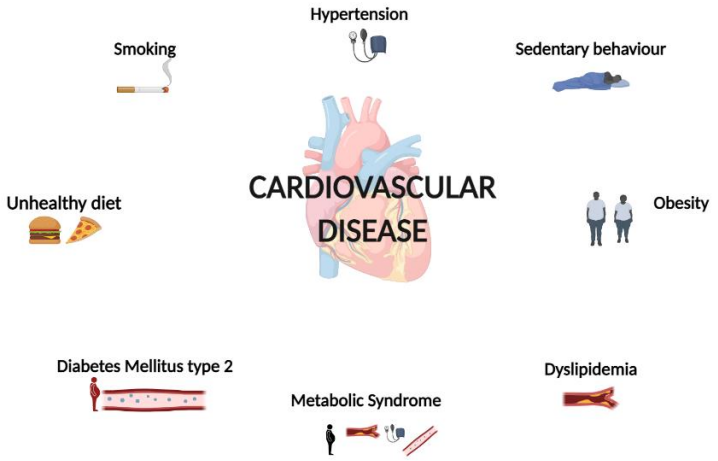

Figure 1 Modifiable risk factors for CVD

OBESITY AND DIABETES MELLITUS

Overweight and obesity, defined as body mass index (BMI) 25-30 kg/m^2 and >30kg/m^2 respectively, is strongly associated with cardiovascular disease (79, 80). This is both as an independent risk factor, and as a risk factors for several other conditions associated with further increased CVD risk, such as Type 2 Diabetes Mellitus (T2DM) (79).

CVD has been found to affect 32.2% of all T2DM individuals, and to be the cause of half of all deaths in T2DM (81). While DM alone is associated with a reduction of seven years of life expectancy in persons of 40 years, increasing with added cardiovascular comorbidity (82), the lifetime risk of developing a CVD has been shown to increase with increasing BMI (kg/m^2) (83).

DYSLIPIDEMIA

The importance of serum levels of lipid and certain cholesterol particles in the pathogenesis of ACVD underscore the risk increasing properties. Dyslipidemia occurs when these levels are abnormal and contributory to the development of atherosclerosis, as seen by elevated triglycerides (TG), Total cholesterol (TC) LDL-cholesterol (LDL-C), as well as low HDL-cholesterol (HDL-C) concentrations (51).

A causal, linear relationship between LDL-C levels has been established (68, 84, 85) with cumulative effects in a lifetime perspective. Further, high serum levels remnant particles and elevated serum concentrations of TG is also associated with elevated risk of ACVD (86).

Considered the sum of particles with atherogenic properties and a representation of all cholesterol remnants, non-HDL-cholesterol (non-HDL-C) levels have emerged as an important risk factor of ACVD similarly to LDL-C (87) and a 12% reduced risk ischemic stroke risk reduction seen per 1.1mmol/l reduction in non-HDL-C has been described (88).

Due to its potential protective properties, HDL has been heavily studied with regards to CVD risk. An inverse relationship between HDL-C and ischemic heart disease has been found (89), though not causal. Nevertheless, low levels of HDL-C are considered a risk factor for CVD modifiable through lifestyle, by diet, exercise and smoking habits (51)

HYPERTENSION

Elevated usual blood pressure is an additional causal risk factor for overall vascular mortality, including stroke and ischemic heart disease (90). Elevated blood pressure (BP), defined as hypertension (HT) at >140mmHg systolic and/or >90mmHg diastolic BP, increases CVD risk (91)

THE METABOLIC SYNDROME

Defined as a cluster of the previously described risk factors, The Metabolic Syndrome (MetS) is strongly associated with an increased risk of ACVD (92). The syndrome was first recognized internationally by the description given by the World Health Organization (WHO) in 1998 (93). In this, insulin resistance was a required criteria with the presence of two additional obligatory factors determining MetS; dyslipidemia, elevated blood pressure, obesity and/or microalbuminuria (93). The latter being the exception, later definitions of MetS have all included the same factors; differing in whether abdominal obesity or insulin resistance are obligatory or not.

The International Diabetes Federation (IDF) defines MetS as central obesity in addition to two or more present factors (94). In these, central obesity can be assumed at BMI> 30 kg/m^2, if not defined by waist circumference in Caucasian men and women as ≥94 cm and ≥80 cm respectively, these criteria are met at different values in other ethnic groups (94).

Further factors defined in IDF criteria for MetS are raised TG (≥1.7mmol/l), - blood pressure (≥130 systolic, ≥85 systolic) and -plasma glucose (≥5.6mmol/l), as well as reduced HDL-C (<1.03 mmol/l in men, <1.29mmol/l in female) (94). The factor is also deemed present in the case of healthy values within factors mentioned and concurrent treatment for- or diagnosis of any of the abnormalities (94). These criteria are based on and similar to those defined by the National Cholesterol Educating Programme (NCEP ATP III Criteria) (95) although in these, central obesity is weighted equal to the other defined factors, and is not assumed in BMI >30 kg/m2.

OTHER LIFESTYLE RELATED BEHAVIOURS

Sedentary behavior is associated with an elevated risk of CVD, and more so in combination with low levels of leisure time engagement in physical activity (96), the latter with suggestive effects comparable to those of medication with regards to prevention of coronary heart disease (97). The use of tobacco, especially smoking, is also a well-established risk factor for cardiovascular disease and premature death (98). The relative risk of coronary heart disease is up to 2.27 and 3.95 in males and females respectively (99).

UNHEALTHY DIET

Diet affects the risk of developing obesity, hypertension, dyslipidemia, T2DM and Metabolic Syndrome. Thus, unhealthy dietary habits is a risk factor for CVD and is estimated to contribute to 20% of all global deaths and 72% of all CVD-related mortality (100).

Therefore, several dietary patterns have been studied regarding effects on CVD risk and associated factors have been established as beneficial (101-103). A common feature is low contents of SFAs and sodium, and high contents of PUFAs and dietary fiber, which is in line with what is known about nutrients and effect on CVD (65)

As previously described, intakes of SFA is causally associated with LDL-levels and substitution with PUFAs are beneficial with regards to cardiovascular health, more so than by monounsaturated fatty acids (MUFA) (67). Further, high intakes of sodium increase the risk of hypertension (104) while the association between dietary fiber and CVD risk has been shown to be inverse (105). Dietary habits providing more energy than what is utilized cause weight gains and consequential obesity (106).

1.3 Modifiable CVD risk factors in SMI

Not surprisingly, many modifiable risk factors for CVD in SMI populations have been found to be more prevalent when compared to the general population (107). This is further described in this section.

Overweight and obesity is highly prevalent in SMI populations, correlating significantly with duration of illness (108-110). Patients with schizophrenia and bipolar affective disorder are up to 4.4- and 1.8 fold, respectively, more likely to be obese (111-114). Individuals diagnosed with an SMI also have an increased risk of T2DM when compared to healthy controls, ranging from 10% to 87% in bipolar disorder and schizophrenia respectively (115).

Although hypertension tend to occur more frequently in SMI individuals than in healthy controls (116) they are less likely to be screened and to receive blood pressure regulating medication (117). This is also true for dyslipidemia (108) in spite of an increased risk of elevated TG and low HDL-C when compared to age- and gender matched healthy controls (116).

As a consequence of frequently occurring components SMI individuals are at the least 58% more likely to have MetS than age- and sex matched healthy controls, with a prevalence of ~34% in schizophrenia and other psychosis related disorders, and 31.7% in bipolar disorder (116).

Harmful levels of TG and HDL-C are previously defined by Met-S criteria, as well as serum glucose whereas ideal and recommended TC levels are defined as <5 mmol/l (118). Levels between 6 and 7 mmol/l are defined as slightly elevated. TC >7 mmol/l are determined elevated and severely so when exceeding 8 mmol/l (118). Further, LDL-C <3 mmol/l (119)

Based on the elevated CVD risk in SMI, lipid goals in terms of prevention could be even lower as the ESC/EAS guideline recommend LDL-C levels <1.8 mmol/l and non-HDL-C <2.6 mmol/l in high-risk individuals, while ideal TC levels are defined as <4 mmol/l (51).

Further, SMI individuals meet recommendations regarding physical activity to a lesser extent than healthy controls, with an increased risk of sedentary behavior (120). In psychosis related disorders, the mean daily duration of sedentary activity has been found to exceed that of

healthy controls by nearly three hours (121). As for tobacco use, the odds for current smoking is five times higher in patients with schizophrenia than in the general population (122) and 3.5 in bipolar disorder (123).

Detailed research on dietary intake in SMI populations is scarce, yet dietary interventions have been conducted (124), suggesting a common agreement on both a potential of- and room for- improvement of dietary habits in SMI populations. This was supported by a recent study on adherence to the cardioprotective Mediterranean diet, which was found to be low in individuals with schizophrenia and bipolar disorders (125). Further, and indicative of an impact of mental health on food choices, a recent cross-sectional study on adult residents in Southern Norway, found the broadly defined "mental distress" measured by a questionnaire, to be significantly associated with multiple unhealthy dietary habits (126).

Two systematic review articles on dietary intake in SMI populations were identified (127, 128). With overlapping inclusion of studies, Dipasquale *et al.* (2013) and Teasdale *et al.*(2019) found patients with schizophrenia to have lower intakes of fruits and dietary fiber than controls, and higher intakes of total energy and saturated fats (127, 128). High total intake of energy was also seen in individuals with bipolar disorders, as well as higher intakes of sodium in both schizophrenia- and related disorders and in bipolar disorder, as compared to healthy controls (128). The only dietary data identified from Scandinavian SMI population, was that of Ringen *et al*. (2018), in which diet was measured as a secondary outcome with poorly described methods for assessment (129). In this study however, half of the SMI in-patients had dietary habits described as unhealthy (129).

1.4 National food based dietary guidelines

Over 100 nations worldwide have developed national food based dietary guidelines (FBDGs) to promote improved public health and to prevent diet-related chronic diseases (130).

Mostly, FBDGs provide similar guidance globally, and several regions have developed guidelines through international collaborations (131). In the Nordic countries, a common development of nutrient intake recommendations lay the ground for FBDGs in Denmark, Iceland, Finland, Sweden and Norway (132).

Table 1 Recommended daily intake of macronutrients

Nutrient	Dietary Recommendation
Total fat	20-40E%
Saturated fat	<10E%
Monounsaturated fat	10-20E%
Polyunsaturated fat	5-10E%
Omega- 3	>1E%
Omega- 6	>5E%
Carbohydrates	45-60E%
Dietary fiber	25-35 grams
Added sugars	<10E%
Protein	10-20E%

E%= Contribution of macronutrient to total energy intake

Based on the recommended daily intakes of macronutrients (**Table 1**), the Norwegian Directorate of Health recommends a varied, energy-balanced diet, mainly plant based with high contents of fruits, berries and vegetables as well as whole grains and fish. Lower intakes are recommended for red- and processed meats, salt and added sugars (133). Generally, dietary supplements are not recommended unless implicated clinically. The daily engagement in physical activity should be at least of 30 minutes duration in total. More detailed FBDGs are also provided (133), and presented below.

This recommendation can be accomplished by daily consumption of at least five portions à 100g of fruits, berries and vegetables, and whole grain products (133). Daily intakes of low-fat dairy products is also recommended (133). Corresponding to two- or three dinner portions, 300-450g fish should be consumed weekly, of which 200g should be fatty fish (133). Lean meats and meat products are preferred over red- and processed meats, recommended to be limited to < 500 g/week (133). Food oils, soft- and liquid margarine should be used in cooking, rather than hard butter and margarine (133). Foods high in salt and added sugars should be restricted, the latter also as drinks (133).

1.5 Gaps in the knowledge

Despite the high prevalence of CVDs in SMI populations as well as commonly reported unhealthy behaviors, little research on dietary habits in SMI patients exist. To this date, dietary habits in Scandinavian SMI outpatient populations have not been investigated in detail, and no studies have been conducted concerning adherence to NFBGs. Thus, no scientific data on SMI outpatient' dietary habits is available in Scandinavia and given the above figures and facts, this is highly overdue. An assessment of dietary habits and adherence to FBDGs will yield new information relevant both in the clinic, as well as in future research.

2 Aim

The overall aim of this study is to investigate adherence to FBDGs and calculated macronutrient intakes in a Norwegian SMI outpatient population, supported by data on anthropometry, relevant biochemical markers and other lifestyle related measures.

In Norway, SMI populations receive little- to no treatment with diet as main focus, as part of their treatment course. Dietary treatment by clinical nutritionists is highly relevant in groups with elevated risks of CVD, e.g. patients with hypercholesterolemia. This thesis aims to explore a possible need for dietary counselling in patients with SMI. The rationale of this study is to contribute to filling the knowledge gap on dietary habits in a population with a high prevalence of disorders known to be preventable through dietary treatment.

2.1 Objective

The primary objective of this study is to assess dietary habits in an adult SMI outpatient population and their adherence to FBDGs. Secondary objectives include describing weight status in the study population, as well as levels of biochemical measures with known associations to diet and CVDs. Assessments of level of engagement in physical activity and smoking status are additional secondary objectives.

2.2 Hypothesis

Based on current knowledge of dietary risk factors for CVDs and diet in SMI populations, we hypothesized the following:

- Low overall adherence to Norwegian FBDGs
- Low adherence to single FBDGs, especially those relevant to CVD risk such as the recommendations regarding fruit and vegetables, whole grains, fatty fish, unsalted nuts, margarine/oils and red and processed meats.
- Unbeneficial intakes of total energy and macronutrients, especially those relevant to CVD risk such as SFAs, PUFAs and MUFAs as well as dietary fiber.

Further, a high proportion of overweight and obesity in the study population was hypothesized, as well as elevated levels of TC and LDL-C serum-glucose and HbA1c. HDL-C was hypothesized to be low. Thus, MetS was also expected to be present in a large number of participating SMI patients.

Levels of engagement in moderate and vigorous activity was hypothesized to be below national recommendations (<150 min/week), as well as lower than in the general population. Daily tobacco use was hypothesized to be frequent in the study population, more so than in the general population.

Additionally, the severity of disease and related symptoms was hypothesized to yield no difference in outcomes between diagnostic groups.

3 Materials and method

In this retrospective, cross-sectional study, two different methods for dietary data assessments were applied, in addition to collection of other relevant measurements (anthropometry, biochemical and clinical). Subjects were adults (≥18 years) diagnosed with an SMI, here defined as schizophrenia or related disorders, or bipolar affective disorder. Participants were in treatment as outpatients at a district psychiatric center in Norway at the time of the study.

3.1 Study design

This cross-sectional study investigated diet and adherence to FBDG in an outpatient SMI population at Asker District Psychiatric Center (Asker DPS).

Subsequent to recruitment, an initial 24h recall interview was scheduled (V1), during which anthropometry was assessed and blood samples were requested if missing from medical journals. DIGIKOST, a digital food frequency questionnaire (FFQ) was then completed by participants during the second- and third measuring point (DK1 and DK2). All visits were completed in one-month intervals, with DK2 scheduled approx. one-month post V1, and DK2 one month post DK1

Methods for dietary assessments are described in further detail in section 3.2.1. The study flow is illustrated in **figure 2**, below.

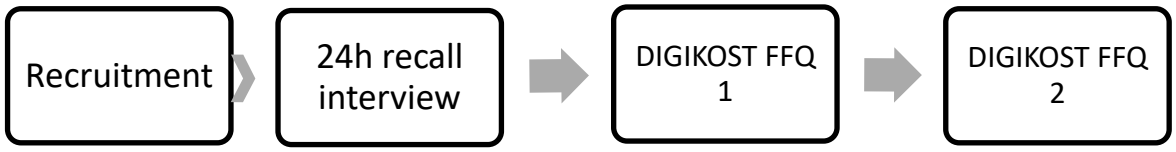

Figure 2 Illustration of study flow. Larger arrows represent one-month intervals.

3.1.1 Inclusion criteria

Adult patients (≥18 years) currently in treatment at Asker DPS, were eligible if diagnosed with a severe mental illness, e.g., schizophrenia-/schizotypal disorder, delusional disorder or a bipolar affective disorder (F20-F31, ICD10). Study participation required the patient to be in a

stable phase, and a clinical evaluation by physicians and other health personnel regarding competence of informed consent.

3.1.2 Recruitment

Eligible patients were recruited from June 2021 through January 2022 by health personnel in multiple departments in Asker District Psychiatric Center (Asker DPS). Their psychiatrist, psychologist or psychiatric nurse provided information on the study during scheduled appointments, and if interested a consent form was provided by recruiting personnel (**appendix 2**). The primary investigator subsequently received their contact information in order to provide further information if necessary, and to schedule the first visit.

In the planning of the study, at least 30 participants were estimated based on expected number of eligible patients within diagnostic criteria. Post study initiation, even higher numbers were identified. However, due to time pressure and practical limitations within clinicians as well as unaccustomedness to clinical nutritionists in the ward, a smaller study population was yielded. For the same reasons, no records of patients who declined, nor reason, was kept.

Further, slow recruitment initially as well as additional delays due to the Covid-19 pandemic, lead to the time period for inclusion being extended by two months.

3.2 Data collection

Data on diet, anthropometry, biochemical- and clinical markers, diagnosis and prescribed medication was collected. Within assessments of dietary habits, data on physical activity, time spent sedentary and tobacco use was also collected.

3.2.1 Dietary assessments

Dietary data was assessed retrospectively, through both 24h recall interviews and food frequency questionnaire (FFQ), the latter being the primary focus. Methods for dietary data collection were selected based on considerations regarding both data quality and level of invasiveness.

24 hour recall interviews

Subsequent to established contact between the patient and investigator, a 24h recall interview was scheduled and primarily performed on site. Completion of a second interview was deemed ideal, yet not feasible given the timeframe.

In cases where practical issues necessitated it, interviews were conducted per telephone. Twenty-four recall interviews were completed, of which seventeen were in-person. On site interviews were performed in two Asker DPS clinics, according to patient affiliation and request. One interview was performed in an in-patient clinic, prior to hospital discharge.

No recommendations for dietary assessment methods in SMI populations were identified, and 24h recall interviews were chosen based on considerations of participant burden and data quality. The open format of this method was also presumed to reduce recall bias in a population at risk of impaired memory function, with the possibility of explaining consumptions through conversation. Further, the method was anticipated to provide grounds for a diet related dialogue, and was deemed fitting for its purpose in the current setting.

The interviews were performed based on an interview guide developed in line with the "Multiple pass approach" (**Appendix 3**). This approach is widely used and has been shown to yield high quality data in non-SMI individuals (134-136). Although spontaneous alterations were made to accommodate the context, the interviews were completed in line with the guide; participants were encouraged to give detailed descriptions of reported foods and drinks, with follow-up questions to quantify and specify consumptions. A list of commonly forgotten foods was recited at the end of the interview (ERN2300, Hilde K. Brekke). Participants were also asked to state the time of reported intake, and whether or not the consumptions were representable of their usual dietary intakes.

If the label or food type was uncertain, foods were looked up online with the participants. In some cases, with respect to participant burden, such further investigation of specified food type was not completed. For homemade dishes, descriptions of recipes were recorded if known. In order to quantify reported intakes as accurately as possible, household measures such as deciliters, liters, tablespoons and teaspoons were used in follow-up questions. Available props such as paper cups or water bottles were also used to describe amounts as well as imagery such as milk cartons and portion packs of butter.

DIGIKOST FFQ

The DIGIKOST FFQ (**Appendix 4**) is a digital FFQ developed by the Department of Nutrition, Faculty of Medicine, University of Oslo. DIGIKOST is based on the validated NORDIET-FFQ (137) used in multiple studies in non-SMI individuals. The questionnaire provides data on habitual intake of specific food groups over the previous one month, in relation to the Norwegian FBDGs. A manuscript regarding the index is ready for submitting, and will be so shortly.

Quantified intakes of specific foods and drinks, as well as frequencies are yielded. Based on these, estimates on adherence to single FBDGs are calculated and categorized as either low-, intermediate or high. Similarly, overall adherence to FBDGs is categorized based on the total score yielded from all NFBDs. An overview of quantified intakes defining each level of adherence is presented in **table 2a**, below (137). Dietary supplements are included as a single FBDG, thus part of the total score and thereby overall adherence to FBDGs. However, this was not included further in this thesis due to lack of data on established deficiencies.

Table 2a Definitions of level adherence to FBDG

FBDG		Low [1]	Intermediate[2]	High[3]	Points
Fruit and berries*		<125g/day	125-250g/day	≥250g/day	3
Vegetables		<125g/day	125-250g/day	≥250g/day	3
Whole grains	**Women**	<35g/day	35-70g/day	≥75g/day	3
	Men	<45g/day	45-90g/day	≥90g/day	
Unsalted nuts	**BMI<25**	<10g/day	10-20g/day	≥20g/day	1
	BMI≥25	30≤ g/day <10	10-20g/day	20≤ g/day ≥30	
Fish		<21.5g/day	21.5 - 43g/day	≥43g/day	1
Low-fat dairy products		<50g/day	50-100g/day	≥100g/day	1
Margarine/oils**		Mainly unhealthy	A combination	Mainly healthy	1
Red meat		≥71g/day	35.5-71g/day	<35.5g/day	1
Processed meat		>20g/day	10-20g/day	<10g/day	1
Foods rich in sugars and fat		>20g/day	10-20g/day	<10g/day	1
Drinks with added sugar		>20g/day	10-20g/day	<10g/day	1
Dietary supplements		>0 units	N/A	≤0 units	1
Total FBDG Score		**0 to <7**	**≥7 to <13**	**≥13 to 18**	**18**

*Adherence based on quantified intakes.*including 200ml juice. **unhealthy choices defined as hard butter/high content of saturated fatty acids. Healthy choices defined as soft/liquid margarine and oils. Points yielded by level of adherence to single FBDGs are [1] 0 points, [2]0.5 points (1.5 points for fruits, berries, vegetables and whole grains) [3]1 point (3 points for fruits, berries, vegetables and whole grains).*

Further data yielded from the FFQ is data on level of physical activity, tobacco- and alcohol use, as well as socioeconomic factors such as employment, education and marital status.

Additionally and based on the result of overall adherence to diet-, BMI-, alcohol-, tobacco- and physical activity FBDG- recommendations, a lifestyle score is calculated, 5 points indicating high adherence. Components and basis for calculation is presented in **table 2b**.

Table 2b Components in the Lifestyle Index

Lifestyle index	Low	Intermediate	High	
Diet[1]	0	0.5	1	1
Body weight[2]	0	0.5	1	1
Physical activity[3]	0	0.5	1	1
Tobacco[4]	0		1	1
Alcohol[5]	0	0.5	1	1
FBDG-lifestyle score				**5**

1Low; Total FBDG score <7, Intermediate: Total FBDG score 7>13, High; Total FBDG score >13
[2]Low; BMI <18.5 kg/m^2 or >30 kg/m^2, Intermediate; 25-29.9 kg/m^2, High; 18.5-24.9 kg/m^2
[3]low; <75min/week, intermediate; 75-149.5min/week, high; ≥150min/week
[4] Low>0, High; ≤0
[5]Low; >4.29g/d, Intermediate; 0>4.29g/d, High; 0g/day

In this study, participants were invited to complete both the first and second form (DK1 and DK2) on site with guidance from the master student. On participant's request, the form was sent as a web link per text message instead. If the form was then left incomplete after a week, a text message reminder was sent to participants. Further delays in completion was followed up by a phone call. In cases were the questionnaire was uncompleted, and this was known to be a consequence of psychiatric hospital admission, no reminders were sent. In such cases, completion of the form was instead scheduled only after hospital discharge.

3.2.2 Anthropometric assessments

Bodyweight (BW) and height was planned to be retrieved from medical journals, however this was rarely recorded. Therefore, BW was measured during V1. Participants interviewed on-site were weighed by the investigator, under standardized conditions as fully clothed without shoes. Height was self-reported in all cases, as was recorded weights for participants interviewed per telephone. Body mass index (BMI) was calculated based on these measures, using standard equation: BMI (kg/m^2) = BW (kg) / Height (m^2).

3.2.3 Biochemical and clinical assessments

Biochemical markers were planned to be retrieved from medical journals. As with anthropometric assessments, these were seldom recorded. Participants were for that reason requested to have new blood samples taken, in line with screening procedures.

Due to the non-standardized procedures regarding requisition of blood samples, these were analyzed by different laboratories. Blood samples requisitioned by general practitioners were assumed analyzed by Fürst medicinal laboratories. Samples requisitioned by psychiatrists in the outpatient clinics as well as during psychiatric hospital admission were analyzed by the Bærum hospital laboratory. Participants were instructed to have blood samples drawn during fasting.

The biomarkers recorded were serum concentrations of lipoproteins (Total cholesterol, LDL-cholesterol, HDL-cholesterol) and triglycerides. Diabetes related measures were also retrieved as serum levels of HbA1c and plasma glucose. Additional blood samples recorded were ALAT, ASAT, hemoglobin, ferritin, folic acid and vitamin D, however these were not included in analyses both due to relevance for the scope of this thesis and inconsistent requisition.

While total cholesterol levels in serum samples are determined by direct methods, alternatively LDL-C can be estimated by Friedewalds Formula (51). LDL-C is measured directly by both Fürst and Bærum hospital. Non-HDL was calculated by this formula:

$$\text{NonHDL} = \text{Total Cholesterol} - \text{HDL Cholesterol}$$

Data on blood pressure was also retrieved from medical journals. The preferred measurement time was during scheduled appointments at the clinic, rather than measures during either hospitalizations or admissions to psychiatric institutions. In cases where only the latter was available, the most recent measure was chosen.

Metabolic syndrome

Based on both IDF- and NCEP ATP III – criteria, MetS was defined as "present" or "not present" in patients with available measures. The presence of three or more of the defined risk factors as described previously, indicated MetS. The prevalence of MetS using IDF-criteria assumed central obesity in BMI>30kg/m^2, while estimates using NCEP ATP III- criteria were performed twice by both including and excluding this assumption.

3.2.4 Prescribed medication

Prescribed medication relevant to this study (antipsychotics, glucose- , lipid- and blood pressure regulating) was retrieved from medical journals. Antipsychotic medication was categorized as either high-, moderate- or low risk of obesity and CVD based on the scientific evidence (37, 39) and with guidance from the project leader.

3.2.5 Unintended qualitative observations

In the course of the study, multiple qualitative measures emerged through conversation and observation. Deemed nuancing to the findings and highly relevant to the aim of this study, these were included and described in this thesis.

3.3 Nutrient calculations

Nutrient intakes reported through 24h recall interviews were calculated using KBS[1] version 18. In this software, foods are given specific codes provided in a database. These were then recorded simultaneously with quantities, subsequently calculated with regards to nutrient contents by the program.

Intakes of nutrients analyzed were chosen based on relevance to The Norwegian food based dietary guidelines and associations with CVD. Macronutrients included here are total fatty acids, saturated fatty acids and unsaturated fatty acids (PUFA, MUFA, omega-3 and omega-6). These were analyzed according to contribution to the total intake of energy in percent (E%). Intakes of carbohydrates, protein and added sugars are presented in the same manner, while dietary fiber was analyzed in grams. Day-to-day variations are present in intakes of all nutrients, yet that of micronutrients is the greatest (138) (p.35), and these were for that reason not included in analyses.

[1] KBS: Food and Nutrient Database and Software, developed by the Nutritional Epidemiology research group at the Department of Nutrition, Faculty of Medicine, University of Oslo.

Foods not available in the database were registered as accurately as possible, using food labels when specified. In cases where food items were unavailable in the database and not specified by participants, similar items in the database were chosen based on description. Similarity was evaluated with regards to density of the most relevant nutrients; e.g. density of fiber for bread, added sugars for baked goods and saturated fatty acids for cheese. When reported quantities were unclear and not specifically described, standardized portions were registered using "Weight, measures and portion sizes for foods" (139).

To consider degree of underreporting, a ratio between energy intake (EI) and estimated resting energy expenditure (BMR) was calculated to represent physical activity level (PAL). Underreporting and over reporting was assumed when EI:BMR<1.2 and >1.8, respectively.

3.4 Statistical analyses

All statistical analyses were performed using IBM SPSS Statistics Version 28.0.0.0 (SPSS Inc. Chicago) and according to data distribution. Results are presented as means with corresponding standard deviations (SD) for group data with normal distribution, and median (25^{th}, 75^{th} percentile) for non-parametrical data. Distribution was determined by considerations of histograms and Q-Q plots, as well as tests for normality. In the case of non-HDL, data distribution was defined based on the distribution of TC and HDL-C. Linear regression was performed to detect potential confounding or interactions by variables relevant to outcome.

Significance level was set to $p < 0.05$. Groups based on gender and diagnosis were tested for significant differences in baseline characteristics using Students T-test or Mann Whitney U-test for parametric and nonparametric data, respectively. For categorical data, crosstabs was performed to find distribution of participants within defined categories. To test for statistically significant differences in distribution, data was checked according to chi-square assumptions. These were not met in any analyses, and Fisher's exact tests were performed instead.

DIGIKOST (Adherence to FBDGs)

Results from completed DK1 and DK2 were analyzed separately and tests for differences between measuring points were performed. Students T-test for paired data were performed in quantified intakes of food groups reported from DK1 and DK2. Fisher's exact tests were performed to detect statistical differences in distribution of individuals in the categories of adherence to FBDGs. Pooled results from DK1 and DK2 were calculated for variables where no significant difference was detected between the measuring points.

FBDG scores yielded from the questionnaire were analyzed as categories, in groups of low-, intermediate- and high adherence. Intakes of food groups were analyzed as continuous data.

24h-recall interviews (Nutrient intakes)

As intakes were recorded from only one day and previous studies on dietary data in SMI populations are scarce, a normal distribution cannot be assumed. Results from 24h recall interviews are therefore presented as medians with 25^{th} and 75^{th} percentiles.

Due to the lack of sufficient data on total physical activity, no level (PAL) was calculated individually. Total energy expenditure (TEE) was therefore estimated for each participant based on WHO equation for resting metabolic rate (RMR), shown to be most precise in prediction of RMR in populations with mixed BMI $\geq$25 kg/m^2(140). PAL 1.4 and 1.6 were assumed based on existing literature on physical activity levels in SMI populations. TEE was estimated as a range to account for inter individual variations in activity level. Simple estimates of energy requirements were also calculated (35 kcal/kg bodyweight). As recommended, 10% was subtracted in obese participants (141).

Secondary analyses were performed in a subset excluding presumed underreporting participants. Presumed over reporting individuals were included as these large intakes were confirmed by reported incidents of overeating. Subset analyses were also performed according to representability of intakes as reported by participants.

Biochemical and clinical measures

Data on biochemical parameters were analyzed descriptively, for the total population as well as in groups of gender due to differences in cut-offs. Tests for statistical difference were performed according to distribution, as described previously.

Metabolic syndrome

For each individual with available measurements, HDL, Triglycerides, Glucose and BMI were categorized as above or below MetS cut-off value. Analyzes on categorical data were then performed, and tested to detect differences by Fischer's exact test.

3.5 Ethics

The Norwegian Regional Ethics Committee (REK) approved this study unanimously in June 2021 (protocol approval ref. 2021/251225/rek) **(appendix 5)**.

National guidelines for research on persons with impaired informed consent capacity were fundamental in the process of providing information to- and recruitment of patients in this study (142). In line with these, each participant's ability to provide informed consent was evaluated individually by personnel with insight in the specific participant's capability. Written information was provided to all patients invited to participate, in addition to being verbally communicated by their therapist.

It was essential that the methods did not pose any risk or discomfort. Therefore, we applied non-invasive methods such as 24h recall interviews and digital FFQs. The master student was also supervised on communicational and clinical issues as needed by long-experienced psychiatrist and project leader MD, PhD Dawn E. Peleikis on site.

Additionally, participation in this study also provided an additional, non-scheduled, visit to the clinic and with no intention to talk about the patient's disease. This was presumed to benefit participants, as the population is prone to isolation, worsened by restrictions related to the Covid-19 pandemic.

4 Results

4.1 Recruitment

Twenty-five patients were recruited in this study (male n=13, female n=12). None of the participants had received dietary treatment by a clinical nutritionist at any time prior to this study.

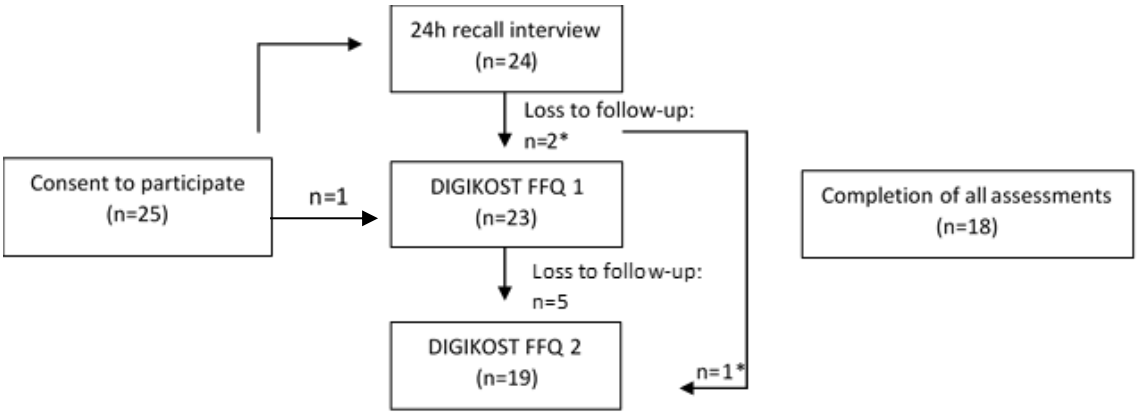

Figure 3 Participant flow chart. **One participant was lost to follow-up between the 24h recall interview and DIGIKOST 1, but later completed the second questionnaire*

As illustrated in **figure 3**, 96% (i.e. 24) of all participants completed the 24h recall interview. Total response rate to DIGIKOST was 84%. For the first DIGIKOST questionnaire, the response rate was 92% (i.e. 23), and 76% (i.e. 19) completed the second. Due to postponed inclusion, one participant completed only one DIGIKOST questionnaire rather than a 24h recall interview. Further, one participant did not complete any of the DIGIKOST questionnaires due to psychiatric hospital admission, whereas one completed only the second.

4.2 Population characteristics

Mean age was 40.6 years (±SD 12.8), and did not differ statistically between gender or diagnostic groups. 45.8% (i.e. 11) of study participants were diagnosed with schizophrenia or other psychosis related disorders. 54.2% (i.e.14) were diagnosed with bipolar affective disorder. There was no significant difference between diagnostic groups with regards to age, weight or height. Further, the diagnostic groups did not differ in terms of gender. Population characteristics are further presented below, in **table 3a** and **3b**.

Table 3a Population characteristics.

	Mean ± SD			P*
	Total (n=25)	**Male (n=13)**	**Female (n=12)**	
Age	40.6 ± 12.8	41.9 ± 11.8	39.2 ± 14.2	0.61
BMI (kg/m^2)	30.01 ± 6.6	28.7 ± 3.6	31.5 ± 8.7	0.32
Weight (kg)	90.0 ± 17.9	93.5 ± 13.6	86.3 ± 21.6	0.32
Height (m)	1.74 ± 0.1	1.81 ± 0.1	1.66 ± 0.1	<0.001

**P-value for statistical difference between groups of gender, Independent samples T-test. Significance level p<0.05 SD=Standard deviation*

Table 3b Population characteristics in diagnostic groups

	Mean ± SD		P*
	Schizophrenia/psychosis related disorder (n=11)	**Bipolar affective disorder (n=14)**	
Age	38.9 ± 12.5	41.9 ± 13.4	0.58
BMI (kg/m^2)	31.1 ± 7.1	29.2 ± 6.3	0.47
Weight (kg)	90.3 ± 17.3	89.9 ± 19.1	0.96
Height (m)	1.71 ± 0.1	1.76 ± 0.1	0.29

**P-value for statistical difference between diagnostic groups. Independent samples T-test. Significance level p<0.05*

4.2.1 Body mass index

Anthropometric data was available for twenty-five participants (male n=13, female n=12), of which 68% were weighed on site. The remaining seven (i.e. 32%) self-reported weights were communicated per telephone, two of which described as measured as part of study participation. There was no significant difference between objective and subjectively obtained BMI.

Recorded from the first visit, mean BMI was 30.0 kg/m^2 (±SD 6.6) in the overall study population. Pooled from both completions of the DIGIKOST-FFQ mean BMI was 31.6 kg/m^2 (± SD 6.7), which did not differ significantly from anthropometric measures recorded the first visit.

80% of the study population were classified as overweight or obese class I, II or III, of which 55% were obese. The remaining 20% were classified as normal weight, with one participant near underweight (18.4 kg/m^2). There were no significant difference in distribution of patients in categories of BMI between diagnostic groups (p=1.00).

4.2.2 Prescribed medication

At the time of the study, 14 participants were prescribed with antipsychotics with moderate to high risk of weight gain, Olanzapine, Clozapine, Risperidone, and Quetiapine.

Two participants were prescribed medication for glucose control, of which one was also prescribed with medication for hypertension. In addition, one participant was prescribed diabetes medication during the study period.

4.3 DIGIKOST

4.3.1 Overall adherence to dietary recommendations

In the first completion of the DIGIKOST-FFQ (n=23), 47.8% reported dietary habits with overall low adherence to FBDGs. 43.5% and 8.7% had moderate- and high adherence to dietary guidelines, respectively. In participants who completed the second questionnaire (n=19) low adherence was seen in 21.3%, intermediate in 73.7% and high in 5.3%. Overall adherence did not differ significantly between measuring points in the eighteen participants completing both.

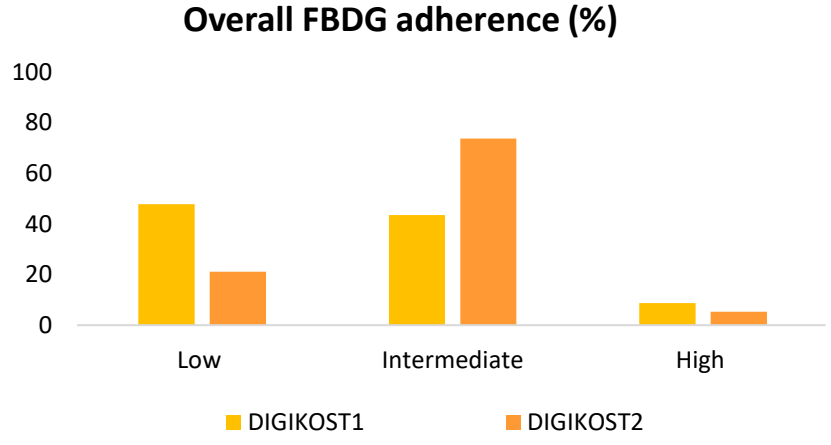

Figure 4 Distribution of participants (%) in categories of overall adherence to FBDGs in the first (DIGIKOST1) and second (DIGIKOST2) completion of the questionnaire.

Total diet score was not significantly different between measuring points in participants completing both (p=0.17) and pooled mean score was 8.2 (±SD 2.9). This was not statistically different between diagnostic groups (p=0.80) nor gender.

DIGIKOST1 In the low overall adherence group, mean total diet score was 5.1 (±SD 1.3), and was not statistically different in groups of diagnosis (p=0.51) nor gender. This was also the case in individuals with overall intermediate adherence (p=0.201), where mean total diet score was 9.2 (±SD 1.7). Total diet score in the two individuals categorized as highly adherent to FBDGs was 14.5 and 13.5.

DIGIKOST2 In the second completion of the DIGIKOST-FFQ, mean total diet score was 4.3 (±SD 2.3) in individuals with low adherence and 9.8 (±SD 1.8) in individuals with intermediate adherence to FBDGs. This did not differ significantly between diagnostic groups within neither of the two levels of adherence (p=0.88 for low adherence, p=0.35 for intermediate). One participant was categorized as highly adherent, with a total diet score of 14.5 points.

4.3.2 Adherence to single FBDGs, in DIGIKOST1 and DIGIKOST2

Distribution of participants (%) in categories of adherence to all FBDGs in both completions of the questionnaire are presented in **table 4**. Quantified intakes within each category of adherence is presented in **supplementary table 1a.** (**appendix 6**.). Pooled median intakes from both completions of the questionnaire is presented in **supplementary table 1b**. (**appendix 7**).

There were no significant differences between diagnostic groups with regards to single FBDGs, except for that of margarine and oils (p=0.039)

DIGIKOST1 91.3% reported intakes of unsalted nuts with low adherence to the FBDG. 82.6% had intakes of processed meats exceeding 20g/day, corresponding to low adherence to this FBDG. Further, 60.9% reported low adherence do FBDG regarding foods rich in fats and sugars, with intakes of foods such as chips, cakes and candies >20g/d. 52.2% reported intakes of fruits and berries below half of the recommended amount, equal to low adherence.

The dietary guideline with the largest proportion of individuals with high adherence, was that regarding fish. 52.2% (i.e. 12) of all participants who completed the first questionnaire reported intakes of fish corresponding to the recommendation of intakes >43g/d, of which >20g derived from fatty fish. Next, 47.8% reported high adherence to FBDG regarding wholegrains, as the second largest proportion of individuals with intakes according to recommendation. Further distribution of adherence levels in single FBDGs are illustrated below, in **Figure 5a**.

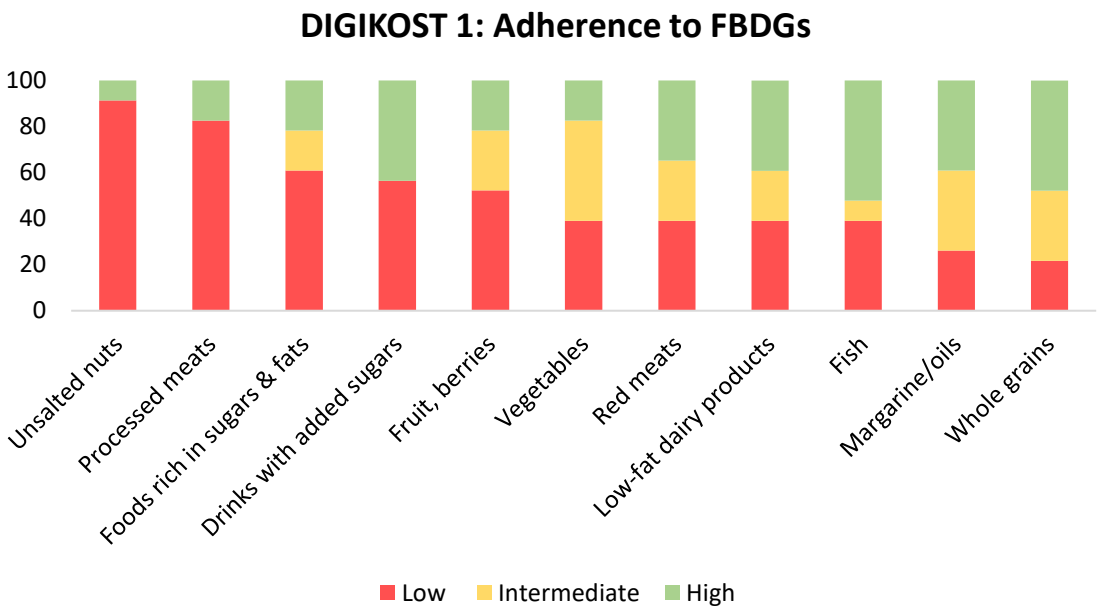

Figure 5a Distribution of participants (%) in categories of adherence to single FBDGs in the first completion of the questionnaire (n=23). *Layout inspired by Agnes Guttormsen, master thesis 2021.*

DIGIKOST2 A smaller proportion of participants reported high adherence to the dietary guideline regarding fish, where 42.1% reported usual intakes according to this FBDG. The greatest proportion of individuals with high adherence was in the second completion seen in the dietary guideline regarding low-fat dairy products, with 57.9% reporting intakes >100g/day, followed by the FBDG regarding wholegrains and margarine/oils.

The dietary guideline regarding intakes of salted nuts had the largest proportion of individuals with low adherence. This was followed by foods rich in sugars and fats and processed meats, with 73.7% and 68.4% respectively, reporting intakes categorized as low adherence. Further distribution of participants within levels of adherence to single FBDGs in the second completion is illustrated in **Figure 5b**.

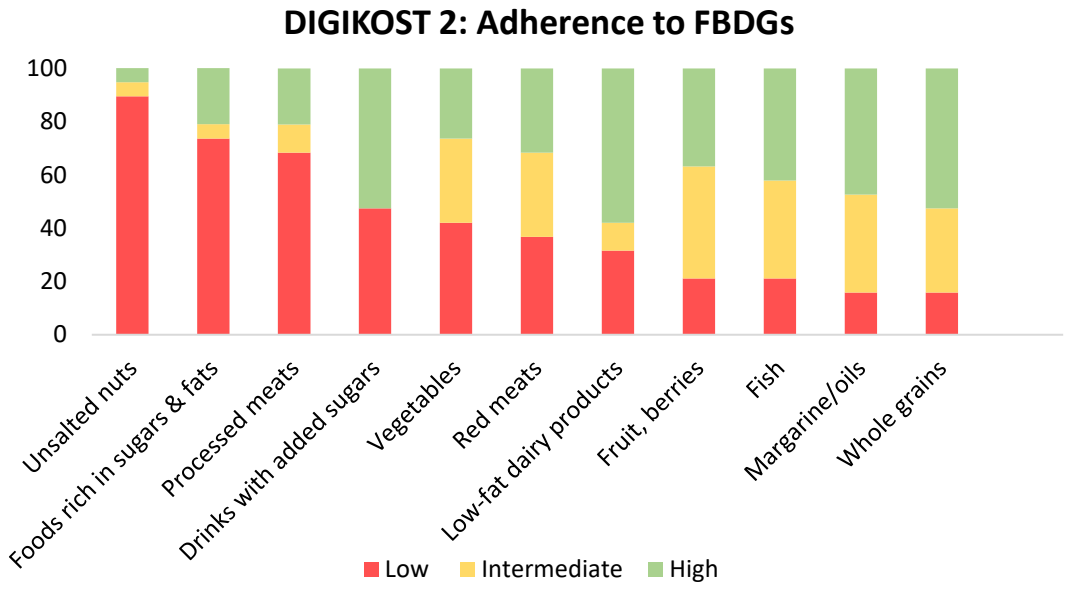

Figure 5b Distribution of participants (%) in categories of adherence to single FBDGs in the second completion of the questionnaire (n=18). *Layout inspired by Agnes Guttormsen, master thesis 2021.*

In participants who completed both FFQs (n=18), significant improvements between the first and second measuring point were seen in reported adherence to FBDGs regarding wholegrains, margarine and oils, low-fat dairy products, processed meats and drinks with added sugars ($p<0.05$). A significant reduction in participants reporting high adherence to FBDG regarding red meats was also seen, as well as an increased proportion of individuals reporting low adherence to FBDG regarding foods rich in sugars and fats ($p<0.05$).

Table 4 Distribution of participants (%) in levels of adherence to each FBDG

Adherence	Low (%)		Moderate (%)		High (%)		P*
FBDG	**DK1**	**DK2**	**DK1**	**DK2**	**DK1**	**DK2**	
Fruit, berries	52.2	21.1	26.1	42.1	21.7	36.8	0.44
Vegetables	39.1	42.1	43.5	31.6	17.4	26.3	0.13
Whole grains	21.7	15.8	30.4	31.6	47.8	52.6	0.022
Unsalted nuts	91.3	89.5	0	5.3	8.7	5.3	1.00
Fish	39.1	21.1	8.7	36.8	52.2	42.1	0.044
Margarine/oils	26.1	15.8	34.8	36.8	39.1	47.4	0.020
Low-fat dairy products	39.1	31.6	21.7	10.5	39.1	57.9	<0.001
Red meats	39.1	36.8	26.1	31.6	34.8	31.6	0.024
Processed meats	82.6	68.4	0	10.5	17.4	21.1	0.039
Food rich in sugars and fats	60.9	73.7	17.4	5.3	21.7	21.1	0.012
Drinks with added sugars	56.5	47.4	0	0	43.5	52.6	0.06

*Categorized by measuring point as first (DK1, n=23) and second (DK2, n=19) completion of the DIGIKOST-FFQ. Definitions of levels of adherence are presents in table 2a., p.19. *P-value for statistical difference in proportions in each cell for participants who completed both (n=18) FFQ= food frequency questionnaire. Fisher's exact test (two-sided p). Significance level p<0.05.*

4.3.3 Physical activity

In the first questionnaire, 47.8% (i.e. 11) participants reported levels of physical activity corresponding to low adherence to guideline regarding activity. 13% (i.e. 3) and 39.1% (i.e. 9) had moderate- and high adherence, respectively. This categorization was significantly different from that of the second completion (p=0.001), in which 31.6% (i.e. 6) reported low adherence to guideline regarding physical activity, while 26.3% (i.e. 5) and 42.1% (i.e. 8) reported moderate- reported high adherence, respectively.

Amount of physical activity reported did not differ significantly between measuring points (p=0.21). Pooled median (25^{th}, 75^{th} percentile) amount of weekly physical activity in the nineteen individuals who completed both questionnaires was 97min/week (36, 230).

In both the first and second questionnaire, reported weekly engagement in physical activity did not differ between diagnostic groups nor genders. This was also true in pooled results for individuals who completed the FFQ twice.

Time spent sedentary

Median (25^{th}, 75^{th} percentile) time spent sedentary in total was 8 (6, 12) hours daily as recorded through the first completion of DIGIKOST. This did not differ significantly between diagnostic groups (p=0.73). Median (25^{th}, 75^{th} percentile) time spent sedentary was not significantly different in the second questionnaire. Further, at no measuring point was there a significant difference in time spent sedentary groups of gender or diagnosis.

4.3.4 Alcohol

Median intakes of alcohol (ethanol, g/day) was not significantly different in the two completions in individuals who completed both. For the first completion, median (25^{th}, 75^{th} percentile) was 0.00g/day (0.00, 10.64), and 0.00g/day (0.00, 2.13) reported in the second. No significant difference between diagnostic groups nor genders were detected in neither of the two measuring points.

4.3.5 Tobacco

In the first completion of DIGIKOST, 17.4% reported being daily smokers, 8.7% smoked occasionally, 21.7% were previous smokers and 52.2% had never smoked. In the second completion 10.5% reported being daily smokers, 5.3% were occasional smokers, 26.3% were previous smokers and 57.9% had never smoked. Within individuals who completed both questionnaires, one person who had never smoked in the first completion, recorded being a previous smoker in the second.

In previous smokers median (25^{th}, 75^{th} percentile) duration since smoking cessation was 17 years (6.5, 27.5) in the second completion of the form (n=5), and 17 (10, 20) years in those who were pervious smokes as recorded in the first completion (n=5). For snus, 39.1% were daily users of snus and 60.9% reported having never used snus in the first completion of the questionnaire. 36.8% reported being daily users and 63.2% had never used snus in the second completion.

4.3.6 Total lifestyle score

The total lifestyle score was based on afore presented results on adherence to lifestyle recommendations regarding the five components; healthy BMI, diet, physical activity, alcohol and tobacco. Neither of which differed significantly between diagnostic groups ($p>0.05$), nor between the first and second completion of the questionnaire in individuals who completed both.

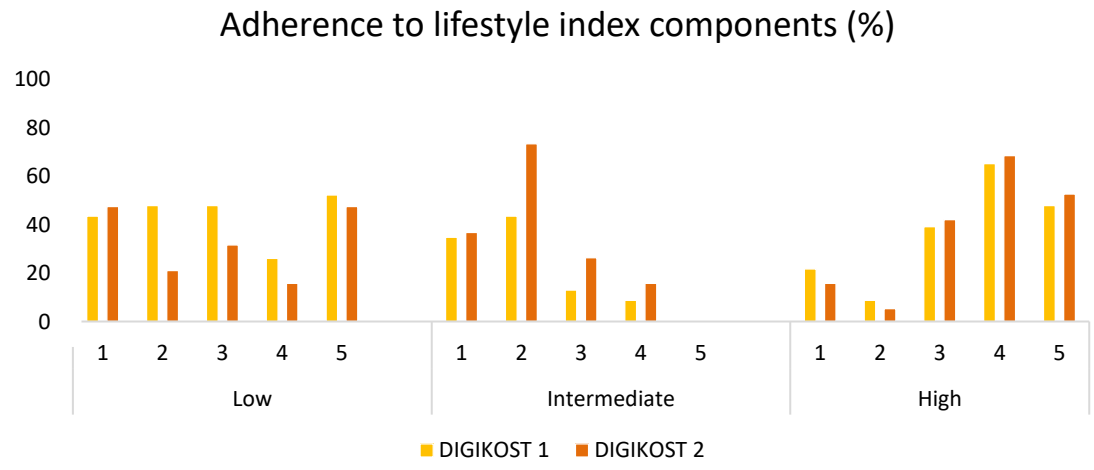

Figure 6. Proportion of participants (%) within levels of adherence to each component in the health index. 1: Healthy BMI, 2: Diet, 3: Physical activity, 4: Alcohol, 5: Tobacco. *BMI=Body Mass Index*

Mean lifestyle score was 2.3 (±SD 1.0) in individuals who completed the first questionnaire (n=23) and 2.6 (±SD 0.9) in the second (n=19). Pooled results from individuals who completed both forms yielded a mean overall lifestyle score of 2.5 points (±SD 1.0).

4.4 The 24h recall interview

Diets were recorded from three Sundays, six Mondays, five Tuesdays, two Wednesdays and eight Thursdays. Eight (i.e. 33%) participants were assumed under reporters. Eighteen (i.e. 75%) described reported intakes as representable. Subset analyses were performed according to both plausibility and reported representability.

4.4.1 Calculated macronutrient intakes

Median estimated macronutrient intakes are presented with corresponding 25^{th} and 75^{th} percentiles in **supplementary table 2** (**appendix 8**) as either total contribution to total energy consumption in percent (E %) or in grams.

No significant differences between diagnostic groups were detected in terms of nutrient intakes calculated from 24h recall interviews. Overall, consumptions of SFA, Omega-3 and Omega-6, dietary fiber and carbohydrates were not according to recommendations, whereas median intakes of PUFAs and MUFAs were only barely so.

Secondary analyses according to plausibility and representability

In plausible reporters, median (25^{th}, 75^{th} percentile) intakes of dietary fiber were according to recommendation and significantly higher than in under reporters; 27g (18, 36) and 16g (10, 20) respectively.

Nutrient calculations with significant or borderline significant effects of representability were total-, polyunsaturated and monounsaturated fats, as well as carbohydrates. Unusual intakes yielded significantly higher median intakes of total fats (p=0.047), PUFAs (p=0.006) and MUFAs (p=0.047). A borderline significantly lower intake of carbohydrates (p=0.056) was also seen in participants who described intakes as representable.

4.4.2 Energy intake

Median (25th, 75th percentile) reported total energy intake in the whole group was 2616 kcal (1958, 3173) with no detected statistically significant effect of BMI (kg/m^2). Intakes according to gender and estimated total energy expenditure are presented below in **table 6**.

Table 6. Energy intake according to gender and total energy expenditure

	Median (25th, 75th percentile)			P*
	Males		**Females**	
EI (kcal)	2503 (1569, 3147)		2636 (1656, 3191)	0.73
	Median (25th, 75th percentile)			
	Simple[1]	**WHO 1.4[2]**	**WHO 1.6[2]**	
TEE-EI*	221 (-355, 1069)	-82 (-850, 706)	275 (-506, 1893)	

*P-value for statistical difference, significance level p<0.005. Tested by Mann Whitney-U test. **Total energy expenditure subtracted by total energy intake, negative values indicate intakes exceeding TEE. Difference between estimated total energy expenditure and total energy intake based on [1]simple equation (35kcal/kg, -10% in BMI>30kg/m^2) and [2]WHO equations using PAL 1.4 and 1.6. *EI=energy intake, TEE= total energy expenditure, PAL=Physical activity level*

Estimates of energy intake were not significantly different than estimated TEE (TEE_e) when using the simple equation. This was also the case for the WHO equation applying both PAL 1.4 and 1.6.

More than one third of the study population had intakes exceeding TEE_e by simple formula, with median caloric consumptions exceeding TEE_e by 731 kcal, ranging from 865kcal and 142 kcal in the 25th and 75th percentiles, respectively. Caloric overconsumption was seen in 33.2% in WHO equations using both PAL 1.4 and 1.6, with energy intakes exceeding TEE_e by median (25th, 75th percentile) 566 kcal (1231, 61) and 613 kcal (820, 506) respectively. The proportions with estimated intakes higher and/or lower than calculated requirements did not differ significantly between diagnostic groups in any of the three estimates (p>0.05).

Secondary analyses according to plausibility of reported energy intakes

In the subset analyses of plausible reporters (n=17) median (25th, 75th percentile) total energy intakes were 2960 kcal (2191, 3393). Using the simple equation, median (25th, 75th percentile) total energy intake exceeded TEE_e by 3 kcal (-738, 328). Total energy intake exceeded TEE_e by median (25th, 75th percentile) 278 kcal (-924, 5) in the WHO equation using PAL 1.4.

Median total energy intakes were 56 kcal less than TEE_e when applying PAL 1.6 to the same equation, ranging from caloric overconsumptions of 613kcal, to intakes of 373kcal less than TEE_e, in the 25th and 75th percentile respectively.

4.5 Biochemistry and clinical measures

TC, LDL-C and HDL-C was available for twenty one individuals, with mean levels (mmol/l) 5.14 (±SD 0.82), 3.67 (±SD 3.60) and 1.21 (±SD 0.44), respectively. Mean estimated non-HDL (mmol/l) was 3.93 (±SD 0.77). Fasting serum TG (mmol/l) was available for nineteen individuals, with median (25th, 75th percentile) serum concentration of 1.8 (1.4, 2.9).

Median (25th, 75th percentile) HbA1c (mmol/mol) was 35.5 in the sixteen individuals with available measures. Twenty individuals had measures of s-glucose (mmol/l) in which median (25th, 75th percentile) was 5.25 (4.8, 5.50). Means and medians for blood samples in males and females are presented in **table 7**, below.

Table 7. Serum concentrations of biochemical markers in males and females

	Mean ± SD		
	Male N=12	**Female N=9**	**P‡**
TC (mmol/l)	5.12 ± 1.00	5.18 ± 0.60	0.85
LDL-C (mmol/l)	3.64 ± 0.87	3.70 ± 0.55	0.86
HDL-C (mmol/l)	1.19 ± 0.52	1.22 ± 0.35	0.89
Non-HDL-C (mmol/l)	3.9 ± 0.90	4.0 ± 0.62	0.88
	Median (25th, 75th percentile)		**P¥**
	Male	**Female**	
S-TG (mmol/l)[1]	2.28 (1.16, 3.39)	2.50 (1.30, 2.80)	0.71
HbA1c (mmol/mol)[2]	40.38 (26.42, 54.33)	35.50 (35.00, 37.00)	0.79
S-glucose (mmol/l)[3]	5.66 (4.41, 6.90)	5.20 (4.70, 5.55)	0.88

P-value for statistical difference tested by ‡Independent T-test and ¥Mann-Whitney U test. Significance level $p < 0.05$. [1]n=10/9 male/female, [2]n=8/8 male/female, [3]n=11/9 male/female.
TC= total cholesterol, LDL-C=Low density lipoprotein cholesterol, HDL-C= High density lipoprotein cholesterol, S-TG= Serum triglycerides, HbA1C= glycated hemoglobin, S-glucose= serum glucose.

4.6 Blood pressure

Blood pressure was available for seventeen participants (male n=7, female n=10). Mean systolic- and diastolic blood pressure was 131 mm/Hg (±SD 18) and 83mm/Hg (±SD 9), respectively. This did not differ statistically between genders, with mean systolic blood pressure at 138 mm/Hg (±SD 25) in males and 127 mm/Hg (±SD 10) in females. Mean diastolic blood pressure was 86 mm/Hg (±SD 10) and 80mm/Hg (±SD 8) in males and in females. No statistically significant effect of BMI or age was detected.

4.7 The Metabolic Syndrome

Twenty one individuals had sufficient measures available including BMI. When excluding BMI, this was true for nineteen when excluding BMI. Proportions of individuals with MetS did not differ significantly between diagnostic groups using neither of the criteria ($p>0.05$).

The largest proportion of MetS was seen when assuming central obesity in BMI >30 kg/m^2 using NCEP ATP III criteria. When excluding this assumption, these criteria yielded the smallest proportion. This is presented in **Table 8a**, below.

Table 8a. Proportion of individuals with MetS

	NCEP ATP III	**IDF**	***NCEP ATP III****
MetS % (n/N)	43% (9/21)	29% (6/21)	26% (5/19)

*As defined by NCEP ATP III and IDF with BMI>30kg/m^2 as indicator of central obesity, and *NCEP ATP III excluding BMI as indicative of central obesity.*

In individuals with three or more measures relevant to MetS available (n=21), mean number of present criteria (including BMI >30 kg/m^2) was 2.2 (±SD 1.2). When excluding BMI >30kg/m^2 as a criteria, mean number of present factors was 1.8 (±SD 1.0) in individuals with three or more available measures (n=19). In participants with all relevant measures (n=13), mean fulfilled MetS criteria was 2.3 (±SD 1.1). Proportion of participants with metabolic factors according to single MetS criteria are presented in **table 8b**.

Table 8b. Proportion of individuals in individual components of MetS

Criteria*	**HDL** *mmol/l*	**Triglycerides** *mmol/l*	**Glucose** *mmol/mol*	**Blood pressure** *mm/Hg*	**BMI** *kg/m²*
	<1.03[1] *<1.29[2]*	*>1.7*	*>5.6*	*>135[3]* *>85[4]*	*>30*
> cut off	52.4%	63.2%	20%	52.9%	44%

**NCEP ATP III / IDF- criteria for MetS.* [1]Males, [2]Females, [3]Systolic, [4]Diastolic.

4.8 Unintended qualitative observations

Several key messages were noted during the interviews and throughout the course of the study. These included reports of weight gains up to 70 kg post diagnosis as well as perception of inflicted weight gains due to compulsory treatment during acute psychiatric admissions. Personal interest in dietary habits associated with symptom reliefs and variations in eating patterns according to illness phase was also addressed. A few participants also reported effects of childhood trauma on aspects of dietary habits, as aversions to certain food groups due to strict parenting and unpleasant circumstances. Many also communicated feelings of shame in relation to dietary habits, both when reporting incidents of binge eating and when describing needs of dietary treatment.

Regarding recruiting clinicians, a broad variation in motivation was observed both through conversation, in morning-meetings and as addressed by participating patients. Further, many recruiters declined participation on behalf of eligible patients due to expectations concerning motivation. In this context it is worth mentioning that all eligible patients invited by the project leader accepted participation. Additionally, downgrading of recruitment was a fact for many, necessitating multiple reminders by the project leader and primary investigator.

5 Discussion

In this study, we found a large proportion with low overall adherence to FBDGs as well as in single FBDGs. As a consequence of a pronounced prevalence of obesity as well as elevations in biochemical markers, MetS was present in at least one fourth. The cross-sectional design of this study allowed for assessments of a variety of data within a limited timeframe. The short duration period restricted access to e.g. variations in dietary habits, yet it also a yielded a lower risk of loss to follow-up. Further, the design does not provide information regarding causality, however findings can generate new research questions and be considered baseline assessments for further research (149) (chap. 8). Thus, the design is encumbered with both strengths and limitations of which several are further discussed in the following.

5.1 Methodological considerations

5.1.1 Limitations

Subjects and study flow

This study was conducted on a small sample with no record kept of patients declining to participate and consequently the generalizability is uncertain (149) (p. 241). Further, the characteristics of patients not recruited are unknown and selection bias may have occurred unknowingly (149). Possible mechanisms yielding such bias could be through recruiting personnel, who may have invited only patients with minimal burden of symptoms, especially interested patients or those deemed fitting for dietary therapy (i.e. overweight/obese or known poor dietary habits). Consequently, findings in this study are of uncertain representability and would benefit from more information concerning this aspect.

A large-dropout rate could be expected and completion was vulnerable due to the exploratory nature of the study. The untried logistics of the study flow and unknown motivation in patients, as well as in clinicians, could have disrupted feasibility. Effort and interest in recruiters was also expected to vary. Recruitment was therefore likely affected by relying on clinicians. Though this could have been avoided by limiting number of recruiters, the unaccustomedness to research activity as well as Clinical Nutritionists in the clinic did not allow for such a set up.

Dietary assessments

Both methods for assessments were retrospective and thereby prone to recall bias (149), possibly enhanced by the effect of psychiatric diseases on memory (4, 5). Furthermore, social desirability bias is common in dietary research (149) and may have occurred in this study. Relying on both memory and accuracy in reported dietary habits and intakes could therefore have biased the results through under reporting unhealthy and forgotten foods, and over reporting healthy foods.

A single 24h recall interview was completed per participant in this study. However, to assess individual variations in macronutrient intake, multiple interview occasions are necessary (138) (chap.3). Poor grounds for estimates were therefore yielded in this study, with a consequential lack of scientific significance. Adding to this, portion sizes were mostly estimated based on subjective descriptions, and in the cases where this was poorly described standards were used (139). The latter poses a risk of error as variations in portion sizes exist within all populations (139), enhanced by the lack of validation in populations where eating patterns may deviate from the norm. Further, data handling error in KBS cannot be ruled out, e.g. when unspecified food types were substituted manually.

Validation studies for the DIGIKOST questionnaire used in this study are to this date unpublished, therefore results must be interpreted with that in mind. Additionally the FFQ was modified to accommodate the presumed risk of recall bias. The FFQ reflected dietary habits one month prior to completion rather than two months as originally designed which may have reduced generalizability as well as the possibility of comparison to future findings. Moreover, the questionnaire has not yet been applied to assess dietary habits in general populations. Comparisons are thus drawn between studies using different methods of dietary assessment and therefore considerations regarding deviations are highly uncertain. The use of a more commonly used FFQ would have facilitated more valid information regarding dietary habits in an SMI populations compared to that of a general population.

Assessments of biochemistry and clinical measures

Weight was self-reported in 40% of the participants. As underreporting is common (138) (p.215), this may have biased the results. Further, self-reported weights varied with regards to the reported timespan between actual measurement and recording of the data. No associations between dietary habits and anthropometry in these cases can for that reason be drawn.

In this study BMI was used as an index for overweight and obesity. This measure as an overall health risk has been extensively discussed in the latest decades (143) due to the lack of information on body composition with regards to body fat and muscle. As the BMI does not consider muscle weight, categorization as overweight or obese can occur in healthy persons with a large overall muscle mass. As no other anthropometric measures were used in this study, a risk of this bias is present.

The timeframe between biochemical measures and study participation varied, and this should be taken in to consideration. Other factors could also have biased the results such as systematic errors occurring in only one lab, as multiple laboratories analyzed the blood sample. This could have been avoided by a stronger implementation of a protocol regarding requisition of blood samples. Further, blood pressure was not measured on site due to lack of training in the master student. As this data was extracted from medical journals, a large variation in circumstances affecting this measure could be expected. The use of an automatic blood pressure monitor this assessment could have provided more valid data.

Unintended qualitative observations

Qualitative observations included in this thesis were not intended and therefore no systematic handling of assessment nor analyses was planned, thus they carry no scientific value.

5.1.2 Strengths

To the best of my knowledge, this is the first study on detailed dietary intake in individuals with SMI in Norway. Further, no studies in the remaining Scandinavian countries with dietary intakes and/or habits as primary outcomes were identified. The findings in this assessment provide new information on dietary habits in a patient population where other modifiable risk factors for CVD have been found to be severely increased.

Subjects and study flow

In this study, all outpatients aged 18 years or older were included if diagnosed with the studied disorders, competent of informed consent and in a stable phase. Inclusion and exclusion criteria were thereby minimal and allowed for variation within included subjects, possibly enhancing representability of the results. Adding to this, patients were recruited from multiple divisions in a district psychiatric center covering a large geographic area.

Dietary assessments

Although multiple 24h recall interviews would have provided more detailed answers regarding nutrient intakes, the restricted time frame and resources available for this study excluded this alternative as feasible. Further, and despite the restricted scientific value of results, the 24h recall interview provided a setting where a relation was established between the patients and investigator, possibly enhancing response rate later on in the study. This may also have decreased the risk of discomfort related to sharing personal information such as dietary habits, thereby strengthening data quality. In addition, the setting facilitated a diet-related conversation and valuable information was communicated. By discussing their diet in detail, patients could share motivation for participation as well as their own perceived needs of dietary treatment, weight history and former attempts of lifestyle changes.

The DIGIKOST has been qualitative evaluated by focus group interviews and usability testing, for which the manuscript is under review in JMIR Formative Research, and found feasible in use. Further, validation studies have been performed, though this manuscript is still in work. The data assessed through the DIGIKOST-FFQ are presumed to be of high quality, as it was based on the validated NORDIET-FFQ which has shown to yield valid data on dietary habits and physical activity (137, 144). Additionally, previous adaptations of the form has provided data with satisfactory reproducibility in a population with moderately elevated risk of CVD (147). As no FFQs validated or designed for SMI groups were identified, the quality of the data yielded from this FFQ may not have been obtained in other manners. Moreover, the questionnaire was designed to provide data on adherence to FBDGS, thus providing answers to the currents research question.

Completion of the form required minimal effort from the participants, through inclusion of pictures and a comprehensible layout. The possibility of completion on site with the presence and availability of the master student during this assessment also allowed for aid in recalling dietary habits through conversation and clarifications of questions, possibly minimizing the effect of recall bias and information error through misinterpretations of questions (149).

Assessments of biochemistry and clinical markers

Objective measures of weight was obtained for more than half of the study population under standardized condition. For the self-reported weights, the effect of social desirability bias as

underreporting may also have been minimized by being communicated per telephone. Additionally, all participants were instructed to complete biochemical markers fasting, and those recorded from medical journals were presumed drawn under similar conditions. Further, biochemical markers were selected as the most recent if not measured as a part of the study and results can be considered a vague reflection of true status during study participation.

Unintended qualitative observations

Despite the lack of scientific value of the presented observations, the impressions are nuancing to the findings in this study as they reflect some of the stories behind the reported intakes and dietary habits as well as portraying a rationale for need of tailored intervention in this specific group.

5.2 Discussion of the results

Adherence to Norwegian NFBDGs

Nearly half of the study population reported intakes corresponding to low overall adherence in the first completion. Although not significantly so, this proportion was halved in the second completion. Mean total diet score pooled from two completions by eighteen participants was 8.2 points. This corresponds to intermediate adherence, in which the scale ranges from 7 to 13, thus the mean score was in the lower range. Indicative of a significant amount with low- rather than high adherence to FBDGs, supported by the variation of 2.9 points suggesting a large proportion with overall poor dietary habits and adherence to FBDGs. Both in overall adherence and adherence to single FBDGs, no differences between diagnostic groups were observed, the exception being adherence to the recommendation regarding margarine and oils.

Further, at least one fourth of the study population had low adherence to eight single FBDGs in both completions of the form, in which the rest were mostly categorized as intermediately adherent. The largest proportions (<47%) of low adherence were seen in FBDG regarding nuts, processed meats, drinks with added sugars and foods rich in sugars and fats. These characteristics correspond to previous findings (124-126), and are associated with both obesity and other cardiometabolic risk factors such as the lipid profiles seen in this study. Conversely, ~40% were categorized as highly adherent to FBDG regarding margarine and oils, suggesting healthy choices of fats used for e.g. cooking. In this, a significant difference

was seen between diagnostic groups, possibly by chance as such differences were not seen in other FBDGs reflecting beneficial choices of dietary fat.

Unexpectedly, we also found large proportions categorized as highly adherent to single FBDGs in both completions of the questionnaire. Over half of the study population were deemed highly adherent to FBDG regarding fish in the first completion, whereas this was true for level of adherence to recommendations for whole grains, low-fat dairy products and drinks with added sugars in the second completion. Further, a large proportion (~40%) reported usual intakes of fruits, berries as well as vegetables, corresponding to intermediate adherence to these FBDGs. These findings are contrary to what was hypothesized and to previous studies. Nonetheless, most of these dietary habits are considered protective of CVDs (65) and high intakes of e.g. fish were reported by those concerned with having a healthy diet in the NORKOST 3 study (146). Similar concerns may be present in the current study population, yet social desirability bias cannot be ruled out when considering these findings.

Although value of further comparisons is restricted, some points will be made with regards to dietary habits recorded in the NORKOST 3 report (146) as a measure of diet in the general Norwegian population; The current population reported higher intakes of foods rich in fats and sugars than what was reported of sweets and snacks by the general public (146). Further, a lower proportion in our study were highly adherent to FBDG regarding fruits and berries than in the NORKOST population (146). In the NORKOST study a smaller amount of juice was included when estimating intake adherence to this FBDG (146). Thus, an even larger disparity in consumption of fresh fruits and berries may be present. As fresh produce provide more fiber and greater satiety compared to juice, the current study population could benefit from increased consumptions to lower the risk of obesity.

Regarding the recommendation of lowering intakes of red- and processed meats, both pooled median intakes and proportions with high adherence to these FBDGs were more similar to that of Norwegian males rather than females (146). However, the distribution of NORKOST individuals in intermediate- and low adherence is not defined, and it is therefore unclear whether or not a similarly large proportion of low adherence is present in Norwegian males and females, although the variance in the estimated mean (146) may indicate this.

This study was exploratory and small, and P-values < 0.05 indicate significant improvements in adherence to seven FBDGs between measuring points (table 4). As no intervention was provided, this could be explained by a phenomenon commonly seen in nutritional research, where being observed positively influences the studied behavior and suggest probable effects of intervention. Considering the small sample size, this finding may indicate an even stronger potential for dietary improvement.

The Lifestyle Index

Mean total lifestyle score was 2.5 when pooled from two completions of the questionnaire by eighteen participants. As expected based on the mean BMI of ~30 kg/m^2 and large proportions of overall low- and intermediate adherence, this estimate was reduced by these components. The largest proportions of high adherence to the index components, were in those regarding alcohol and tobacco. In the latter and in contrast to that of alcohol, this was not reflected in the proportion of daily and occasional smokers, although not as severely as previously shown (122, 123), this was elevated as compared to the general Norwegian population (150). These disparities were greater in snus (151). A shift was also seen in proportion of individuals who reported being daily smokers and previous smokers, possibly due to miscategorization if not smoking cessation.

Nearly half had low adherence (<75 min/week) to recommendation regarding physical activity in the first completion of the FFQ. The pooled median amount of physical activity was ~ 100 weekly minutes, corresponding to 15min/day and intermediate adherence. However, no conclusions can be drawn as the variance in this estimate was large.

Macronutrient intake

These results have low scientific value consequently of a small study sample and only one interview occasion, which is kept in mind in the discussion of these results.

In the estimated macronutrient intakes from 24h-recall interviews (appendix 8:supplementary table 2), consumptions of SFAs were higher than recommended for cardiovascular health, similar to that reported in the general Norwegian population (146). This similarity was also seen for omega-3 and omega-6 fatty acids, as well dietary fiber (146), where consumptions were lower than recommended. Although these similarities to the general population were

unexpected, the intakes were not in line with recommendations as hypothesized. Further, this population is at increased risk for CVD and a lower threshold for e.g. saturated fatty acids may be more relevant than that of the general public (147).

Surprisingly, estimates of added sugars were according to recommendation, as opposed to the NORKOST population (146). This was in contrast to the high proportion of low adherence to FBDG regarding foods rich in sugars and fats as well as that of drinks with added sugars as seen in DIGIKOST. The FFQ yielded presumed to yield better data quality, which may indicate higher actual intakes of added sugars than that reported through interviews. Moreover, the risk of social desirability bias can be assumed to be slightly lower in a self-administered form compared to a face-to-face interview.

The lowest day-to-day variation is seen for energy intakes (138) (p. 34-5). Both the simple estimate of energy requirement and the estimate using WHO equation with PAL 1.6 yielded caloric consumptions less than estimated requirements which over time would result in reduction of body weight. The difference calculated using a lower PAL with the WHO equation, estimated a median caloric consumption more line with our hypothesis and the elevated BMI in the study population. Additionally, the lower levels of physical activity and high amounts of time spent sedentary as reported through the FFQs could support the use of a lower PAL. Median energy intakes were also higher in the subset analyses of plausible reporters, in whom larger caloric overconsumption were seen as well. Nonetheless, these estimates are highly uncertain and should be further investigated by larger studies.

Biochemistry and clinical measures

With a mean BMI corresponding to obesity, this present study found a high proportion of individuals with BMI $\geq$25 kg/m^2, of which half were obese. This is in line with findings from previous studies (108-110), and in spite of the high proportion of self-reported weight. In the case of underreporting biasing the data, results regarding body weight and BMI could be presumed to be of a greater severity. However, objective and subjective assessments of weight did not differ significantly neither within the first assessment nor between measuring points, suggesting a low degree of underreporting.

Although correlations between BMI and body fat percentage vary, the overall low engagement in both moderate and vigorous activity in the current study population can indicate BMI as an appropriate measure in this setting and underscore the value of this result. Additionally, observations by the investigator support the presumption of elevated BMI as a consequence of increased fat mass rather than lean mass. Thus, the large proportion of individuals with overweight and obesity found in this study population would expectedly be confirmed by more accurate measures of body composition in larger populations.

In line with previous findings (112, 116), MetS was present in a high proportion of the studied population. This was especially true when assuming central obesity at BMI >30 kg/m^2 using NCEP ATP III criteria. Further, all individuals with available measures had both TC, LDL-C and non-HDL-C levels above ESC/EAS recommendations for high risk individuals (51), whereas none were prescribed lipid lowering medication. This could indicate a higher demand for focus on psychiatric symptoms, lacking attention to somatic measures or expectations of low pharmaceutical adherence. Although supported by the lack of recent measures for multiple participants, these are only assumptions as this was not investigated further.

Unintended qualitative observations

Although highly uncertain due to lack of scientific value, a variety of nutrition related difficulties were noted; ranging from emotional binge eating to loss of appetite, from exclusion of all kinds of fish to drinking only sugary sodas. All of which underscore the need of tailored dietary treatment due to the plausible links to the SMI, e.g. through the environmental effects on risk of disease development, appetite increasing side effects from SGAs and occasions of binge eating due to emotional distress.

5.3 Ethical considerations

In research including vulnerable populations such as that in the current study, ethical issues must be taken into particular consideration. This study asked participants to share personal information on diet with an investigator they had not met before, in addition to being weighed on site. As several patients reported their post diagnosis weight gains as unfortunate, this may have resulted in discomfort to some individuals. However, many patients openly shared information on intake and eating habits as results of both medication and diagnosis,

illustrating their own dietary challenges. Additionally, participants commonly reported a perceived need of dietary treatment. The opportunity of communicating this as well as receiving dietary advice by a master student in Clinical Nutrition, was often presumed to be a benefit of participation.

Further, the clinical evaluation of capability of informed consent was not recorded due to limitations in capacity as a consequence of the current covid-19 pandemic. Health personnel in psychiatric institutions have not only been under the same personal pressure as the entire population, the pandemic has also led to increased demands on psychiatric health care providing institutions (148). However, such evaluations should be documented and could have been recorded in medical journals.

5.4 Future research

Studies with a larger SMI population than the current should be carried out in the future, with multiple 24h recall interviews to estimate nutrient intakes based on more valid data. In such studies, more detailed data on anthropometry should be assessed if ethically possible. Bioelectrical Impedance Analyses (BIA) and Dual X-ray Absorptiometry (DXA) scans will provide more accurate data on distribution of body fat as a measure of CVD risk; however, the invasiveness of these methods should be considered. Waist circumference could be used as a less invasive, yet appropriate measure for central adiposity. Further, a questionnaire could be used to systematically study the weight history and the history of dietary behavior and physical activity over time. Additionally, a family history of eventual premature ASCVD would be helpful for risk estimation.

To further investigate the need of a Clinical Nutritionist as an integrated part of the treatment course, future research should include qualitative measures on motivation on- , perceived barriers for- and need of dietary therapy in SMI patients as well as assessment of the extent- and quality of dietary advice given to this date should be conducted.

The possible improvements in adherence to dietary guidelines seen in this study, suggest potential for beneficial modification of dietary habits. Future studies on dietary habits and other modifiable risk factors in SMI populations, should include dietary intervention. Implications of such studies would benefit from interventions being matched with standard

clinical procedures, with a high focus on interdisciplinary work. As dietary guidance in SMI populations should be tailored, diet therapy in such studies should focus on relevant and reasonable CVD risk reduction in each patient, preferably by highly qualified personnel such as Clinical Nutritionists.

5.5 Clinical implications

Results from this study suggest poor dietary habits in the studied population and although possibly comparable to the general population, the increased risk of CVD in SMI necessitates intervention to a larger extent. Furthermore, SMI individuals require tailored approaches and intensified follow up by highly qualified personnel. Clinical Nutritionist are educated in adjusting dietary advice with multiple concerns in mind, and are the only health care providers with approved knowledge to provide diet therapy in a clinical setting.

SMI patients would also benefit from interdisciplinary collaboration including a clinical nutritionist. The possibility of conferring with personnel with such expertise would provide patients with answers and individual consultations if needed. Additionally, group educational programs tailored for SMI populations could be provided in clinics, enhancing dietary awareness in this group.

In a population at high risk of CVDs an improvement in dietary habits could reduce the risk of future CVD events. The findings in this study underline the need for improvement in the diets of SMI individuals, which should be used in motivating already involved clinicians in supporting patients in lifestyle changes. The suggested potential for improvement found in this study should also be taken into consideration when dietary advice is requested.

As of now, SMI patients' main access to a clinical nutritionist is similar to that of the general population. In cases of present lifestyle related diseases, a referral to standard treatment courses may not benefit this population. Further, most clinical nutritionists lack experience with SMI groups and do not have psychiatric personnel available, which may contribute to poorer quality treatment or even rejection. More standardized involvement of a clinical nutritionist in psychiatric institutions would consequently benefit SMI populations.

6 Conclusion

This was an exploratory, cross-sectional study where dietary intake was assessed in detail in twenty-five adult SMI outpatients.

In this study, we found a high proportion with low- and intermediate overall adherence to FBDGs whereas two individuals at the most reported dietary intakes according to recommendation.

Further, with established associations to CVD risk, low adherence was especially prevalent in FBDGs regarding unsalted nuts, processed meats and foods rich in sugars and fats. A large proportion of individuals also reported high intakes of drinks with added sugars. Low intakes of vegetables were also seen. This was also true for fruits and berries in the first completion of the questionnaire, although more than double than what was reported in the second.

Calculated nutrient intakes from one 24h recall interview were similar to what has been reported in the general population. However, as confirmed by both clinical and biochemical markers, as well as low levels of engagement in physical activity and a high proportion of smokers, this SMI population was at high risk of CVDs and would benefit from particular attention to dietary habits.

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Appendices

Appendix 1. The Healthy Heart algorithm

Appendix 2. Information- and consent form

Appendix 3. Interview guide

Appendix 4: DIGIKOST FFQ

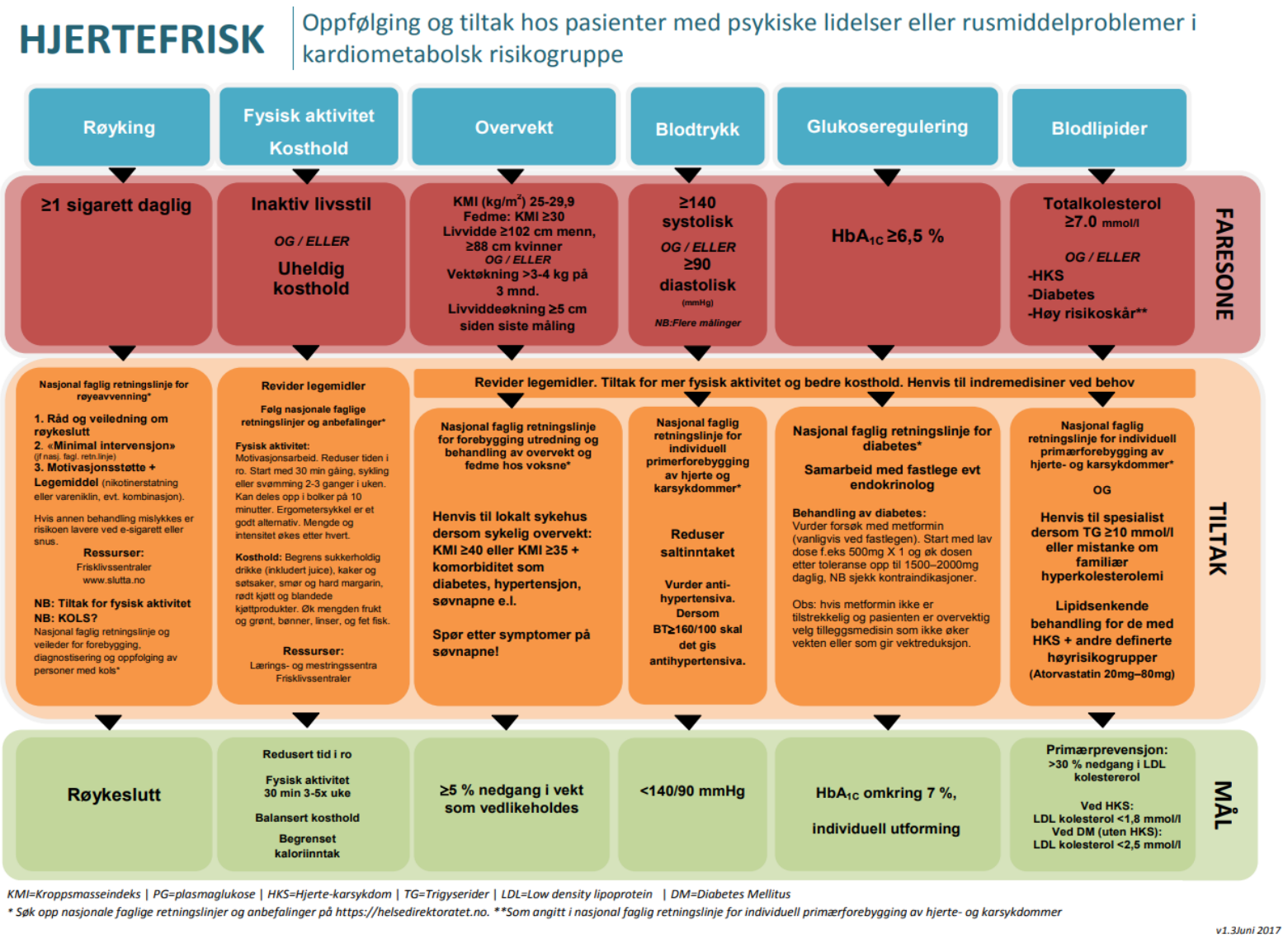
Appendix 5. Regional Ethical Committee for Medical Research approval of the study.

Appendix 6. Supplementary table 1a: Quantified intakes within levels of adherence

Appendix 7 Supplementary table 1b: Quantified total intakes pooled from both completions of the DIGIKOST-FFQ

Appendix 8. Supplementary table 2: Median macronutrient intakes in overall study population and in diagnostic groups.

Appendix 1. The Heart Healthy Algorithm



Anamneseopptak og undersøkelser ved oppstart eller endring av behandling med antipsykotika

Utføres vanligvis av spesialist i psykiatri.
Rask tidlig vektoppgang predikerer senere alvorlig vektøkning. Om det skulle oppstå somatiske forhold som bør behandles bør adekvate tiltak iverksettes med oppfølging minst hver tredje måned.

Ved undersøkelsen

Anamnese: Spør etter betydelig vektøkning (f.eks 3-4kg), spesielt om dette har vært raskt (f.eks innen 3 mnd). Spør etter røyking, fysisk aktivitet og kosthold. Spør etter sykdommer i familien (diabetes, fedme og hjerte-karsykdom hos førstegradsslektninger <55 år menn og <65 år kvinner) samt svangerskapsdiabetes. Merk etnisitet.
Spør etter bruk av reseptfrie eller alternative medisiner, og sjekk sikkerheten ved disse.

Somatisk status: Vekt, høyde, BT, puls.

Blodprøver: HbA1c, og lipider (total kolesterol, LDL-kol, HDL-kol, TG). Fastende prøver må nyttes dersom TG>5 mmol/l.

EKG: Bør tas før oppstart med antipsykotika. Viktig dersom pasienten har eller har hatt hjertesykdom, eller det er hjertesykdom i familien. NB: visse antipsykotika har større risiko for arytmi.

Kronisk nyrelidelse*: Undersøk rutinemessig alle med diabetes, hypertensjon, hjerte- og karsykdom, nyresykdom i familien, strukturell nyrelidelse (f.eks nyrestein):

1. Nyrefunksjon: a) kreatinin & elektrolytter b) estimert GFR
2. Test urinen: a) for proteinuri (dip-stick), b) albumin- kreatininratio (laboratorieanalyse)

* Kronisk nyrelidelse øker risiko for hjerte- og karsykdom

Spesifikke intervensjoner

Livsstilsendringer tas opp med pasienten på en samarbeidende og støttende måte. Fokus på egen mestring og dyktiggjøring. Kartlegg og bruk tilgjengelige ressurser. Hensyn til individuelle variasjoner og at pasientens egne preferanser er førende.
Samarbeid med fastlegen vil være naturlig ved de fleste intervensjoner.

Spesifikke kostholdsråd – «Predimed» middelhavsdiett - http://www.predimed.es:
En liten håndfull (30 g) nøtter eller 4 ss olivenolje extra virgin daglig (brukes istedenfor annet fett i matlaging og som dressing); 2 frukt og 3 grønnsaker daglig; Bønner eller linser 3X ukentlig; Fet fisk 3X ukentlig

Dersom pasienten ikke har nådd målet etter 3 mnd, vurder farmakologiske tiltak rettet mot den somatiske risikoen.
VURDER ALLTID HVER PASIENT INDIVIDUELT.

Revisjon av medikasjon med antipsykotika og stemningsstabiliserende:
Legemiddelvurdering er viktig dersom:

- Rask vektøkning (f.eks. 3-4 kg <3 mnd) etter start av antipsykotika.
- Rask forverring (<3 mnd) av lipidverdier, BT eller blodsukkerverdier.

Psykiateren bør vurdere om uheldige endringer er forårsaket av antipsykotika. Om dette er tilfellet bør det vurderes om et alternativt legemiddelregime kan forventes å gi mindre bivirkninger:

- Rasjonaliser eventuell polyfarmasi
- Endring av antipsykotisk medikasjon krever nøye vurdering av forventede fordeler ved reduksjon veid mot risiko for forverring av psykoselidelsen
- Legemiddelutprøvning bør minst vare i 4-6 uker med optimale doser av antipsykotika
- Dersom klinisk vurdering og pasientens opplevelse tilsier at en likevel fortsetter med eksisterende behandling trengs jevnlig videre monitorering og vurdering av risikobildet

Monitorering ved bruk av antipsykotika: Når og hva

Fastlegen bør kobles inn så tidlig som mulig, men psykiateren bør ha ansvar for å overvåke pasientens somatiske helse og effekten av antipsykotika helt frem til pasientens tilstand har blitt stabilisert, minimum de første 12 månedene. Deretter kan ansvaret for denne oppfølgingen bli overført til fastlegen i videre samarbeid med spesialisthelsetjenesten.

[1]Røyking, kosthold og fysisk aktivitet.
[2]Fastende eller ikke-fastende prøver kan brukes, fastende skal brukes om TG>5.

	Start av behandling	Ukentlig første 6 uker	12 uker	Årlig
Bakgrunn og sykehistorie	■			■
Gjennomgang av livsstil[1]	■		■	■
Vekt	■	■	■	■
Livvidde	■			■
BT	■		■	■
HbA1c	■		■	■
Lipider[2]	■		■	■

Økt kardiometabolsk risiko ved psykoselidelser:

IKKE BARE OBSERVÉR - INTERVENÉR!

FARESONE?

↓

TILTAK!

↓

MÅL

Shiers D. et al. Positive Cardiometabolic Health Resource. Royal College of Psychiatrists, London.
Med tillatelse fra:
Curtis J, Newall H, Samaras K. ©HETI 2011
Norsk adaptasjon 2015 ved PA Ringen og S Tonstad, Klinikk for psykisk helse og avhengighet og Seksjon for preventiv kardiologi, Oslo universitetssykehus.
Med støtte fra Norsk psykiatrisk forening.
Kontakt: p.a.ringen@medisin.uio.no

Oslo universitetssykehus
Norsk psykiatrisk forening
DEN NORSKE LEGEFORENING

Appendix 2. Study information- and consent form.

VIL DU DELTA I FORSKNINGSPROSJEKTET «HVORDAN ER KOSTHOLDET HOS PASIENTER MED DIAGNOSE SCHIZOFRENI /PSYKOSE- ELLER BIPOLAR AFFEKTIV LIDELSE SOM BEHANDLES PÅ EN ORDINÆR POLIKLINIKK (ASKER DPS) I 2021»?

FORMÅLET MED PROSJEKTET OG HVORFOR DU BLIR SPURT

Dette er et spørsmål til deg om å delta i et forskningsprosjekt for å studere kostholdet til personer med en alvorlig psykisk lidelse (schizofreni/-psykose eller bipolar affektiv lidelse.)

Dine svar vil kunne være med på å bedre nåværende behandlingstilbud, og redusere forekomsten av hjerte- og karsykdom hos personer i denne gruppen, gjennom belysning av behov for ernæringsbehandling.

Vi spør deg om å delta i studien fordi din behandler har definert deg som egnet deltager for prosjektet

HVA INNEBÆRER PROSJEKTET FOR DEG?

Deltagelsen i prosjektet er todelt:

1) En samtale med masterstudent i ernæring for samtale om kostholdet ditt. Samtalen foregår i form av et intervju, varighet på 45min-1time. Pause kan tas når du får behov for det. Intervjuet gjennomføres på Asker DPS, men kan også gjennomføres som videosamtale hvis du heller ønsker det.

2) En måned etter intervjuet vil du bli bedt om å fylle ut et digitalt spørreskjema. Her er det også spørsmål om ditt kosthold, og noen spørsmål om din helse, (f.eks.: vaner knyttet til fysisk aktivitet.) Hvordan utfylling av digitalt spørreskjema gjøres, viser jeg deg i det første intervjuet. Samtidig får du et skriv med informasjon om gjennomføring av det digitale spørreskjemaet. Jeg kan også bistå deg over telefon/video dersom du ønsker veiledning når du fyller ut spørreskjemaet.

I prosjektet vil vi innhente og registrere opplysninger om deg fra din pasientjournal. Kun informasjon relevant til prosjektet hentes ut, eksempelvis din vekt, høyde og andre prøver som er tatt relatert til kosthold/helse (f.eks. vitamin-status, kolesterol, blodsukker og blodtrykk).

MULIGE FORDELER OG ULEMPER

Deltagelse i dette prosjektet gir deg en mulighet til å påvirke og optimalisere fremtidig behandling av pasienter. Du vil medvirke til økt fokus på riktig kosthold og på den måten også bidra til at pasienter med alvorlig psykisk lidelse får lavere forekomst av hjerte- og karsykdommer.

Når du deltar i prosjektet, vil du samtidig få en samtale med en masterstudent med kunnskap om ernæring og hvordan kostholdet påvirker kroppen. Det vil være mulig å stille spørsmål om kosthold og ernæring, og om du ønsker det kan du få tilbakemelding og råd knyttet til ditt kosthold.

Deltagelse i dette prosjektet vil kreve at du møter opp til intervjuet, enten ved Asker DPS eller på video, i tillegg til utfylling av det digitale spørreskjemaet en måned etter intervjuet. Å snakke om eget kosthold kan oppleves som ubehagelig for enkelte, og dette kan derfor for noen være en ulempe ved å delta. Intervjuformen som skal benyttes, brukes derimot ofte i ernæringsforskning fordi det er en enkel og lite belastende metode for deltageren. Samtalen vil også være et unikt tilbud for deg som pasient ved Asker DPS, som normalt ikke inngår i forløpet, hvor vi kun vil snakke om ernæring og helse.

FRIVILLIG DELTAKELSE OG MULIGHET FOR Å TREKKE DITT SAMTYKKE

Det er frivillig å delta i prosjektet. Dersom du ønsker å delta, undertegner du samtykkeerklæringen på siste side. Du kan når som helst og uten å oppgi noen grunn trekke ditt samtykke. Det vil ikke ha noen negative konsekvenser for deg eller din behandling hvis du ikke vil delta eller hvis du senere velger å trekke deg.

Dersom du trekker tilbake samtykket, vil det ikke forskes videre på dine helseopplysninger. Du også kan kreve innsyn i opplysningene som er lagret om deg, og opplysningene vil da utleveres innen 30 dager. Du kan også kreve at dine helseopplysninger i prosjektet slettes.
Adgangen til å kreve destruksjon, sletting eller utlevering gjelder ikke dersom materialet eller opplysningene er anonymisert eller publisert. Denne adgangen kan også begrenses dersom opplysningene er inngått i utførte intervjuer.

Dersom du senere ønsker å trekke deg eller har spørsmål til prosjektet, kan du kontakte prosjektleder (se kontaktinformasjon på neste side).

HVA SKJER MED OPPLYSNINGENE OM DEG?

Alle involverte i informasjonsinnsamlingen er underlagt taushetsplikt.

Opplysningene som registreres om deg skal kun brukes slik som beskrevet under formålet med prosjektet, og planlegges brukt til 2022. Eventuelle utvidelser i bruk og oppbevaringstid kan kun skje etter godkjenning fra REK og andre relevante myndigheter.

Du har rett til innsyn i hvilke opplysninger som er registrert om deg og rett til å få korrigert eventuelle feil i de opplysningene som er registrert. Du har også rett til å få innsyn i sikkerhetstiltakene ved behandling av opplysningene. Du kan klage på behandlingen av dine opplysninger til Datatilsynet og institusjonen sitt personvernombud.

Alle opplysningene vil bli behandlet uten navn og fødselsnummer eller andre direkte gjenkjennende opplysninger (=kodede opplysninger). En kode knytter deg til dine opplysninger gjennom en navneliste. Det er kun prosjektleder Dawn E. Peleikis så vel som prosjektmedarbeider/mastergradsstudent Emma Johannessen som har tilgang til disse. Prosjektleder og mastergradsstudenten er kjent med at de har et selvstendig ansvar vedrørende alle forhold som omtales i Prosedyre for lagring av forskningsdata. Da mastergradsstudenten ikke har et ansettelsesforhold til Vestre Viken sørger prosjektleder for at nødvendige taushetserklæringer blir underskrevet, og at avtaler som sikrer at Vestre Vikens prosedyrer blir fulgt.

Publisering av resultater er en nødvendig del av forskningsprosessen. All publisering skal gjøres slik at enkeltdeltakere ikke skal kunne gjenkjennes, men vi plikter å informere deg om at vi ikke kan utelukke at det kan skje.

Opplysningene om deg vil bli oppbevart i fem år etter prosjektslutt av kontrollhensyn. Disse lagres i Tjenester for sensitive data (TSD) ved Universitetet i Oslo.

KONTAKTOPPLYSNINGER

Dersom du har spørsmål til prosjektet eller ønsker å trekke deg fra deltakelse, kan du kontakte mastergradsstudenten, Emma Johannessen:
e-post: e.n.johannessen@studemd.uio.no
tlf: 93028301

Dersom du har spørsmål om personvernet i prosjektet, kan du kontakte personvernombudet ved institusjonen: personvern@vestreviken.no.

JEG SAMTYKKER TIL Å DELTA I PROSJEKTET OG TIL AT MINE PERSONOPPLYSNINGER BRUKES SLIK DET ER BESKREVET

Sted og dato	Deltakers signatur
	Deltakers navn med trykte bokstaver

Appendix 3. Interview guide

Guide for gjennomføring av 24t-recall intervjuer

1) Deltager gjennomgår matvarer som er spist/drukket det foregående døgn.

2) Vurdering sammen med deltager om noe kan være glemt, bruk evt. sjekkliste:

mellommåltid
pølse
eple/banan/annen frukt
sjokolade/godteri
brødskive/kjeks
iskrem
bær
kaffe, melk, saft/brus/juice,
popcorn/nøtter/chips
grønnsaker
boller/hvetebrød
müsli.

3) Gjennomgå tidspunkt og type måltid for det inntaket som er rapportert av deltager i trinnene 1 og 2 (eks. 09:00, frokost)

4) Detaljerte spørsmål om rapportert inntak:

   a. Mengder som mangler for komponenter (husholdningsmål eks. 1ss, 1dl etc.)

   b. Spør om eventuelle andre detaljer der det mangler til alle matvarer/drikker; tilberedning, merkevare/varenavn (fett%, grovhet, nøkkelhull).
      - Drikke til måltid?
      - Tilbehør som ketchup/sennep/sylteagurk eller annet?

5) Et avsluttende, åpent spørsmål om eventuelt annet inntak i løpet av den aktuelle dagen, uavhengig av mengde/størrelse.

Intervjuguiden er utarbeidet med utgangspunkt i «multiple pass approach», etter anbefaling fra FAO (Food and Agriculture Organization of the United Nations: Dietary Assessment, A resource guide to method selection and application in low resource setting).

Appendix 4. DIGIKOST FFQ

Appendix X: DIGIKOST-FFQ

DIGIKOST

Ditt fødselsnummer *

I denne undersøkelsen spør vi om dine livsstilsvaner, slik som kosthold, fysisk aktivitet og tobakksvaner.

Ha den siste 1 måneden i tankene når du fyller ut spørreskjemaet:

- Vi er klar over at livsstil varierer fra dag til dag, prøv derfor så godt du kan å gi et gjennomsnitt av dine livsstilsvaner.
- Vi er ute etter ditt vanlige inntak av mat og drikke og din aktivitet per uke i løpet av den siste 1 måneden.

Til å hjelpe deg med å bestemme mengder og porsjoner har vi noen steder lagt inn bilder av porsjoner av ulike typer mat.

Bildene er ikke alltid samme matvare som vi spør om, men en som ligner i størrelse og type.

Det vil ta ca. 15 minutter å fylle ut skjemaet.

Samtykke om deltakelse til å fylle ut DIGIKOST spørreskjema *

○ Jeg har lest gjennom informasjonen om spørreskjemaet, og er villig til å delta

1. Frukt og bær

1.1 Epler, pærer eller tilsvarende

Hvor mange ganger pr. uke spiser du epler, pærer eller tilsvarende? *

Her kan du oppgi det du spiser rå, i matlaging og/eller som pålegg.

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

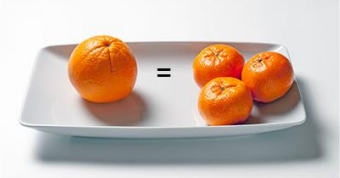
Hvor mange epler, pærer eller tilsvarende spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «5», «4», «3», «2», «≥ 8», «6-7» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du epler, pærer eller tilsvarende?»

Et vanlig eple eller pære veier ca. 135 gram

○ 1/2 stk	○ 1 stk	○ 2 stk	○ 3 stk	○ ≥ 4 stk

1.2 Appelsin



Bildet over viser en vanlig appelsin (195 gram) som tilsvarer ca. 3 små klementiner

Hvor mange ganger pr. uke spiser du appelsiner? *

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

Hvor mange vanlige appelsiner spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «5», «4», «3», «2» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du appelsiner?»

○ 1/2 stk	○ 1 stk	○ 2 stk	○ 3 stk	○ ≥ 4 stk

1.3 Banan

Hvor mange ganger pr. uke spiser du banan? *

Her kan du oppgi det du spiser rå, i matlaging og/eller som pålegg.

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

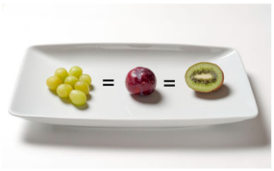
Hvor mange bananer spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du banan?»

En vanlig banan veier ca. 120 gram

○ 1/2 stk	○ 1 stk	○ 2 stk	○ 3 stk	○ ≥ 4 stk

1.4 Liten frukt (f.eks. plommer, druer, kiwi, klementiner)



I bildet over er det lik mengde druer (ca. 8 stk), plomme (1 stk) og kiwi (1/2 stk) og som tilsvarer ca. 50 gram.

Hvor mange ganger pr. uke spiser du liten frukt? *

Her kan du oppgi det du spiser rå, i matlaging og/eller som pålegg.

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

Hvor mange liten frukt spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «2», «1», «6-7», «5», «4», «3» eller «≥ 8» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du liten frukt?»

1 liten frukt tilsvarer 1 plomme som vist i bildet ovenfor.

○ 1/2 stk	○ 1 stk	○ 2 stk	○ 3 stk	○ ≥ 4 stk

1.5 Bær (f.eks. jordbær, blåbær, bringebær, tyttebær, kirsebær)

Smoothie inngår også i dette spørsmålet.
Her kan du rapportere frosne og ferske bær, og bær som er rørt ut i litt sukker.

Hvor mange ganger pr. uke spiser du bær? *

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

Hvor mye bær spiser du hver gang? *

Dette elementet vises kun dersom alternativet «1», «5», «4», «3», «2», «≥ 8» eller «6-7» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du bær?»

Bærene i bildene nedenfor er servert i en suppetallerken (17cm)

Det ligger en spiseskje i hver tallerken.

A = ca. 50 gram

B = ca. 100 gram

C = ca.150 gram

D = ca. 250 gram

2. Nøtter

Inngår nøtter som en del av ditt ukentlige kosthold? *

Ja

Nei

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår nøtter som en del av ditt ukentlige kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår nøtter som en del av ditt ukentlige kosthold?»

Bildet til venstre viser ca. 20 gram nøtter (=1 neve)

Bildet til høyre viser ca. 140 gram nøtter (=7 never)

Det ligger en teskje på hver tallerken.

Vi vil først spørre deg om usaltede nøtter og deretter saltede nøtter.

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår nøtter som en del av ditt ukentlige kosthold?»

2.1 Usaltede nøtter (f.eks. mandler, valnøtter, cashewnøtter, ferdige nøtteblandinger, peanøtter)

Hvor mange ganger pr. uke spiser du usaltede nøtter? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår nøtter som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye usaltede nøtter spiser du hver gang? *

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du usaltede nøtter?»

- ○ 1-2 never
- ○ 3-4 never
- ○ 5-6 never
- ○ ≥ 7 never

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår nøtter som en del av ditt ukentlige kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår nøtter som en del av ditt ukentlige kosthold?»

2.2 Saltede nøtter (f.eks. peanøtter, chilinøtter, ferdige nøtteblandinger, pekannøtter, cashewnøtter)

Hvor mange ganger pr. uke spiser du saltede nøtter? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår nøtter som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye saltede nøtter spiser du hver gang? *

Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «5», «4», «3», «2» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du saltede nøtter?»

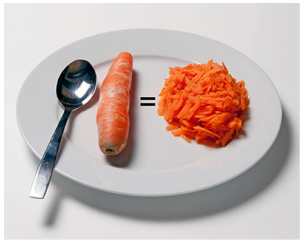
- ○ 1-2 never
- ○ 3-4 never
- ○ 5-6 never
- ○ ≥ 7 never

3. Grønnsaker

Vi vil nå spørre deg om de grønnsakene du vanligvis spiser.

Det kan være at du spiser en blanding av det vi spør deg om. Et tips er da å velge litt av hver type grønnsak, så det tilsammen stemmer med det du spiser.

3.1 Gulrot



Bildet viser en vanlig gulrot og revet gulrot som tilsvarer 80 gram i mengde.

Gulroten er servert på en middagstallerken (19 cm).

Det ligger en spiseskje på tallerken.

Hvor mange ganger pr. uke spiser du gulrot? *

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

Hvor mange vanlige gulrøtter spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du gulrot?»

○ 1/2 stk	○ 1 stk	○ 2 stk	○ ≥ 3 stk

3.2 Brokkoli og/eller blomkål

Hvor mange ganger pr. uke spiser du brokkoli og/eller blomkål? *

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

Hvor mye brokkoli og/eller blomkål spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du brokkoli og/eller blomkål?»

Brokkolien og blomkålen i bildene nedenfor er servert på en middagstallerken (19 cm).

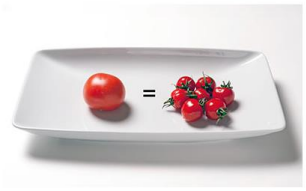
○ A= ca. 50 gram

○ B= ca. 100 gram

○ C= ca. 150 gram

○ D= ca. 250 gram

3.3 Tomat



Bildet over viser friske tomater der en vanlig tomat (95 gram) tilsvarer 6-7 små cherrytomater

Hvor mange ganger pr. uke spiser du tomater? *

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

Hvor mange vanlige tomater spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du tomater?»

○ 1/2 stk	○ 1 stk	○ 2 stk	○ ≥ 3 stk

3.4 Tomatprodukter (f.eks. tomatsaus, hermetiske tomater, ketchup)

Hvor mange ganger pr.uke spiser du tomatprodukter *

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

ⓘ Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «5», «4», «3», «2» eller «1» er valgt i spørsmålet «Hvor mange ganger pr.uke spiser du tomatprodukter»

ⓘ Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «5», «4», «3», «2» eller «1» er valgt i spørsmålet «Hvor mange ganger pr.uke spiser du tomatprodukter»

Bildet over viser mengde tomatprodukt (17 gram) som tilsvarer en spiseskje (ss).

Tomatproduktet i bildet er servert på en middagstallerken (19 cm).

Hvor mye tomatprodukter spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «5», «4», «3», «2» eller «1» er valgt i spørsmålet «Hvor mange ganger pr.uke spiser du tomatprodukter»

ss = spiseskje

○ 0,5 ss	○ 1 ss	○ 2 ss	○ ≥ 3 ss

3.5 Løk, vårløk og purreløk

Inngår løk, purreløk og/eller vårløk som en del av ditt ukentlige kosthold? *

- ○ Ja
- ○ Nei

Hvor mange ganger pr. uke spiser du løk, vårløk og/eller purreløk? *

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår løk, purreløk og/eller vårløk som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

ⓘ Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «1», «5», «4», «3» eller «2» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du løk, vårløk og/eller purreløk?»

ⓘ Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «1», «5», «4», «3» eller «2» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du løk, vårløk og/eller purreløk?»

Bildet viser en vanlig løk og revet løk som tilsvarer 150 gram i mengde.

Løken er servert på en middagstallerken (19 cm).

Det ligger en spiseskje (ss) på tallerken.

Hvor mye hver gang spiser du løk, vårløk og/eller purreløk? *

ⓘ Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «1», «5», «4», «3» eller «2» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du løk, vårløk og/eller purreløk?»

1 ss løk = 10 gram

- ○ 1 ss
- ○ 2 ss
- ○ 3 ss
- ○ ≥ 4 ss

3.6 Blandet salat

Hvor mange ganger pr. uke spiser du blandet salat? *

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye blandet salat spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «1», «5», «4», «3», «2», «≥ 8» eller «6-7» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du blandet salat?»

Grønnsakene i bildene nedenfor er servert på en middagstallerken (19 cm).

- ○ A = ca. 25 gram

- ○ B = ca. 50 gram

- ○ C = ca. 100 gram

- ○ D = ca. 150 gram

3.7 Rotgrønnsaker (f.eks. kålrot, sellerirot, persillerot, reddik)

Hvor mange ganger pr. uke spiser du rotgrønnsaker? *

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye rotgrønnsaker spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «1», «5», «4», «3», «2», «≥ 8» eller «6-7» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du rotgrønnsaker?»

Grønnsakene i bildene nedenfor er servert på en middagstallerken (19 cm).

○ A = ca. 50 gram

○ B = ca. 100 gram

○ C = ca. 150 gram

○ D = ca. 250 gram

3.8 Belgfrukter (f.eks. bønner, erter, linser, kikerter)

Hvor mange ganger pr. uke spiser du belgfrukter? *

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye belgfrukter spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «5», «4», «3», «2», «≥ 8», «6-7» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du belgfrukter?»

- ○ 0,5 dl
- ○ 1 dl
- ○ 2 dl
- ○ ≥ 3 dl

3.9 Andre grønnsaker (f.eks. avokado, aubergin, squash)

Hvor mange ganger pr. uke spiser du andre grønnsaker ? *

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye andre grønnsaker spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «1», «5», «4», «3» eller «2» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du andre grønnsaker ?»

En stor avokado, en vanlig aubergin og en vanlig squash veier hver seg omtrent 250 gram.

- ○ 50 gram
- ○ 100 gram
- ○ 150 gram
- ○ ≥ 250 gram

4. Brød, knekkebrød og pålegg

Brødskalaens fire kategorier har vi satt inn for å hjelpe deg å vurdere grovheten på brødproduktene du spiser.

0-25% sammalt mel/hele korn

25-50% sammalt mel/hele korn

50-75% sammalt mel/hele korn

75-100% sammalt mel/hele korn

4.1 Brød og knekkebrød

Hvor mye brød og knekkebrød spiser du?

I dette spørsmålet skal du oppgi antall skiver pr. dag

Mengden oppgis i antall skiver:

1/2 rundstykke = 1 skive; 1 baguett = 4 skiver; 1 ciabatta = 2 skiver; 1 knekkebrød= 1 skive

	0	1	2	3	4	5	6	7	8	9
Fint brød, 0-25% sammalt mel (f.eks. loff, fine rundstykker, ciabatta)	○	○	○	○	○	○	○	○	○	○
Halvgrovt brød, 25-50% sammalt mel (f.eks. helkornbrød, kneip, grove rundstykker)	○	○	○	○	○	○	○	○	○	○
Grovt brød, 50-75% sammalt mel (f.eks.havrebrød)	○	○	○	○	○	○	○	○	○	○
Ekstra grovbrød, 75-100% sammalt mel (f.eks. mørkt rugbrød)	○	○	○	○	○	○	○	○	○	○
Fint knekkebrød (f.eks. kavring, frokost knekkebrød)	○	○	○	○	○	○	○	○	○	○
Grovt knekkebrød (f.eks. Husman, Sport, Solruta)	○	○	○	○	○	○	○	○	○	○

Vi har regnet ut at du bruker 0 brødskiver og knekkebrød per uke

4.2 Pålegg

Man kan bruke flere pålegg pr. brødskive eller knekkebrød

Hvor mye pålegg har du vanligvis på de 0 brødskivene og eller knekkebrødene (viser til antall brødskiver og knekkebrød per uke beregnet i spørsmålet ovenfor)?

	0	1-3 skiver	4-7 skiver	8-12 skiver	13-18 skiver	19-25 skiver	≥ 26 skiver
Fete oster som pålegg (f.eks. helfet Norvegia, helfet Jarlsberg, brunost, prim, brie) *	○	○	○	○	○	○	○
Magre oster som pålegg (f.eks. lett Norvegia, lett Jarlsberg, cottage cheese) *	○	○	○	○	○	○	○
Fiskepålegg (f.eks. makrell i tomat, røket/gravet laks, sild) *	○	○	○	○	○	○	○
Rødt kjøtt (f.eks. salami, skinke, servelat, leverpostei) *	○	○	○	○	○	○	○
Hvitt kjøtt (f.eks. kyllingpålegg, kalkunpålegg, kyllingleverpostei) *	○	○	○	○	○	○	○
Pålegg med sukker (f.eks. honning, syltetøy, nøttepålegg) *	○	○	○	○	○	○	○
Egg (kokt, stekt, eggerøre) *	○	○	○	○	○	○	○

4.3 Grøt og kornblandinger

Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold? *

- ○ Ja
- ○ Nei

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold?»

4.3.1 Havregrøt/ byggrynsgrøt

Hvor mange ganger pr. uke spiser du havregrøt/ byggrynsgrøt? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye havregrøt/ byggrynsgrøt spiser du hver gang? *

Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «5», «4», «3», «2» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du havregrøt/ byggrynsgrøt?»

Grøten i bildene nedenfor er servert i en suppetallerken (17 cm).

○ A = ca. 90 gram

○ B = ca. 180 gram

○ C = ca. 270 gram

○ D = ca. 360 gram

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold?»

4.3.2 Risengrynsgrøt

Hvor mange ganger pr. uke spiser du risengrynsgrøt? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye risengrynsgrøt spiser du hver gang? *

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du risengrynsgrøt?»

Grøten i bildene nedenfor er servert i en suppetallerken (17 cm)

○ A = ca. 90 gram

○ B = ca. 180 gram

○ C = ca. 270 gram

○ D = ca. 360 gram

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold?»

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold?»

4.3.3 Usøtede kornblandinger (f.eks. 4-korn, havregryn, musli)

Hvor mange ganger pr. uke spiser du usøtede kornblandinger? *

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold?»

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

Hvor mye usøtet kornblanding spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du usøtede kornblandinger?»

Frokostblandingen i bildene nedenfor er servert i en suppetallerken (17 cm)

○ A = ca. 40 gram

○ B = ca. 80 gram

○ C = ca. 120 gram

○ D = ca. 160 gram

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold?»

4.3.4 Søtede kornblandinger (f.eks. Corn flakes, Chocofrokost)

Hvor mange ganger pr. uke spiser du søtede kornblandinger? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår grøt og/eller kornblandinger som en del av ditt ukentlige kosthold?»

- Aldri/Sjelden
- 1
- 2
- 3
- 4
- 5
- 6-7
- ≥ 8

Hvor mye søtet kornblanding spiser du hver gang? *

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du søtede kornblandinger?»

Den søtede kornblandingen i bildene nedenfor er servert i en suppetallerken (17 cm)

- A = ca. 14 gram

- B = ca. 28 gram

- C = ca. 42 gram

- D = ca. 56 gram

5. Margarin, smør og olje

5.1 Bruker du vanligvis margarin, smør eller olje på brød, baguette og/eller rundstykker? *

- Ja
- Nei, vanligvis ikke

Hva bruker du oftest på brød, baguette eller rundstykker? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «5.1 Bruker du vanligvis margarin, smør eller olje på brød, baguette og/eller rundstykker?»

- Margarin (f.eks. Soft Flora, Vita, Soft Oliven)
- Smør (f.eks. Bremykt, meierismør)
- Oljer (f.eks. olivenolje, soyaolje, rapsolje, Vita hjertego)

5.2 Bruker du vanligvis margarin, smør og olje til matlaging? *

- ○ Ja
- ○ Nei, vanligvis ikke

Hva bruker du oftest til matlaging? *

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «5.2 Bruker du vanligvis margarin, smør og olje til matlaging?»

- ○ Margarin (f.eks. Soft Flora, Vita, Soft Oliven)
- ○ Smør (f.eks. Bremykt, meierismør)
- ○ Oljer (f.eks. olivenolje, soyaolje, rapsolje, Vita hjertego)

6. Fisk

Inngår fisk som en del av ditt ukentlige kosthold? *

- ○ Ja
- ○ Nei

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår fisk som en del av ditt ukentlige kosthold?»

Vi vil først spørre om fet fisk, deretter mager fisk og bearbeidet fisk.

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår fisk som en del av ditt ukentlige kosthold?»

6.1 Fet fisk (f.eks. laks, ørret, sild, kveite)

Hvor mange ganger pr. uke spiser du fet fisk? *

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår fisk som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye fet fisk spiser du hver gang? *

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du fet fisk?»

A: 0,5 porsjon (ca. 62 gram)

B: 1 porsjon (ca. 125 gram)

C: 1,5 porsjoner (ca. 187 gram)

D: 2 porsjoner (ca. 250 gram) eller mer

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår fisk som en del av ditt ukentlige kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår fisk som en del av ditt ukentlige kosthold?»

6.2 Mager fisk (f.eks. torsk, sei, hyse, rødspette, breiflabb)

Hvor mange ganger pr. uke spiser du mager fisk? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår fisk som en del av ditt ukentlige kosthold?»

Aldri/Sjelden	1	2	3
4	5	6-7	≥ 8

Hvor mye mager fisk spiser du hver gang? *

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du mager fisk?»

A: 0,5 porsjon (62 gram)

B: 1 porsjon (ca. 125 gram)

C: 1,5 porsjoner (ca. 187 gram)

D: 2 porsjoner (ca. 250 gram) eller mer

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår fisk som en del av ditt ukentlige kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår fisk som en del av ditt ukentlige kosthold?»

6.3 Bearbeidet fisk (f.eks. fiskekaker, fiskegrateng, fiskeboller, fiskepudding)

Hvor mange ganger pr. uke spiser du bearbeidet fisk? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår fisk som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du bearbeidet fisk?»

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du bearbeidet fisk?»

Bildet over viser 1 porsjon med mager fisk, tilsvarende 150 gram.

Hvor mye bearbeidet fisk spiser du hver gang? *

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du bearbeidet fisk?»

- ○ 0,25 porsjon
- ○ 0,5 porsjon
- ○ 1 porsjon
- ○ 1,5 porsjoner
- ○ 2 porsjoner
- ○ ≥ 3 porsjoner

Obligatoriske felter er merket med stjerne *

7. Kjøtt

Inngår kjøtt som en del av ditt ukentlige kosthold? *

- ○ Ja
- ○ Nei

7.1 Rødt kjøtt (f.eks. storfe, svin eller sau/lam)

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kjøtt som en del av ditt ukentlige kosthold?»

7.1.1 Bearbeidet rødt kjøtt (f.eks. pølser, hamburger, kjøttboller, sommer-kotelett, kjøttdeig)

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kjøtt som en del av ditt ukentlige kosthold?»

Bearbeidet kjøtt er røkt, saltet eller konservert med nitrat eller nitritt

Hvor mange ganger pr. uke spiser du bearbeidet rødt kjøtt? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kjøtt som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du bearbeidet rødt kjøtt?»

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du bearbeidet rødt kjøtt?»

Bildet over viser 1 porsjon bearbeidet rødt kjøtt (150 g). Det er lik mengde pølser, kjøttboller og karbonader

Hvor mye bearbeidet rødt kjøtt spiser du hver gang? *

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du bearbeidet rødt kjøtt?»

- ○ 0,25 porsjon
- ○ 0,5 porsjon
- ○ 1 porsjon
- ○ 1,5 porsjoner
- ○ 2 porsjoner
- ○ ≥ 3 porsjoner

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kjøtt som en del av ditt ukentlige kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kjøtt som en del av ditt ukentlige kosthold?»

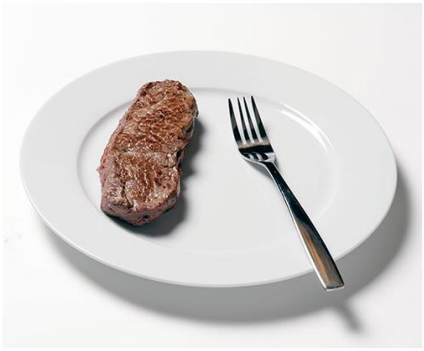
7.1.2 Rødt kjøtt, ikke bearbeidet (f.eks. biff, stek, grytekjøtt)

Hvor mange ganger pr. uke spiser du rødt kjøtt, ikke bearbeidet? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kjøtt som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Dette elementet vises kun dersom alternativet «5», «4», «3», «2», «≥ 8», «6-7» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du rødt kjøtt, ikke bearbeidet?»



Dette elementet vises kun dersom alternativet «5», «4», «3», «2», «≥ 8», «6-7» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du rødt kjøtt, ikke bearbeidet?»

Dette bilde viser 1 porsjon rødt kjøtt, ikke bearbeidet, tilsvarende 150 gram og som er servert på en middagstallerken (19 cm).

Hvor mye rødt kjøtt, ikke bearbeidet, spiser du hver gang? *

Dette elementet vises kun dersom alternativet «5», «4», «3», «2», «≥ 8», «6-7» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du rødt kjøtt, ikke bearbeidet?»

- ○ 0,25 porsjon
- ○ 0,5 porsjon
- ○ 1 porsjon
- ○ 1,5 porsjoner
- ○ 2 porsjoner
- ○ ≥ 3 porsjoner

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kjøtt som en del av ditt ukentlige kosthold?»

7.2 Hvitt kjøtt (f.eks. kylling, kalkun)

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kjøtt som en del av ditt ukentlige kosthold?»

7.2.1 Bearbeidet hvitt kjøtt (f.eks. pølser, kjøttboller, hamburger)

Hvor mange ganger pr. uke spiser du bearbeidet hvitt kjøtt? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kjøtt som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «5», «4», «3», «2» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du bearbeidet hvitt kjøtt?»

Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «5», «4», «3», «2» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du bearbeidet hvitt kjøtt?»

Bildet over viser 1 porsjon bearbeidet hvitt kjøtt (150 g). Det er lik mengde pølser, kjøttboller og karbonader.

Hvor mye bearbeidet hvitt kjøtt spiser du hver gang? *

Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «5», «4», «3», «2» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du bearbeidet hvitt kjøtt?»

- ○ 0,25 porsjon
- ○ 0,5 porsjon
- ○ 1 porsjon
- ○ 1,5 porsjoner
- ○ 2 porsjoner
- ○ ≥ 3 porsjoner

Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «5», «4», «3», «2» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du bearbeidet hvitt kjøtt?»

7.2.2 Hvitt kjøtt, ikke bearbeidet (f.eks. kyllingfilet, kalkunbrystfilet)

Hvor mange ganger pr. uke spiser du hvitt kjøtt, ikke bearbeidet? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kjøtt som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «1», «5», «4», «3» eller «2» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du hvitt kjøtt, ikke bearbeidet?»

Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «1», «5», «4», «3» eller «2» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du hvitt kjøtt, ikke bearbeidet?»

Dette bildet viser en kyllingfilet som tilsvarer 1 porsjon hvitt kjøtt (150 g) og som er servert på en middagstallerken (19 cm).

Obligatoriske felter er merket med stjerne *

8.0 Yoghurt, rømme, creme fraiche eller liknende

Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold? *

- ○ Ja
- ○ Nei

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

Bildet viser 1,5 dl yoghurt som tilsvarer ett lite beger med yoghurt. Det ligger en teskje ved siden av yoghurten.

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

8.1 Lett yoghurt (f.eks. all youghurt med "lett", "0%", "0,1%" i navnet el-ler yoghurt naturell)

Hvor mange ganger pr. uke spiser du lett yoghurt? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

Hvor mye lett yoghurt spiser du hver gang? *

Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «1», «5», «4», «3» eller «2» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du lett yoghurt?»

○ 0,5 dl	○ 1 dl	○ 1,5 dl	○ 2 dl	○ 2,5 dl	○ ≥ 3 dl

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

8.2 Yoghurt (f.eks. God morgen yoghurt, fruktyoghurt)

Hvor mange ganger pr. uke spiser du yoghurt? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

Hvor mye yoghurt spiser du hver gang? *

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du yoghurt?»

○ 0,5 dl	○ 1 dl	○ 1,5 dl	○ 2 dl	○ 2,5 dl	○ ≥ 3 dl

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

9. Rømme, creme fraiche og liknende

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

9.1 Rømme, creme fraiche o.l. med lavt fettinnhold (f.eks. lettrømme, ma-ger kesam, eller inneholder mindre enn 20% fett)

Hvor mange ganger pr. uke spiser du rømme, creme fraiche o.l. med lavt fettinnhold? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

○ Aldri/Sjelden	○ 1	○ 2	○ 3
○ 4	○ 5	○ 6-7	○ ≥ 8

Dette elementet vises kun dersom alternativet «1», «5», «4», «3», «2», «≥ 8» el-ler «6-7» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du rømme, creme fraiche o.l. med lavt fettinnhold?»

Dette elementet vises kun dersom alternativet «1», «5», «4», «3», «2», «≥ 8» eller «6-7» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du rømme, creme fraiche o.l. med lavt fettinnhold?»

Bildet over viser en spiseskje (ss) med rømme.

Hvor mye rømme, creme fraiche o.l. med lavt fettinnhold spiser du hver gang? *

Dette elementet vises kun dersom alternativet «1», «5», «4», «3», «2», «≥ 8» eller «6-7» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du rømme, creme fraiche o.l. med lavt fettinnhold?»

Oppgi mengde i spiseskjeer (ss)

- ○ 0,5 ss
- ○ 1 ss
- ○ 1 1/2 ss
- ○ 2 ss
- ○ 3 ss
- ○ ≥ 4 ss

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

9.2 Rømme, creme fraiche og liknende med høyt fettinnhold (f.eks. seterrømme, creme fraiche, eller inneholder mer enn 20% fett)

Hvor mange ganger pr. uke spiser du rømme, creme fraiche o.l. med høyt fettinnhold? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår yoghurt, rømme, creme fraiche eller liknende som en del av ditt ukentlige kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye rømme, creme fraiche o.l. med høyt fettinnhold spiser du hver gang? *

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du rømme, creme fraiche o.l. med høyt fettinnhold?»

10. Ris og pasta

Inngår ris eller pasta som en del av ditt ukentlig kosthold? *

- ○ Ja
- ○ Nei

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår ris eller pasta som en del av ditt ukentlig kosthold?»

10.1 Brun ris (upolert, fullkorn)

Hvor mange ganger pr. uke spiser du brun ris? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår ris eller pasta som en del av ditt ukentlig kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye brun ris spiser du hver gang? *

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du brun ris?»

Risen i bildene nedenfor er servert på en middagstallerken (19 cm).

Oppgi mengde som kokt ris.

○ A = ca. 40 gram

○ B = ca. 80 gram

○ C =ca. 160 gram

○ D = ca. 320 gram

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår ris eller pasta som en del av ditt ukentlig kosthold?»

10.2 Hvit ris (polert)

Hvor mange ganger pr. uke spiser du hvit ris *

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår ris eller pasta som en del av ditt ukentlig kosthold?»

○ Aldri/Sjelden ○ 1 ○ 2 ○ 3

○ 4 ○ 5 ○ 6-7 ○ ≥ 8

Hvor mye hvit ris spiser du hver gang? *

ⓘ Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du hvit ris»

Risen i bildene nedenfor er servert på en middagstallerken (19 cm).

Oppgi mengde som kokt ris.

○ A = ca. 40 gram

○ B = ca. 80 gram

○ C = ca. 160 gram

○ D = ca. 320 gram

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår ris eller pasta som en del av ditt ukentlig kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår ris eller pasta som en del av ditt ukentlig kosthold?»

10.3 Fullkornspasta

Hvor mange ganger pr. uke spiser du fullkornspasta? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår ris eller pasta som en del av ditt ukentlig kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye fullkornspasta spiser du hver gang? *

Dette elementet vises kun dersom alternativet «≥ 8», «6-7», «5», «4», «3», «2» eller «1» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du fullkornspasta?»

Pastaen i bildene nedenfor er servert på en middagstallerken (19 cm).

Oppgi mengde som kokt pasta.

○ A = ca. 50 gram

○ B = ca. 100 gram

○ C = ca. 195 gram

○ D = ca. 390 gram

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår ris eller pasta som en del av ditt ukentlig kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår ris eller pasta som en del av ditt ukentlig kosthold?»

10.4 Hvit pasta (ikke fullkorn)

Hvor mange ganger pr. uke spiser du hvit pasta? *

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår ris eller pasta som en del av ditt ukentlig kosthold?»

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

Hvor mye hvit pasta spiser du hver gang? *

Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «Hvor mange ganger pr. uke spiser du hvit pasta?»

Pastaen i bildene nedenfor er servert på en middagstallerken (19 cm).

Oppgi mengde som kokt pasta.

○ A = ca. 50 gram

○ B = ca. 100 gram

○ C = ca. 195 gram

○ D = ca. 390 gram

Obligatoriske felter er merket med stjerne *

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår ris eller pasta som en del av ditt ukentlig kosthold?»

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11. Kalde og varme drikker

Vi vil først spørre deg om kalde drikker, og deretter varme drikker.

11.1 Kalde drikker i glass

Hvor ofte drikker du vanligvis de ulike typene drikker i listen under?

Bildet over viser et vanlig kjøkkenglass tilsvarende 2 dl.

"Glass/uke" betyr antall glass i uken, "glass/dag" betyr antall glass pr. dag. "≥7 glass/dag" betyr 7 eller flere glass pr. dag.

Husk å ta med melk du bruker på frokostgryn, grøt og dessert.

	Aldri/Sjelden	1-3 glass/uke	4-6 glass/uke	1-2 glass/dag	3-4 glass/dag	5-6 glass/dag	≥ 7 glass/dag
Vann (springvann) *	○	○	○	○	○	○	○
Flaskevann med og uten kullsyre (f.eks. Farris, Imsdal) *	○	○	○	○	○	○	○
Helmelk, kefir, kulturmelk *	○	○	○	○	○	○	○
Lettmelk (1% eller 0,5%), skummet melk, skummet kulturmelk *	○	○	○	○	○	○	○
Juice (f.eks. eplejuice, appelsinjuice uten tilsatt sukker) *	○	○	○	○	○	○	○
Saft og iste med tilsatt sukker *	○	○	○	○	○	○	○
Saft og iste uten tilsatt sukker, kunstig søtet *	○	○	○	○	○	○	○
Annen drikke uten tilsatt sukker (f.eks.lettbrus) *	○	○	○	○	○	○	○
Annen drikke med tilsatt sukker (f.eks. brus, nektar, energidrikke) *	○	○	○	○	○	○	○

11.2 Kaffe og te

Inngår kaffe eller te som en del av ditt ukentlige kosthold? *

- ○ Ja
- ○ Nei

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kaffe eller te som en del av ditt ukentlige kosthold?»

Hvor ofte drikker du vanligvis de ulike typene drikker i listen under?

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kaffe eller te som en del av ditt ukentlige kosthold?»

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kaffe eller te som en del av ditt ukentlige kosthold?»

1 kopp te tilsvarer ca. 2,5 dl
1 kopp vanlig kaffe tilsvarer ca. 2,0 dl
1 kopp espresso tilsvarer ca. 0,3 dl

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kaffe eller te som en del av ditt ukentlige kosthold?»

	Aldri/Sjelden	1-3 kopper/uke	4-6 kopper/uke	1-2 kopper/dag	3-4 kopper/dag	5-6 kopper/dag	≥ 7 kopper/dag
Kaffe (traktet,filter) *	○	○	○	○	○	○	○
Presskanne kaffe, kokekaffe, kaffekapsel *	○	○	○	○	○	○	○
Espresso *	○	○	○	○	○	○	○
Annen kaffe (f.eks. cappucino, caffe latte, macchiato, andre espresso relatert) *	○	○	○	○	○	○	○
Te (f.eks. svart, grønn) *	○	○	○	○	○	○	○

12. Alkoholholdige drikker

Drikker du vanligvis alkoholholdige drikker? *

- ○ Ja
- ○ Nei, vanligvis ikke

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Drikker du vanligvis alkoholholdige drikker?»

Hvor mange ganger pr. uke drikker du alkoholholdige drikker?

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Drikker du vanligvis alkoholholdige drikker?»

"gang/uke" betyr antall ganger i uken.

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Drikker du vanligvis alkoholholdige drikker?»

	Aldri/Sjelden	1 gang/uke	2 ganger/uke	3 ganger/uke	4 ganger/uke	5 ganger/uke	6-7 ganger/uke	≥ 8 gang/uke
Øl, sterk øl, pils *	○	○	○	○	○	○	○	○
Vin *	○	○	○	○	○	○	○	○
Brennevin *	○	○	○	○	○	○	○	○

Hvor mye drikker du hver gang?

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Drikker du vanligvis alkoholholdige drikker?»

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Drikker du vanligvis alkoholholdige drikker?»

Bildet over viser vanlig vinglass tilsvarende 1,2 dl, ølglass tilsvarende 4,0 dl og brennevinsglass tilsvarende 0,4 dl.

Oppgi mengde i antall glass.

ⓘ Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Drikker du vanligvis alkoholholdige drikker?»

	0	1/2 glass	1 glass	2 glass	3 glass	4 glass	5 glass	≥ 6 glass
Øl, sterk øl, pils (glass, 4 dl) *	○	○	○	○	○	○	○	○
Vin (glass, 1,2 dl) *	○	○	○	○	○	○	○	○
Brennevin (glass, 0,4 dl)	○	○	○	○	○	○	○	○

Obligatoriske felter er merket med stjerne *

13. Kaker, dessert, godteri

Inngår kaker, dessert og godteri i ditt ukentlige kosthold? *

- ○ Ja
- ○ Nei

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kaker, dessert og godteri i ditt ukentlige kosthold?»

Hvor ofte spiser du vanligvis de ulike matvarene i listen under?

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kaker, dessert og godteri i ditt ukentlige kosthold?»

	Aldri/Sjelden	1 enhet/uke	2-3 enheter/uke	4-5 enheter/uke	6-7 enheter/uke	8-9 enheter/uke	≥ 10 enheter/uke
Kaker, hvetebakst, vafler, søt kjeks (1 enhet = ca. 80 gram, 1 kakestykke= 1 bolle= 1 vaffelplate= 8 små kjeks) *	○	○	○	○	○	○	○
Dessert (f.eks. is, hermetisk frukt, pudding) (1 enhet= 1,2 dl) *	○	○	○	○	○	○	○
Sjokolade, godteri (1 porsjon= 100gram) *	○	○	○	○	○	○	○
Potetull, chips (1 enhet= 1 neve= 15 gram) *	○	○	○	○	○	○	○

14. Kosttilskudd

Inngår kosttilskudd i ditt ukentlige kosthold? *

- ○ Ja
- ○ Nei

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kosttilskudd i ditt ukentlige kosthold?»

Hvor ofte spiser du kosttilskuddene i listen under?

Dette elementet vises kun dersom alternativet «Ja» er valgt i spørsmålet «Inngår kosttilskudd i ditt ukentlige kosthold?»

	Aldri/Sjelden	1-2 enheter/uke	3-4 enheter/uke	1 enhet/dag	2 enheter/dag	3 enheter/dag	≥ 4 enheter/dag
Tran (1 enhet= 1 barneeskje) *	○	○	○	○	○	○	○
Trankapsler, fiskeoljekapsler, omega-3 tilskudd (1 enhet=1 kapsel) *	○	○	○	○	○	○	○
Vitamin D (1 enhet= 1 pille) *	○	○	○	○	○	○	○
Mulitvitamin tilskudd (1 enhet= 1 pille) *	○	○	○	○	○	○	○
Jern (1 enhet= 1 pille) *	○	○	○	○	○	○	○
Kalsium (1 enhet= 1 pille) *	○	○	○	○	○	○	○
Andre kosttilskudd *	○	○	○	○	○	○	○

Obligatoriske felter er merket med stjerne *

15. Fysisk aktivitet, tid i ro og søvn

Vi vil først spørre deg om din fysiske aktivitet der du blir lett og veldig andpusten, og deretter hvor lenge du er i ro og sover i løpet av ett vanlig døgn.

15.1 Hvor mange ganger pr. uke er du fysisk aktiv der du blir lett andpusten (moderat intensitet)? *

F.eks. hurtig gange, hardt husarbeid, fysisk aktiv i arbeid

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

15.1.1 Hvor lenge var du fysisk aktiv hver gang (minutter) i moderat intensitet? *

ⓘ Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «15.1 Hvor mange ganger pr. uke er du fysisk aktiv der du blir lett andpusten (moderat intensitet)?»

- ○ 1-4 minutter
- ○ 5-9 minutter
- ○ 10-15 minutter
- ○ 16-20 minutter
- ○ 21-30 minutter
- ○ 31-45 minutter
- ○ 46-60 minutter
- ○ ≥ 61 minutter

15.2 Hvor mange ganger pr. uke er du fysisk aktiv der du blir veldig andpusten (høy intensitet)? *

F.eks. jogging, skigåing, hard fysisk aktivitet, driver idrett

- ○ Aldri/Sjelden
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6-7
- ○ ≥ 8

15.2.2 Hvor lenge var du fysisk aktiv hver gang (minutter) i høy intensitet? *

ⓘ Dette elementet vises kun dersom alternativet «3», «2», «1», «≥ 8», «6-7», «5» eller «4» er valgt i spørsmålet «15.2 Hvor mange ganger pr. uke er du fysisk aktiv der du blir veldig andpusten (høy intensitet)?»

- ○ 1-4 minutter
- ○ 5-9 minutter
- ○ 10-15 minutter
- ○ 16-20 minutter
- ○ 21-30 minutter
- ○ 31-45 minutter
- ○ 46-60 minutter
- ○ ≥ 61 minutter

Vi vil nå spørre deg om hvor lenge du vanligvis er i ro og sover i løpet av ett døgn (24 timer).

Summen av de tre neste spørsmålene kan ikke bli mer enn 24 timer som tilsvarer ett døgn.

15.3 Hvor mange timer sitter du i ro i løpet av en vanlig arbeidsdag? *

Med ro menes stillesittende aktivitet, f.eks. transport til og fra arbeid (bil, tog, buss, trikk etc.), å lese dokumenter, tid brukt til måltider, sitter i møter, sitter foran PC, sitter med en mobiltelefon eller en annen skjerm.

Hvis du ikke er i arbeid kan du svare 0 (null) her og gå til neste spørsmål.

15.4 Hvor mange timer sitter du i ro i løpet av din fritid eller i løpet av en vanlig dag? *

Med ro menes stillesittende aktivitet, f.eks. å lese bok, tid brukt til måltider, sitter eller ligger og ser på TV, sitter med en PC, mobiltelefon eller annen skjerm.

15.5 Hvor mange timer sover du vanligvis pr. døgn? *

16. Røykevaner

Hva passer best for å beskrive dine røykevaner nå? *

- ○ Røyker daglig
- ○ Røyker av og til
- ○ Har sluttet helt å røyke
- ○ Har aldri røykt verken daglig eller av og til

Hvor mange år er det siden du sluttet å røyke siste gang? *

ⓘ Dette elementet vises kun dersom alternativet «Har sluttet helt å røyke» er valgt i spørsmålet «Hva passer best for å beskrive dine røykevaner nå?»

Hvor mange år har du røykt sammenhengende? Trekk fra de periodene du ikke har røykt, hvis du har sluttet å røyke i lengre perioder *

ⓘ Dette elementet vises kun dersom alternativet «Har sluttet helt å røyke», «Røyker av og til» eller «Røyker daglig» er valgt i spørsmålet «Hva passer best for å beskrive dine røykevaner nå?»

- ○ 1-5 år
- ○ 6-10 år
- ○ 11-15 år
- ○ 16-20 år
- ○ 21-25 år
- ○ Mer enn 25 år

Antall sigaretter *

ⓘ Dette elementet vises kun dersom alternativet «Røyker daglig» er valgt i spørsmålet «Hva passer best for å beskrive dine røykevaner nå?»

Hvor mange sigaretter røyker du i gjennomsnitt pr. dag?

Antall sigaretter *

ⓘ Dette elementet vises kun dersom alternativet «Røyker av og til» er valgt i spørsmålet «Hva passer best for å beskrive dine røykevaner nå?»

Hvor mange sigaretter røyker du anslagsvis pr. uke?

Antall sigaretter *

ⓘ Dette elementet vises kun dersom alternativet «Har sluttet helt å røyke» er valgt i spørsmålet «Hva passer best for å beskrive dine røykevaner nå?»

Hvor mange sigaretter pleide du å røyke pr. uke før du sluttet?

Obligatoriske felter er merket med stjerne *

17. Snus

Hva passer best for å beskrive dine snusvaner: *

- ○ Bruker snus daglig
- ○ Bruker snus av og til
- ○ Har sluttet å bruke snus
- ○ Har aldri brukt snus

Hvor mange år er det siden du sluttet å snuse siste gang? *

ⓘ Dette elementet vises kun dersom alternativet «Har sluttet å bruke snus» er valgt i spørsmålet «Hva passer best for å beskrive dine snusvaner:»

Hvor mange år har du snuset sammenhengende, trekk fra de periodene du ikke har snust, hvis du har sluttet å snuse i lengre perioder. *

ⓘ Dette elementet vises kun dersom alternativet «Bruker snus av og til», «Bruker snus daglig» eller «Har sluttet å bruke snus» er valgt i spørsmålet «Hva passer best for å beskrive dine snusvaner:»

- ○ 1-5 år
- ○ 6-10 år
- ○ 11-15 år
- ○ 16-20 år
- ○ 21-25 år
- ○ Mer enn 25 år

Hvor mange bokser med snus bruker du pr. dag? *

ⓘ Dette elementet vises kun dersom alternativet «Bruker snus daglig» er valgt i spørsmålet «Hva passer best for å beskrive dine snusvaner:»

Hvor mange bokser med snus brukte du pr. uke før du sluttet? *

ⓘ Dette elementet vises kun dersom alternativet «Har sluttet å bruke snus» er valgt i spørsmålet «Hva passer best for å beskrive dine snusvaner:»

18. Generelle opplysninger

Alder *

Vennligst oppgi alder i år.

Kjønn *

- ◯ Mann
- ◯ Kvinne

Vekt *

Vennligst oppgi vekt i kg.

Høyde *

Vennligst oppgi høyde i cm.

Bosituasjon *

- ◯ Bor sammen med en eller flere
- ◯ Bor alene

Bosituasjon *

- ◯ Bor sammen med en eller flere
- ◯ Bor alene

Hvilken utdanning er den høyeste du har fullført? *

- ◯ Grunnskole 7-10 år, framhaldsskole, folkehøgskole
- ◯ Realskole, middelskole, yrkesskole, 1-2 årig videregående
- ◯ Artium, økonomisk gymnas, allmennfaglig retning
- ◯ Høgskole/Universitet, mindre enn 4 år
- ◯ Høgskole/Universitet, 4 år eller mer
- ◯ Fagbrev

Arbeidsførhet *

- ◯ I arbeid (helt eller delvis)
- ◯ Hjemmeværende (selvvalgt)
- ◯ Pensjonist
- ◯ Arbeidsledig
- ◯ Sykmeldt
- ◯ Under attføring/rehabilitering
- ◯ Midlertidig uføretrygdet
- ◯ Varig uføretrygdet
- ◯ Student

Flere svar er mulig, hvis annet spesifiser i neste spørsmål

- ○ Europa
- ○ Afrika
- ○ Asia
- ○ Annet

Hvis annen etnisk bakgrunn, spesifiser her:

ⓘ Dette elementet vises kun dersom alternativet «Annet» er valgt i spørsmålet «Hva slags etnisk bakgrunn har din far?»

Hva slags etnisk bakgrunn har din mor? *

Flere svar er mulig, hvis annet spesifiser i neste spørsmål

- ○ Europa
- ○ Afrika
- ○ Asia
- ○ Annet

Hvis annen etnisk bakgrunn, spesifiser her:

ⓘ Dette elementet vises kun dersom alternativet «Annet» er valgt i spørsmålet «Hva slags etnisk bakgrunn har din mor?»

Hvor lenge (år) har du bodd i Norge? *

Her har du mulighet til å skrive ned andre matvarer du spiser som vi ikke har spurt deg om. Dette er valgfritt.

Tusen takk for at du tok deg tid til å svare på dette spørreskjemaet!

Appendix 5. Regional Ethical Committee for Medical Research approval of the study.

REK
REGIONALE KOMITEER FOR MEDISINSK OG HELSEFAGLIG FORSKNINGSETIKK

Region:	Saksbehandler:	Telefon:	Vår dato:	Vår referanse:
REK sør-øst C	Claus Henning Thorsen	22845515	06.05.2021	251225

Dawn Elizabeth Peleikis

Prosjektsøknad: Kostholdet til pasienter med en alvorlig psykisk lidelse(schizofreni eller bipolar affektiv lidelse) i en skandinavisk psykiatrisk poliklinikk
Søknadsnummer: 251225
Forskningsansvarlig institusjon: Vestre Viken HF

Prosjektsøknad godkjennes av REK

Søkers beskrivelse

Personer med en alvorlig psykisk lidelse som schizofreni og bipolar affektiv lidelse har redusert gjennomsnittlig forventet levetid, særlig grunnet økt forekomst av hjerte- og karsykdommer (HKS). I prosjektet skal kostholdet til denne gruppen kartlegges for å avdekke eventuelle kostholdsfaktorer som bidrar til økt risiko for HKS. Både 24t recall intervjuer og digitalt spørreskjema (DIGIKOST) skal benyttes som metoder. Informasjon fra pasientjournal skal også innhentes. Herunder vil BMI, vekthistorie, blodtrykk samt biokjemiske mål (fastende blodglukose, HbA1c, fastende triglyserider, Hb, Ferritin, ASALT/ALAT og total kolesterol, LDL- og HDL-kolesterol) være relevante for å vurdere ernæringsstatus samt risiko for hjerte og karsykdommer. Grunnet bivirkninger som fører til økt apetitt og følgelig endret inntak og vektoppgang, er også eventuelle medikamenter relevante. Gjennom prosjektet vil vi kunne belyse behovet for ernæringsintervensjon- og behandling i denne pasientgruppen, og slik optimalisere behandlingstilbudet for å redusere forekomst av hjerte- og karsykdom hos personer med diagnosene schizofreni og bipolar affektiv lidelse.

Vi viser til søknad om forhåndsgodkjenning mottatt 17.03.2021.

Søknaden ble behandlet av Regional komité for medisinsk og helsefaglig forskningsetikk (REK sør-øst C) i møtet 15.04.2021. Vurderingen er gjort med hjemmel i helseforskningsloven (hfl.) § 10.

REKs vurdering

Personer med alvorlig psykisk lidelse, så som schizofreni eller bipolar affektiv lidelse, har forkortet levetid grunnet kardiovaskulære incidenter. I dette prosjektet, som inngår i en master i klinisk ernæringsfysiologi, vil man kartlegge eventuelle kostholdsfaktorer som kan være bakomliggende årsaker til kardiovaskulær sykdom.

REK sør-øst C
Besøksadresse: Gullhaugveien 1-3, 0484 Oslo
Telefon:22 84 55 11 | **E-post**:rek-sorost@medisin.uio.no
Web:https://rekportalen.no

Man tar sikte på å inkludere 30 pasienter ved Asker DPS med diagnosene schizofreni og bipolar affektiv lidelse. Potensielle deltakere identifiseres ved diagnosekoder i DIPS, og pasientens behandler vurderer samtykkekompetanse og om de er i en stabil fase.

Samtykke til deltakelse i studien innhentes av samme prosjektmedarbeider som tidligere har informert om studien, alternativt pasientens ansvarlige behandler.

Studiedeltakelse innebærer besvarelse av spørreskjemaet DIGIKOST, som er basert på et validert papirskjema, og planlegges validert i løpet av 2021. Gjennom spørreskjemaet registreres kostinntak, røykevaner og fysisk aktivitet basert på de norske helsemyndigheters anbefalinger om kosthold og andre livsstilsfaktorer.

Det gjennomføres også intervju (24t recall intervjuer for kartlegging av matinntak de siste 24 timene). Dagen det registreres inntak fra, vil være tilfeldig og en vil derfor ikke fange opp variasjon.

Det skal også innhentes diverse variabler fra pasientjournal (DIPS),

Komiteen mener deltakelse i prosjektet kan ha en nytteverdi for pasientene, og da det i tillegg fremstår som lite invasivt, har komiteen ingen forskningsetiske innvendinger til gjennomføringen.
Komiteen anbefaler at samtykke til studiedeltakelse innhentes av prosjektmedarbeider, og ikke av pasientens ansvarlige behandler.

Komiteen har ingen merknader til innholdet i informasjonsskrivet, men forutsetter at det fremgår hvem som har informert om studien.

Vedtak

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

Komiteen gjør samtidig oppmerksom på at etter ny personopplysningslov må det også foreligge et behandlingsgrunnlag etter personvernforordningen. Det må forankres i egen institusjon.

Tillatelsen er gitt under forutsetning av at prosjektet gjennomføres slik det er beskrevet i søknaden og protokollen, og de bestemmelser som følger av helseforskningsloven med forskrifter.

Tillatelsen gjelder til 15.05.2026. Av dokumentasjons- og oppfølgingshensyn skal opplysningene likevel bevares inntil 15.05.2031. Opplysningene skal lagres avidentifisert, dvs. atskilt i en nøkkel- og en opplysningsfil. Opplysningene skal deretter slettes eller anonymiseres, senest innen et halvt år fra denne dato.

Komiteens avgjørelse var enstemmig.

Sluttmelding
Prosjektleder skal sende sluttmelding til REK på eget skjema via REK-portalen senest 15.05.2026 + 6 måneder, jf. helseforskningsloven § 12. Dersom prosjektet ikke starter opp eller gjennomføres meldes dette også via skjemaet for sluttmelding.

Søknad om endring
Dersom man ønsker å foreta vesentlige endringer i formål, metode, tidsløp eller organisering må prosjektleder sende søknad om endring via portalen på eget skjema til REK, jf. helseforskningsloven § 11.

Klageadgang
Du kan klage på REKs vedtak, jf. forvaltningsloven § 28 flg. Klagen sendes på eget skjema via REK portalen. Klagefristen er tre uker fra du mottar av dette brevet. Dersom REK opprettholder vedtaket, sender REK klagen videre til Den nasjonale forskningsetiske komité for medisin og helsefag (NEM) for endelig vurdering, jf. forskningsetikkloven § 10 og helseforskningsloven § 10»

Med vennlig hilsen

Britt Ingjerd Nesheim
Prof. dr. med.
Leder REK sør-øst C

Claus H. Thorsen
Seniorrådgiver

Dokumentet er elektronisk signert

Kopi til:

Vestre Viken HF

Emma Johannessen

Appendix 6. Supplementary table 1a

Supplementary table 1a. Quantified intakes of foods (grams/day) within levels of adherence in both completions of the questionnaire

	Median grams/day (25th, 75th percentile)					
	Low		Intermediate		High	
	DK1	DK2	DK1	DK2	DK1	DK2
Fruit, berries*	76 (3, 99)	68 (15, 110)	187 (155, 217)	194 (149, 221)	373 (299, 438)	351 (290, 449)
Vegetables	72 (62, 94)	72 (52, 105)	166 (158, 234)	200 (161, 227)	501 (339, 766)	385 (338, 556)
Whole grains					150 (125, 173)	179 (118, 220)
Male	40, 15, 0‡	30, 22‡	66, 68, 76‡	54, 63, 71‡		
Female	0, 35 ‡	0‡	46 (42, 55)	59, 60, 58‡	84 (71, 119)	84 (75, 91)
Unsalted nuts						
BMI < 25 kg/m^2	0, 0, 0 ‡	0, 9‡			21‡	28‡
BMI ≥ 25 kg/m^2	0 (0,1)	0 (0,9)		13‡	21‡	
Fish	0 (0, 19)	0 (0, 15)	28, 36‡	35 (34.65, 35)	92 (71, 279)	109 (65, 251)
Fatty fish	0 (0, 14)	0 (0, 8)	28, 36‡	26 (19, 35)	82 (48, 253)	85 (48, 131)
Low-fat dairy products	5 (0, 20)	0 (0, 4)	57 (57, 75)	57, 89‡	300 (143, 764)	303 (300, 336)
Red meats	128 (94, 146)	110 (79, 129)	65 (55, 67)	57 (46, 65)	13 (0, 24)	5 (0, 34)
Processed meats	65 (29, 92)	67 (59, 92)		11, 16‡	0 (0, 2)	0 (0, 0)
Foods rich in sugars & fats	82 (42, 146)	39 (28, 158)	15 (14, 16)	16‡	0 (0, 3)	0 (0, 0)
Drinks with added sugars	263 (57, 250)	143 (57, 293)			0 (0, 0)	0 (57, 143)

DK1: n=23, DK2: n=19, pooled from DK1 and DK2: n=18

**Including one glass à 200ml juice/day.. ‡Intakes per participant. In empty cells, no participants were categorized in level of adherence to respective FBDG. FBDG= Food based dietary guideline, DK= Digikost food frequency questionnaire, DK1=first completion, DK2=second completion*

Supplementary table 1b. Quantified total intakes of foods (grams/day) pooled from both completions of the DIGIKOST-FFQ

FBDG	Pooled Median grams/day (25^{th}, 75^{th} percentile) N=18x 2
Fruits, berries *	162 (124, 277)
Vegetables	152 (87, 260)
Whole grains	66 (62, 103)
Unsalted nuts	0 (0, 45)
Fish	54 (16, 94)
Fatty fish	*34 (14, 80)*
Low fat dairy products	149 (11, 255)
Red meats	67 (25, 80)
Processed meats	54 (12, 80)
Foods rich in sugars & fats	35 (15, 106)
Drinks with added sugars	28 (0.00, 143)

Median intakes of foods relevant to FBDGs, pooled from both completions of the DIGIKOST FFQ in the eighteen individuals who completed both. *Including one glass à 200ml juice/day. *FBDG=food based dietary guideline, FFQ=food frequency questionnaire*

Appendix 8: Supplementary table 2

Supplementary table 2. Median macronutrient intakes in overall study population and in diagnostic groups

FBDG	Median (25th, 75th percentile)			P*
	Total (n=24)	Schizophrenia/psychosis (n=11)	Bipolar affective disorder (n=13)	
Total fat (E%)	33.6 (28.9, 39.3)	29.0 (28.2, 41.4)	35.0 (33.0, 38.9)	0.14
SFA (E%)	13.5 (9.8, 15.1)	13.4 (5.6, 14.8)	13.9 (10.2, 17.0)	0.34
PUFA (E%)	5.1 (3.5, 8.10)	4.7 (3.9, 8.3)	6.8 (3.4, 8.2)	0.98
- Omega-3	0.9 (0.6, 1.6)	1.0 (0.5, 1.7)	0.8 (0.7, 1.3)	0.62
- Omega-6	3.9 (2.8, 6.4)	3.3 (2.8, 6.6)	5.1 (2.7, 6.5)	0.66
MUFA (E%)	11.1 (9.1, 14.0)	9.8 (8.2, 18.6)	11.9 (9.8, 13.9)	0.28
Carbohydrates (E%)	44.7 (36.0, 60.4)	48.8 (35.3, 53.3)	44.7 (37.9, 46.5)	0.51
Added sugars (E%)	7.2 (2.7, 13.3)	8.9 (2.7)	6.9 (0.0, 9.3)	0.12
Dietary fiber (g)	21.2 (15.6, 33.9)	20.0 (15.5, 33.4)	22.7 (15.7, 35.2)	0.73
Protein (E%)	16.1 (12.4, 18.7)	17.1 (13.1, 21.1)	14.5 (12.0, 18.4)	0.28

**P-value for statistical difference between diagnostic groups, tested by Mann Whitney U-test, significance level p<0.05.*
SFA=Saturated fatty acids, PUFA=polyunsaturated fatty acids, MUFA=monounsaturated fatty acids, E%= macronutrient contribution to total energy intake, g=grams