Faculty of Health Sciences, Department of Community Medicine

Potato consumption and risk of colorectal and pancreatic cancer

The Norwegian Women and Cancer cohort and the HELGA cohort

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Lene Angell Åsli **Tromsø 2016**

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Summary

The present work includes participants from two cohorts: The Norwegian Women and Cancer (NOWAC) study (paper 1 and 2) and the HELGA study (paper 3). The NOWAC Study is a population-based prospective cohort study that started data collection in 1991, and consists of more than 172,000 women. The HELGA study is a population-based Scandinavian cohort, consisting of 119,978 men and women from: NOWAC, The Northern Sweden Health and Disease Study Cohort and the Danish Diet, Cancer and Health Study.

Potatoes are the world`s largest food crop after wheat, rice and corn. Potatoes are an important source of fiber, niacin, vitamin C, proteins and several minerals. Studies on health effects of potatoes have found associations between potato consumption and cardiometabolic health and several cancers, but the scientific literature on the health effects of potato consumption is scarce and contradictory. Additionally, potatoes have a high glycemic index (GI) and glycemic load (GL), and studies have shown that food with high GI and GL are associated with increased risk of several chronic diseases, such as type 2 diabetes, heart disease and several cancers, including colorectal and pancreatic cancer.

The aim of this thesis was to Cross-sectionally investigate what characterises women who eat potatoes (Paper 1), investigate prospectively the association between potato consumption and colorectal cancer risk (Paper 2), and to investigate prospectively the association between potato consumption and pancreatic cancer risk (Paper 3).

We found that the high potato consumption group consisted of more elderly women and women with lower socioeconomic status. Health-related factors like smoking and diabetes were found to influence potato consumption (Paper 1). Further, we found that high potato consumption was associated with an increased risk of colorectal cancer among women with a BMI <25 kg/m^2 (Paper 2). Lastly, we found that a high potato consumption was associated with an increased risk of pancreatic cancer, although the association was only significant for women. In addition, there was an interaction between potato consumption and age, and age-specific analyses showed only significant association for the oldest age group.

More research is needed in order to clarify the associations between potato consumption and colorectal and pancreatic cancer for particularly paper 2 and 3, and our results emphasize the need for more research on the topic.

Sammendrag

Dette arbeidet inkluderer deltakere fra to store kohorter: Den norske Kvinner og Kreft-studien (artikkel 1 og 2), og HELGA-studien (artikkel 3). NOWAC-studien er en nasjonal prospektiv befolkningsundersøkelse som startet sin datainnsamling i 1991, og som består av mer enn 172,000 kvinner. HELGA-studien er en Skandinavisk prospektiv befolkningsundersøkelse, bestående av 119,978 kvinner og menn fra NOWAC, Northern Sweden Health and Disease Study Cohort, samt the Danish Diet, Cancer and Health Study.

Poteter er den fjerde viktigste matplanten på verdensbasis, og er en viktig kilde til blant annet fiber, niacin, C-vitamin, proteiner og flere mineraler. Det er få studier på helseeffekter av potetinntak, og de få studiene som finnes har vist motstridene resultater. Noen studier har likevel funnet sammenhenger mellom potetinntak og hjerte-kar-sykdom og flere krefttyper. I tillegg har poteter en høy glykemisk indeks og glykemisk belastning, og studier har vist at det er sammenhenger mellom mat med høy glykemisk indeks og glykemisk belastning og økt risiko for flere kroniske sykdommer, som diabetes type 2, hjerte-kar-sykdom og flere krefttyper, blant annet tykk- og endetarmskreft og bukspyttkjertelkreft. Målet med dette arbeidet var å gjøre en tverrsnittsstudie for å undersøke karakteristikker for potetinntak (artikkel 1), prospektivt undersøke sammenhengen mellom potetinntak og tykk- og endetarmskreft (artikkel 2), samt å prospektivt undersøke sammenhengen mellom potetinntak og bukspyttkjertelkreft (artikkel 3).

Vi fant at de med høyt potetinntak var gjerne de eldste damene, og de med lavere sosioøkonomisk status. Helserelaterte faktorer som røyking og diabetes påvirket også potetinntaket (artikkel 1). Videre fant vi sammenheng mellom høyt potetinntak og økt risiko for tykk- og endetarmskreft blant kvinner med en kroppsmasseindeks under 25 kg/m^2 (artikkel 2). I tillegg fant vi sammenheng mellom høyt potetinntak og bukspyttkjertelkreft, men sammenhengen var kun signifikant for kvinner. Vi fant også en interaksjon mellom potetinntak og alder, og aldersspesifikke analyser viste kun en sammenheng i den eldste aldersgruppa.
Mer forskning må til for å klargjøre sammenhengen mellom potetinntak og tykk- og endetarmskreft, og bukspyttkjertelkreft, og våre resultater understreker viktigheten av mer forskning på dette temaet.

List of papers

This thesis is based on the following papers, referred in the text as Paper 1, 2 and 3.

Paper 1

Åsli LA, Braaten T, Olsen A, Lund E, Skeie G. **What characterises women who eat potatoes? A cross-sectional study among 74,208 women in the Norwegian Women and Cancer cohort.** Food and Nutrition Research 2015; 19;59:25703. doi:10.3402/fnr.v59.25703.

Paper 2

Åsli LA, Olsen A, Braaten T, Lund E, Skeie G. **Potato consumption and risk of colorectal cancer in the Norwegian Women and Cancer cohort.**
[*In review*]

Paper 3

Åsli LA, Braaten T, Olsen A, Tjønneland A, Overvad K, Nilsson LM, Renström F, Lund E, Skeie G. **Potato consumption and risk of pancreatic cancer in the HELGA cohort.**
[*Manuscript*]

List of figures and tables

Abbreviations

BMI	Body mass index
CI	Confidence intervals
CRC	Colorectal cancer
EPIC	European Prospective Investigation into Cancer and Nutrition
FAP	Familial adenomatous polyposis
FFQ	Food frequency questionnaire
GI	Glycemic index
GL	Glycemic load
HIV	Human immunodeficiency virus
HNPCC	Hereditary non-polyposis colorectal cancer or Lynch syndrome
HR	Hazard ratio
HRT	Hormone replacement therapy
kJ	Kilojoules
NOWAC	The Norwegian Women and Cancer cohort
NSAID	Non-steroidal anti-inflammatory drugs
NSHDS	The Northern Sweden Health and Disease Study
OR	Odds ratio
RCT	Randomized controlled trial
WCRF/AICR	World Cancer Research Fund/American Institute of Cancer Research

1 Introduction

1.1 Digestive system cancer

The process of digestion and absorption of food occurs in a long, hollow, twisted and turned tube in the digestive system (1). The system is divided into two parts: the first part consists of organs that are directly involved in the digestion and absorption process (oral cavity, esophagus, stomach, small intestine, large intestine and anus). The second part consists of organs that aid the digestion and absorption process of food in some way, e.g. by producing chemical substances (liver and gall bladder, pancreas, salivary glands, teeth, tongue) (1). Cancer can occur in any parts of the digestive system (2).

This thesis focus on potato consumption in association with two types of cancers of the digestive system, colorectal cancer – one of the most common types, and pancreatic cancer – a rare cancer type, but with a much poorer prognosis.

1.1.1 Colorectal cancer

Cancer of the colon and rectum, i.e. colorectal cancer (CRC), is the third most common cancer worldwide, with 1.6 million new patients diagnosed in 2013 (3). The cancer is ranked second for incidence and mortality in developed countries, fourth for incidence and mortality in developing countries, and the incidence is higher in men than in women (1 in 27 men; 1 in 43 women). CRC has been more common in high-income countries, though it is increasing in low – and middle-income countries (4) (Figure 1). In Norway, CRC is the second most common cancer in women and the third most common cancer in men, with respectively 2157 and 2009 new cases in 2014 (5). The incidence rates of both colon and rectal cancer in Norway have increased rapidly since the 1960s, and the rates rank among the highest in the world (6). Trends in Finland are similar, but with consistently lower rates. The rapid increase of rectal cancer among Norwegian men is especially striking. In Denmark colon and rectal cancer incidence rates has been consistently high. Sweden show a weak increase in incidence rates in both colon and rectal cancer in both sexes (6).

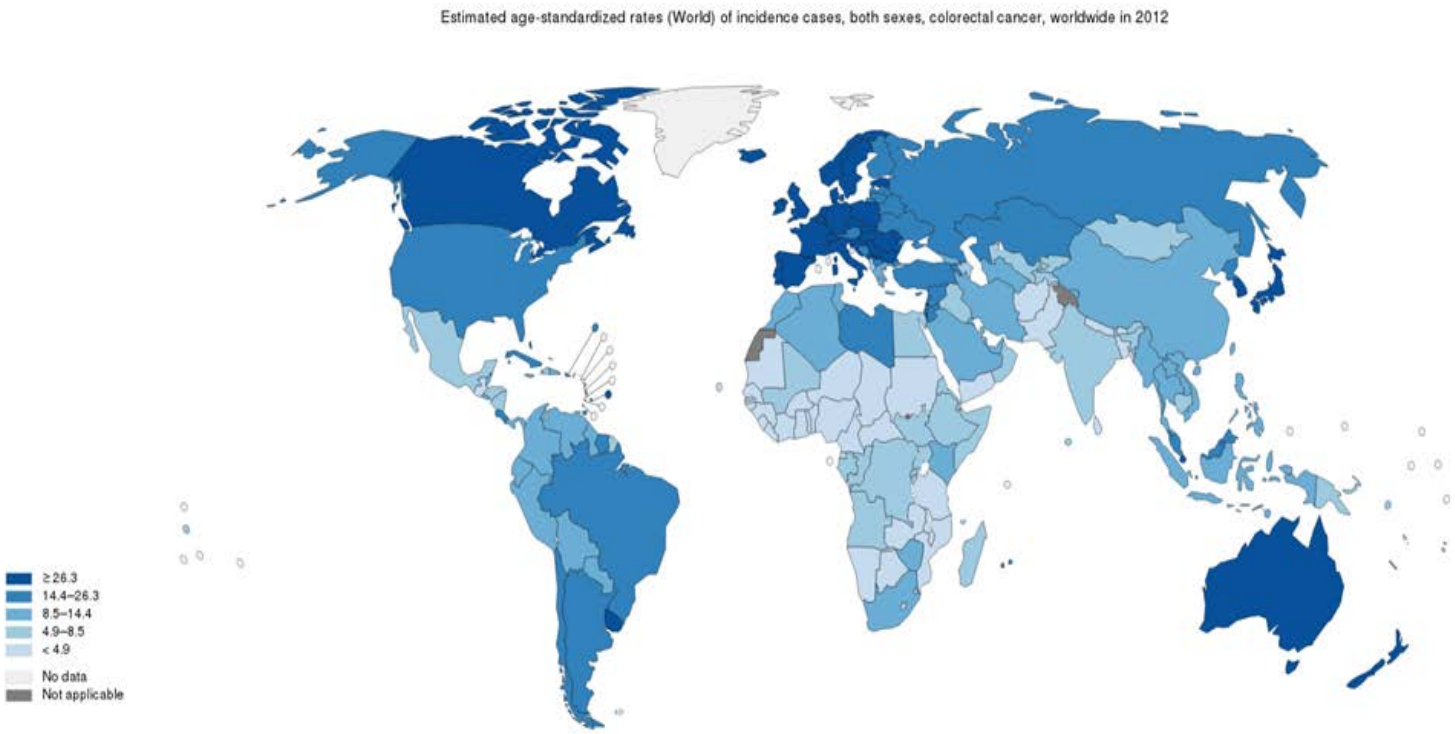


Figure 1: Variation in colorectal cancer incidence in the world. Age-standardized (world) incidence rates for both sexes, 2012. Dark blue colors indicate high incident areas, light blue colors indicate low incident areas. Source: GLOBOCAN 2012, International agency for research on cancer (IARC-WHO)

World Cancer research Fund/American Institute for Cancer Research (WCRF/AICR) have classified red and processed meat, alcoholic drinks (for men), body fatness, abdominal fatness and adult attained height as convincing factors that increase risk of colorectal cancer (4). Physical activity and foods containing dietary fiber was classified as convincing factors that decrease the risk. Listed as probable factors that decrease risk, was garlic, milk and calcium. For women alcoholic drinks was listed as a probable factor increasing the risk. In addition to these diet and lifestyle risk factors, WCRF/AICR reported that Inflammatory bowel disease (Chron`s disease and ulcerative colitis) and tobacco smoking has been identified to increase the risk of CRC. Some medications like non-steroidal anti-inflammatory drugs (NSAID) such as aspirin and hormonereplacement therapy (HRT) in postmenopausal women have been shown to decrease the risk (4). However, a recent meta-analyses of CRC risk factors showed only a trend of protective effect with the use of aspirin, NSAID and HRT (7). The meta-

analyses also found only trends for alcohol and processed meat, but significant associations between fruit and vegetables and CRC was found. Additionally, a history of CRC in a first degree relative was found to be significantly associated with increased risk. Further, the meta-analyses confirmed that tobacco smoking, higher body mass index (BMI), inflammatory bowel disease and red meat intake significantly increased the risk of CRC, and that physical activity decreased the risk (7). Associations between CRC and GI and GL have also been investigated. While an earlier meta-analysis found no significant association (8), several recent studies have found evidence of associations between high dietary GI and GL and increased risk of CRC (9-11). More details about GI and GL can be found in paragraph 1.2.3.

According to WCRF/AICR, 5-10% of CRC cases are due to recognized hereditary conditions (4). The two most common ones are familial adenomatous polyposis (FAP) and Hereditary non-polyposis colorectal cancer (HNPCC or Lynch syndrome) (12). Another 20% of the cases occur in people with a family history of CRC.

As incidence rates vary highly across regions and countries (13, 14) and due to economically differences and westernization (15), environmental factors are suggested to play a big part in the etiology of this cancer. Many studies have suggested diet as an important risk factor for CRC, and according to WCRF/AICR, over 40 percent of the CRC cases in the western world could have been prevented by appropriate food, nutrition, physical activity and body fatness (16).

1.1.1.1 The etiologies of colon and rectal cancer

Studies have suggested that the etiology differs within the different colon sub-sites (proximal and distal colon) and between the cancers of the colon and the rectum (17). Cancer of the proximal and distal colon show for instance differences in incidence according to geography, age and gender (18). The proximal colon includes the first and middle parts of the colon: the cecum (a pouch connecting the small intestine to colon), the ascending colon (the right side of the colon), and the transverse colon (goes across the abdomen from right to left) (19) (Figure 2). The distal colon is the last part, which includes the descending colon (the left side of the colon) and the sigmoid colon (an S-shaped section that connects the colon to the rectum) (20). The rectum includes the last several inches of the colon connected with the anus (21). It has

been suggested that the difference in etiology has do with the differences in anatomy, embryology, and physiology of the colon and the rectum (17). However, the knowledge regarding specific etiological factors connected to the anatomical sub-sites of the colorectum is scarce.

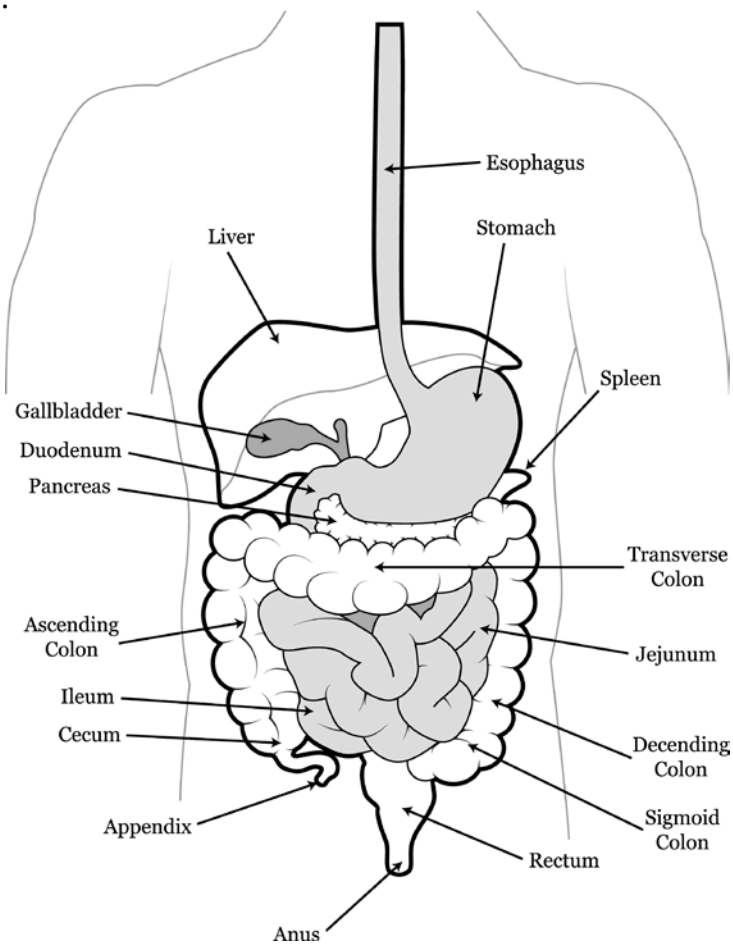


Figure 2: Anatomy of the digestive system. Source: Colourbox.

1.1.2 Pancreatic cancer

Pancreatic cancer is the thirteenth most common type of cancer worldwide (22), with 350,000 new cases in 2013 (3) and somewhat higher incidence in men than women 184,000 and 166,000 in 2013 respectively. The cancer does not show any clear symptoms at an early stage, and therefore the survival rates are low (5-year prevalence is 4.1 per 100,000) (23). In the Nordic countries, the number of new cases per year (incidence 2009-2013) was 3,874 (1,923 males, 1,951 females). Pancreatic cancer is more common in high-income countries, with rates nearly three times higher than in middle – and low-income countries (22) (Figure 3).

Over the past 40 years the incidence of pancreatic cancer in the Nordic countries have been decreasing in men and remained quite stable in women, but there are slight variations between countries (24). In Norway and Denmark there has been a slight increase in pancreatic cancer in women (25, 26). A decrease in incidence has also been found for Norwegian men, while there are no obvious trends for Danish men. Sweden show a decrease in pancreatic cancer in men, and no obvious trend in women (27), while the rate has remained stable in Finland for both women and men (28).

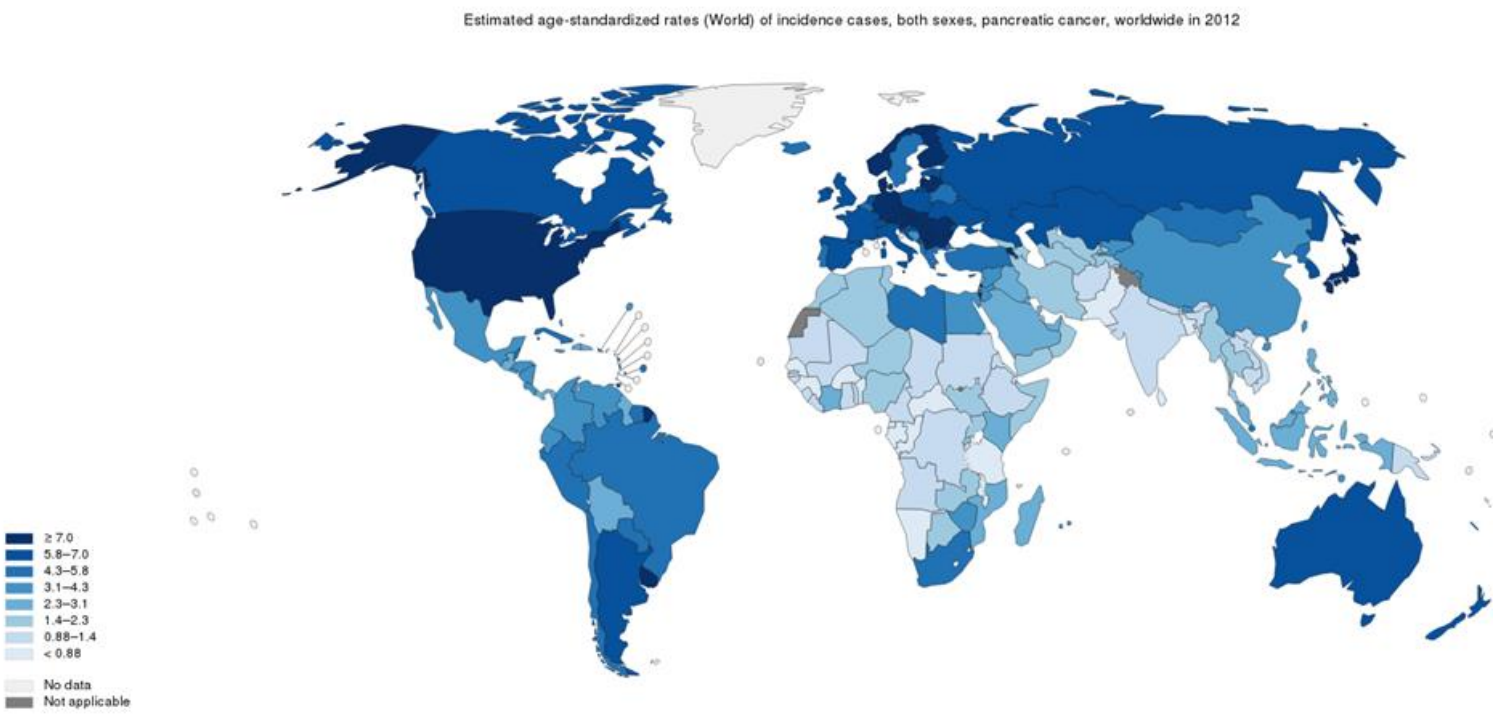


Figure 3: Variation in pancreatic cancer incidence in the world. Age-standardized (world) incidence rates for both sexes, 2012. Dark blue colors indicate high incident areas, light blue colors indicate low incident areas. Source: GLOBOCAN 2012, International agency for research on cancer (IARC-WHO)

A small portion of the pancreatic cancer cases are due to genetic and inherited mutations, especially where more than one family member is involved (22, 29). Over 90% of the cases are sporadic (due to spontaneous factors rather than inherited mutations) (22). WCRF/AICR have classified body fatness as a convincing risk factor and greater childhood growth as a probable risk factor for pancreatic cancer. Further, tobacco smoking is a well-known risk

factor, explaining about 25% of the pancreatic cancer cases (22). The risk of pancreatic cancer also increases with age, and an increasing number of cases is predicted as the population of the most developed countries ages (30). Other factors that have been identified as risk factors, are chronic pancreatitis (explain 3% of the cases), insulin resistance and type 2 diabetes (22, 29). The role of infection with helicobacter pylori is also being investigated (29), and there has also been found associations with human immunodeficiency virus (HIV), ABO blood group and hepatitis B. Evidence regarding a protective effect for physical activity has been to limited or inconsistent to draw any conclusion (22).

Regarding dietary factors, WCRF/AICR have reported that consumption of red and processed meat, food and beverages containing fructose, and alcohol (more than 3 drinks per day) can cause pancreatic cancer, but the evidence is limited (22). The evidence regarding beneficial effects from consuming fruit, are also limited and inconsistent. However, a more recent review found that a high consumption of both fruit and vegetables reduced the risk of pancreatic cancer, and also that nut consumption had a protective effect (31). The review also suggested a diet with whole grain foods as part of the cancer preventive strategies, and this is confirmed by a recent meta-analysis (32). Protective effect from dietary fiber on pancreatic cancer in case-control-studies has also been identified, but more prospective designs, along with detailed analyses regarding subtypes of fiber are needed (33). There have been some mixed reports regarding the association between pancreatic cancer and GI and GL. While two earlier meta-analyses concluded with no associations (34, 35), recent studies have found high dietary GI and GL to be associated with increased risk of pancreatic cancer (9, 11).

1.1.2.1 Location and pathology of the pancreas

Pancreas is an elongated gland located in the retroperitoneal space, which is the space between the peritoneum and the posterior abdominal wall (36) (Figure 2). The pancreas is relatively inaccessible to routine medical examination (22), so the cancer remains often undetected until prominent symptoms abruptly appear (29). The pancreas contains two types of tissue, exocrine and endocrine (22). The exocrine part produces digestive enzymes, which influences the glucose metabolism in the small intestine. Over 95% of the pancreatic cancers are adenocarcinomas arising from the exocrine part of the pancreas.

1.2 Potatoes (Solanum tuberosum)

The Solanum tuberosum is an herbaceous annual, that produces a tuber – called the potato, and belongs to the Solanaceae - or "nightshade" – family of flowering plants (37) (Figure 4). Potatoes come in thousands of different shapes, colours, textures and tastes, but what we typically imagine when we think of potatoes are those with russet, brown or yellowish skin, with yellow or white flesh. Potatoes were first cultivated by Inca Indians in Peru, South America, thousands of years ago, and came to Europe with the Spanish conquistadores during the 1500s. In the beginning, the potatoes fought a tough battle for acceptance as a food all over Europe, as it was rumored to be poisonous (37). However, the potatoes were more and more appreciated as it became an extremely important contributor in terms of food security and poverty alleviation (38). Today potatoes are the world`s largest food crop after wheat, rice and corn (39). Europeans has been the world leaders on both production and consumption of potatoes for most of the 20th century, until Asia recently surpassed Europe on production (40). Per capita consumption is lowest in Africa and Latin America, but increasing (41). Among the "potato giants" of Europe, we find the Russian Federation, Ukraine and Poland where the annual potato consumption per capita is about 130 kg (40). Even though per capita consumption in the Scandinavian countries is below these top consumption countries in Europe (about 55-60 kg per capita, 2011) (42-44), potatoes are indeed an important and central component of the diet in both Norway (45), Denmark (40) and Sweden (46). Boiling is the most common preparation method, but as potato products (such as mashed, stewed, potato salad or French fries) mostly have increased, a decline in particularly the consumption of boiled potatoes has been observed in the Scandinavian (46-48) as well as in other Western European countries (45). Consumption of pasta and rice has increased, and these foods often substitute for potatoes (45, 46, 48).

Figure 4. Solanum tuberosum;
the potato plant and tuber
Source: Colourbox

1.2.1 Nutrient content

Potatoes are an important supplier of carbohydrates in the human diet (49). The carbohydrate content in form of starch comprise more than 95% of the potato by weight (49). Further, potatoes are a good source of fiber and nutrients like niacin, vitamin C and B, proteins and several minerals (e.g. potassium, magnesium and iron) (37). In addition, potatoes contain bioactive phytochemicals such as phenolic acids, flavonoids, folates, kukoamines, anthocyanins and carotenoids that are health beneficial, especially due to their antioxidant properties (50, 51). Regarding antioxidants, the level is relatively low compared to other fruits and vegetables (52). Even so, due to the high daily consumption globally, potatoes are an important source of these compounds.

As potatoes mature, they can accumulate small quantities of glycoalkaloids (solanine) (52), which are natural toxins produced by the plants for defense against animals, insects and fungi (53). High levels of glycoalkaloids are toxic to humans, and the concentration in the potatoes depends on cultivar, maturity and environmental factors. Most of the solanine are removed through peeling (70%) and blanching (29%), and domestic cooking can also reduce the content (53). Exposure to light has a significant effect on the formation of solanine in potatoes, and greening of the peel (synthesis of chlorophyll) indicates that the potato has been exposed to much light. Symptoms indicating solanine toxicity include headache, nausea, fatigue, vomiting, abdominal pain and diarrhea (53).

1.2.2 Effect of preparation methods on the nutrient content in potatoes

Potatoes are prepared in a variety of ways worldwide, like mashed, boiled, steamed, roasted, fried, baked etc. Boling (or steaming) and baking are assumed to be the healthiest way of preparing potatoes (54), as roasting and frying in hot oil (140ºC to 180ºC) results in high absorption of fat, and add often more salt to the meal. The high temperatures also reduce minerals and ascorbic acid content more than boiling and baking (54). In addition, formation of acrylamide in potatoes can occur when frying and roasting potatoes at temperatures above 120°C (55, 56). Acrylamide is a known carcinogen (57), and even though epidemiological studies have generally failed to show an association between dietary acrylamide intake and cancer risk (58), The European Food Safety Authority recently concluded that a high dietary acrylamide intake seems to be associated with an increased risk of human cancer (59).

It is known that when water is involved in the cooking (e.g. by boiling), a significant decrease in mineral (potassium, phosphorus, and magnesium) content is due to leaching, and these effects are summed up in a recent review (52). The review concluded that the minerals were well retained when no-water-added cooking (e.g. roasting, microwaving, and baking) was used. The contents of zinc and iron did not decrease by boiling. Vitamins are sensitive to heat, therefore any kind of cooking method would cause loss of vitamins, and cooking with water or oil would only increase this loss. The review pointed that the loss of vitamins was also

influenced by heating level and time. Regarding protein and dietary fibre, the levels were actually increased by cooking (52).

Results of how well the antioxidants are retained in potatoes through cooking are contradictory (52). As some studies reported that the antioxidants were retained, or even increased through cooking, other reported a decrease.

1.2.3 Glycemic index (GI) and health effects

Even though potatoes contain beneficial nutrients, they are also known for having a high GI (60-62). GI is a measure of how foods containing carbohydrates raises the blood sugar (63). The foods are ranked based on a scale from zero to 100 on how they compare to a reference (generally pure glucose, GI=100) (63). The scale is categorized as follows: low GI (≤55, e.g. most fruits, non-starchy vegetables, oatmeal, kidney beans), medium GI (56-69, e.g. whole wheat, rye, brown, wild or basmati rice, couscous) and high GI (≥70, e.g. white bread, bagel, white rice, russet potato, corn flakes) (64). Consuming foods with high GI causes a sharp increase in the postprandial blood glucose concentration that will decline rapidly, while the consumption of foods with low GI leads to a lower blood glucose concentration that will decline more gradually (63). However, the postprandial glycemic response is influenced by several factors, like the source and amount of carbohydrate ingested and the type and amount of fiber present in the meal (51). In addition, the ingredients or the other foods eaten together with potatoes can influence the GI value and the postprandial glycemic response. The variety of potato and the preparation method do also play a part (51). For instance, mashed and boiled potatoes are considered to have higher GIs than fried or baked, and this has to do with the destruction of the microstructure and effects of the gelatinization degree caused by these preparation methods (52). Glycemic load (GL) is a term that often is combined with the term GI. The GI compares the potential of foods containing the same amount of carbohydrate to raise blood sugar, but the quantity of carbohydrate consumed will also affect the blood sugar and the insulin responses (8). The GL will measure both the raising of blood sugar ability (quality) of the food and the total quantity of carbohydrate consumed in a meal.

Several studies have shown that a diet with low GI and/or low GL is associated with reduced risk of several chronic diseases such as diabetes type 2, heart disease (8, 52, 65), obesity (60)

and several cancers (8, 66), including CRC and pancreatic cancer. In addition, a meta-analysis suggested that subjects who develop CRC and pancreatic cancer have increased prediagnostic blood levels of insulin and glucose (67). Several observational studies have also shown that high insulin concentrations, abnormal glucose metabolism, and insulin resistance may increase the risk of pancreatic cancer, even without a diagnosis of diabetes (68-70). Studies have also showed that high levels of insulin increase risk of colon cancer (71). It is shown that the mechanisms behind high levels of glucose and insulin levels and pancreatic and CRC risk, is that insulin acts as growth factor for tumor development (71, 72).

It is also possible that foods with a high GI have an effect on cancer risk independent of obesity. Although some studies have found slightly stronger associations for obese persons (73, 74), an Italian study found that BMI had no effect on the significant associations they observed between CRC and GI (10). There has also been implicated that potatoes contribute to obesity and diabetes due to its high GI (75).

1.2.4 Research on health effects of potatoes

Even though potatoes are a staple food in many countries, the research on health effects of potato consumption is limited and contradictory, especially regarding the long-term health effects of potato in diets worldwide (75). Some studies have reported that potatoes contains nutrients with beneficial effects on cardiometabolic health, including lowering blood pressure, improving lipid profiles, and decreasing markers of inflammation (51). Research regarding phytochemicals and antioxidants in potatoes show that they play an essential role in the prevention of many chronic diseases, such as atherosclerosis and cancers (52). Contrary, a recent review concluded that higher intake of boiled, baked, mashed potatoes and French fries were independently associated with an increased risk of developing hypertension (76). Also, a recent cohort study concluded that greater consumption of potatoes was associated with a higher risk of diabetes type 2, independent of BMI and other risk factors (77). It has also been implicated that potatoes contribute to obesity and diabetes due to its high GI (75).

Other reviews are inconclusive: A systematic literature review of health effects of Nordic diet food found that data regarding potatoes and any outcomes were too limited to draw any

conclusion (78). Additionally, a recent review could not draw any conclusions regarding potatoes and cardiomethabolic disease or diabetes type 2 due to the lack of studies and contradictory results (79). Nevertheless, there is a lack of clinical trial data on the impact of potatoes on weight management, and the results have been contradictory (51).

Regarding cancer, one case-control study found that a high potato consumption was associated with higher risk of pancreatic cancer (80). Further, a case-control study found increased risk of rectal cancer among Whites in USA with a high potato intake, but no associations were found for African-Americans (81). One case-control study found tendencies of higher risk for colon cancer among individuals with high potato consumption (82), and another case-control study found associations between potato consumption and increased risk of gastric cancer among women, but no associations were found for men (83). Several studies on mice have implicated that potato glycoakaloids increases can significantly aggravate intestinal inflammation (84, 85) which has been associated with increased risk of colorectal cancer (86, 87). Another case-control study found associations with increased risk for potato consumption and risk of oral and pharyngeal cancer (88).

Contrary, there are some studies showing beneficial effects of potato consumption. Some short-term studies have implicated that the anthocyanins, glycoalkaloids and lectins in potatoes have anti-tumor effect (75). One case-control study found that potato consumption had a protective effect on rectal cancer among women, but no associations were found for men (89). The same study found no associations between potato consumption and risk of colon cancer (89). A cohort study found that intake of potato fiber was inversely related to colon cancer among men, however for women the intake of potato fiber showed a higher risk (90). Additionally, two case-control studies found potato consumption associated with decreased risk of bladder cancer (91, 92).

However, there is a lack of research regarding long-term cancer-related health effects of potatoes (75). More research has been devoted to dietary patterns were potatoes are included, and three reviews found that a dietary pattern with a high consumption of red and processed meat, potatoes and refined carbohydrates was associated with a higher risk of CRC (93-95). Research on dietary patterns and pancreatic cancer are more inconsistent. A large American

case-control study found that a Western dietary pattern with high intake of red and processed meat, potato chips, sugary beverages, sweets, high fat dairy, eggs and refined grains was associated with increased risk of pancreatic cancer for men, but not for women (96). Three other studies found no significant associations within this field (97-99).

1.2.4.1 Indices with research on potatoes

Investigating disease outcome with single foods and nutrients has been a common method in nutritional epidemiology (100). However, it is important to keep in mind that foods interact with other food, and that the composition of a diet influences the bioavailability and absorption of other nutrients, therefore it is difficult to isolate the effect of specific foods and nutrients (93, 101, 102). Since potatoes are usually eaten as part of a meal, the impact of potato consumption on disease risk may depend on which other foods they are grouped with in a dietary pattern (51).

1.2.4.2 Biological mechanisms for an association between potato consumption and cancer

There are several potential mechanisms that link potatoes with cancer. The mechanisms behind glycemic index/glycemic load and cancer have already been mentioned, in paragraph 1.2.3. Additionally, has the effect of glycoalkaloids in paragraph 1.2.4 been mentioned. Another pathway is the suspected effect potatoes and GI have on obesity (75), since it is plausible that body fatness is a cause of pancreatic cancer (22) and CRC (4). Body fatness affects levels of several circulating hormones, such as insulin, insulin-like growth factors and oestrogens, which creates an environment known to encourage carcinogenesis (4, 22). Body fatness also stimulates an inflammatory response, which can influence the onset and development of several cancers (4, 22), e.g. CRC, as mentioned in the previous paragraph.

2 Aims of the thesis

This thesis aims to study the association between potato consumption and CRC and pancreatic cancer in two large population-based cohorts: The Norwegian Women and Cancer (NOWAC) cohort and the HELGA cohort.

The specific aims were to:

1. Cross-sectionally investigate what characterises women who eat potatoes in the NOWAC cohort.
2. Investigate prospectively the association between potato consumption and colorectal cancer risk in the NOWAC cohort.
3. Investigate prospectively the association between potato consumption and pancreatic cancer risk in the HELGA cohort.

3 Material and methods

This thesis has mainly used data from two prospective cohort studies, The NOWAC cohort (paper 1 and 2) and the HELGA cohort (paper 3). However, some supplementary data (for paper 2) has been obtained from the European Prospective Investigation into Cancer and Nutrition (EPIC). EPIC is a large ongoing multi-center cohort study, with more than 500,000 participants. Both the NOWAC cohort and the cohorts incorporated in the HELGA cohort are part of the EPIC study, where they contribute with sub-cohorts. More details about the HELGA cohort are presented in Table 1, and a more detailed description of the EPIC study can be read elsewhere (103) (Figure 5 the NOWAC study enrollment. Green boxes show the EPIC study sample and Helga study sample from NOWAC).

3.1 The NOWAC cohort

The NOWAC cohort is a population-based prospective cohort study that started data collection in 1991 (104). Originally, the study was designed to investigate the association

between oral contraceptive use and breast cancer risk. The study has gradually expanded to cover other outcomes and risk factors.

3.1.1 Sampling

All women have been sampled randomly from the Norwegian Central Person Register (104). All Norwegian inhabitants have a unique identity number, consisting of the date of birth and five additional numbers, which gives a unique combination. This number is used in all official registries in Norway.

Participants born in 1927-1965 have been enrolled in NOWAC in three main steps in 1991-1992, 1996-1997 and 2003-2007 (Figure 5 the NOWAC study enrollment, red boxes). The participants have answered one, two or three questionnaires, with 4-7 years' intervals for those answering repeated questionnaires. Distribution of a second questionnaire (follow-up) was initiated in 1998 to 2002 and in 2011 (Figure 5 the NOWAC study enrollment, green boxes), and a third questionnaire (follow-up) was initiated in 2004-2005 and 2010 (Figure 5 the NOWAC study enrollment, yellow boxes). The grey stippled horizontal arrows between the different colored boxes show which of the questionnaires that got follow-ups.

In addition, some have participated in 24-hour dietary recalls (105, 106). Participants born between 1943 and 1957, who agreed to be contacted again, was asked to donate blood samples (Figure 5).

A total of 179,388 women were invited to participate in the first and second step in the period of 1991-1997 (107) (Figure 5 the NOWAC study enrollment, red boxes). During this enrollment, the overall response rate was 57% (107). In the third step, in 2003-2007 (Figure 5 the NOWAC study enrollment, red boxed), additionally 148,088 women were invited to participate, of whom 48% responded (corrected for ineligible women due to emigration, death and unknown addresses).

The response rate to the second questionnaire (follow-up) in 1998-2002 (Figure 5 the NOWAC study enrollment, green boxes) was 81% (corrected for death and emigration) (104). For the third questionnaire (follow-up) in 2004-2005 and 2010 (Figure 5 the NOWAC study enrollment, yellow boxes), the response rate was 80,7% (not published). Lastly, a second

questionnaire (follow-up) was sent in 2011 (Figure 5 the NOWAC study enrollment, green boxes). Written reminders were sent once or twice.

The number of dietary items in questionnaires collected in 1991-1995 was limited compared to those collected from 1996 and onwards. Due to this, the baseline data of this thesis are from questionnaires collected in 1996-1998 and 2003-2004 (Figure 5 the NOWAC study enrollment: circled red and green boxes), as these were most compatible regarding dietary information. Therefore, the questionnaires collected in 1998 (Figure 5 the NOWAC study enrollment: green boxes) were from participants who had answered questionnaires once before, in 1991-1992. Only information on education was collected from these earlier questionnaires for these women, as this was not available in the follow-up questionnaire in 1998. At baseline, a total of 95,942 women, aged 41-70 years were available for the analyses in paper 1 and paper 2. Details of further exclusions and the number of participants eligible for the final analyses in these two papers were as follows:

For paper 1, we excluded women with missing information on potato consumption and participants with missing information on selected covariates (income, education, household structure, smoking, BMI, and physical activity) used in the analysis. Further, participant with implausible daily energy intake (<2,500 kJ, >15,000 kJ) and implausible height were excluded. Hence, 74,208 women were finally included in the present analyses. We also performed analyses in a sub-cohort of 22,726 participants who answered questions on dieting.

For paper 2, we excluded participants with missing information on potato consumption and those with missing information on selected colorectal cancer risk factors (education, HRT use, BMI, smoking status/intensity, and total daily energy intake). In addition, participants with implausible total daily energy intake (<2500 kJ, >15,000 kJ), implausible height were excluded. In addition to those with missing or conflicting information on follow-up status, emigration status, or vital status. All participants with prevalent cancer were also excluded. Hence, 79,778 women were included in the final analyses. Of these, 637 were diagnosed with colon cancer and 275 were diagnosed with rectal cancer during follow-up.

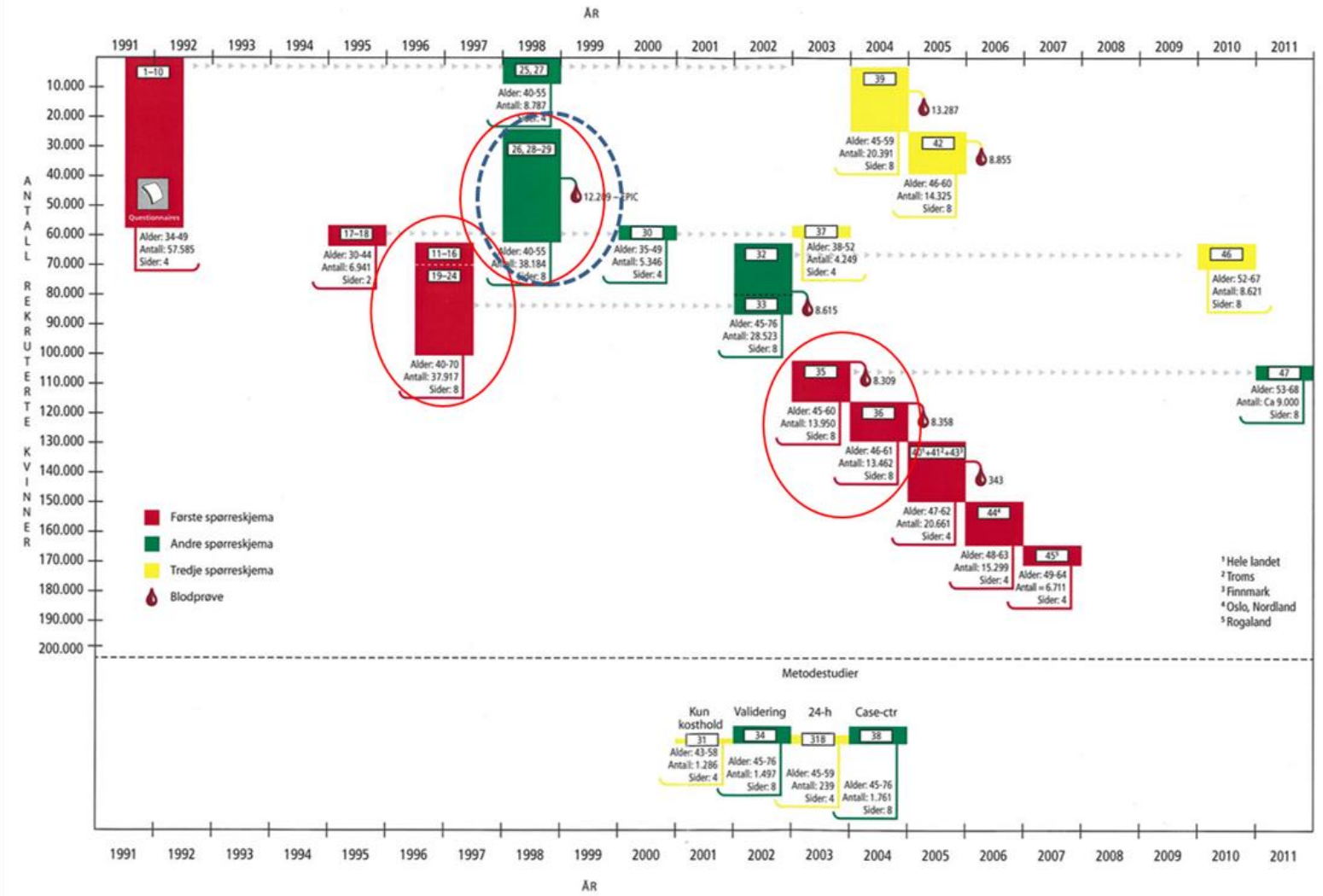


Figure 5: Enrolment in the Norwegian Women and Cancer Study (Red circles: study sample for paper 1 and paper 2. Blue stippled circles: the NOWAC study sample that is part of HELGA (paper 3) and EPIC (supplementary data in paper 2))

3.1.2 The NOWAC questionnaire

The questionnaires varied in length (mainly four or eight pages) and type of questions, but the majority of the participants answered an eight-page questionnaire, which included four pages on dietary habits (food frequency questionnaire (FFQ)). A more detailed description of all the FFQs used in all of the countries in this thesis can be read below, in paragraph 3.5. The general questionnaire contained detailed questions regarding socio-economic status, use of oral contraceptives and hormone replacement therapy, reproduction, age at menarche and menopause, lifestyle (e.g. smoking, alcohol consumption and physical activity), anthropometric measures (height/weight), self-rated health, breast cancer screening, familial breast cancer, sun bathing habits and pigmentation, and self-reported diseases. This thesis has mainly used data from eight-pages questionnaires where the FFQ was included. A more detailed description of the NOWAC study is available elsewhere (104, 107).

3.2 The HELGA study

For the third paper, we obtained data from the HELGA study. The HELGA study is a population-based Scandinavian cohort, consisting of 119,978 participants from: NOWAC (104), The Northern Sweden Health and Disease Study Cohort (NSHDS) (108), and the Danish Diet, Cancer and Health Study (109) (Table 1). The three cohorts are also part of EPIC (110).

3.2.1 Sampling

The Norwegian part consist of only women, and the Danish and Swedish participants are restricted to certain geographical areas. The overall NOWAC study is already described, and the sub-cohort from the NOWAC study that is incorporated in HELGA and EPIC, consist of 35,905 women (from the second questionnaire collected in 1998) (Figure 5), aged 40-55 years old at baseline (Figure 5, green boxes). The NSHDS Cohort consist of 71,367 men and women from Västerbotten county in Northern Sweden, aged 30, 40, 50 or 60 years who all were invited to attend a health screening, with a response rate of 57% (108). Of these, 24,810 men and women, recruited in 1992-1996 are included in the HELGA cohort.

For the Danish cohort 160,725 inhabitants in the Copenhagen and Aarhus areas, aged 50-64 years, were invited in 1993-1997 to participate in the Diet, Cancer, and Health Study (109). The response rate was 35% Of these, 56,666 men and women are included in the HELGA cohort. Initially 2,597 participants were excluded due to prevalent cancer at baseline. Hence, a total of 117,381 participants from NOWAC, NSHDS and the Diet, Cancer and Health Study were available for the analyses in paper 3, of whom 78,080 were women and 39,301 were men. Details of further exclusions and the number of participants eligible for the final analyses in paper 3 were as follows:

We excluded 474 participants due to implausible reported daily energy intake (lower than 2,500 kilojoule (kJ) for both genders, and higher than 18,000 kJ for women and 21,000 kJ for men) and another 27 due to implausible potato intake (>1 kg/day). The preliminary number of pancreatic cancer cases was 268. As we included only adenocarcinomas from the exocrine pancreas, 44 pancreatic cancer cases were excluded because they were neuroendocrine pancreatic tumors, lymphoma, carcinoid, malignant cell and malignant tumor. One case was excluded due to missing information on cancer morphology. Further, we excluded 65 participants, including one case, due to completely missing information on diet, and 2494, including one case, due to missing information on smoking. Then 36 participants with follow-up-time registered as zero were excluded, as they did not contribute to follow-up. Hence, 114,240 participants (38,766 men and 75,474 women) (Danish cohort: 56,245, Norwegian cohort: 33,690 and Swedish cohort: 24,305) were included in the final analyses. Of these, 221 (121 men and 100 women) were diagnosed with pancreatic cancer during follow-up.

3.2.1.1 Questionnaires in HELGA

The NSHDS cohort and the Diet, Cancer, and Health Study did not send out self-administered questionnaire per mail as NOWAC did. Instead they attended a health screening (the Swedish participants) and a study centre (the Danish participants) where they filled in the FFQs and a questionnaire on lifestyle and health (such as smoking, physical activity, diseases and hormone replacement therapy) (109, 111). Trained laboratory technicians measured the weight and height of the Danish and Swedish participants, while in Norway this information was self-reported.

Table 1. Characteristics of the HELGA cohort

	The HELGA cohort		
	The Norwegian Women and Cancer Cohort (NOWAC)	**The Northern Sweden Health and Disease Study Cohort (NHDS)**	**The Diet, Cancer and Health Cohort (DCH)**
Requirements for participation	Women born in Norway between 1943 and 1957	Men and Women, residents of the Västerbotten county, aged 30, 40, 50 or 60	Men and women, resident of the Aarhus or Copenhagen area, aged 50-65
Size of Cohort	36,905	24,810	56,666
Recruitment period	1998	1992-1996	1993-1997
Age at recruitment	40-55	30, 40, 50 and 60	50-65
Participation rate	57%* 81%**	59 %	35 %

* Participation rate for first mailing, ** Participation rate for second mailing (the population of the present study are part of the population who responded to the second mailing)

3.3 Cancer information

For paper 2, we included malignant, primary CRC (carcinomas and adenocarcinomas) as defined by International Classification of Diseases Revision 7 codes (153.0-153.9 for colon cancer and 154.0 for rectal cancer), as the original data was coded according to this revision. Information on CRC incidence and morphology through 31 December 2012 was obtained through linkage to the Cancer Registry of Norway (112). Information on date of death or emigration was obtained from the Norwegian Central Population Register (113).

Paper 3: Since over 95 percent of pancreatic cancers are adenocarcinomas of the exocrine pancreas (22), we included malignant, primary pancreatic cancer of the exocrine pancreas (carcinomas and adenocarcinomas) as defined by the International Classification of Diseases 10th revision as C25 (C25.0-C25.4 and C25.7-C25.9). Information on cancer incidence and vital status was obtained from national cancer registries, and cause of death registries.

3.4 Ethics

The women included in the NOWAC study were sent an invitation letter (Appendix 1) along with the questionnaire, requesting consent to participate. The consent was marked on the questionnaire. The women were also informed about later linkages to the Cancer Registry of Norway and the Cause of Death Register in Statistics of Norway. All samples of blood and tissue will be kept at the Institute of Community Medicine, University of Tromsø. The Regional Ethical Committee and the Norwegian Data Inspectorate has approved the NOWAC study (104).

Participants in NSHDS and Danish Diet, Cancer and Health Study (the other two cohorts in HELGA) also gave written informed consent to participate, and to search information from their national cancer registries. The studies have been approved by the local ethical committees for each of these countries (109, 111).

3.5 Dietary assessment

The use of FFQs has been the dominating method of collecting dietary information in large studies in the last decades (114). The underlying principle of this type of questionnaire is that average long-term diet (weeks, months or years) is a more important exposure rather than the intake of a few specific days (115). It is also been suggested that it is easier to remember one`s usual frequency of consuming a food, than it is to remember what foods were eaten at any specific day or meal in the past (115). Self-administered questionnaires are most common (114). A basic FFQ consists of two components: a list of food, and a frequency response section where the participants can report how often each food was consumed (115). Details regarding quantity and composition may also be included.

In paper 3 the data are based on different questionnaires (Appendix 2, 3 and 4). Each of these validated country-specific FFQs were filled in at baseline and reflected the habitual diet during the previous year. The validations of the FFQs are discussed in the discussion section of this thesis. The questionnaires in the appendix section are examples of the questionnaires. All data in the HELGA cohort are harmonized through EPIC (110). EPIC`s classification of foods does not classify potatoes according to preparation method.

3.5.1 The NOWAC FFQ

As new hypotheses have developed throughout the years, the questionnaire in NOWAC (used for paper 1 and paper 2, and are also one of the three questionnaires in the HELGA cohort for paper 3) has continuously being improved, and questions have been included, omitted or changed (Appendix 2). The number of frequency questions on food, non-alcoholic and alcoholic drinks have therefore varied from 73 to 109. The question on potato consumption has remained unchanged in the questionnaires used for the studies in this thesis. Regarding consumption of different food items, frequencies are asked as appropriate (per day, week, month or year). Food items are accompanied by questions on the amount consumed (in natural units, household units, or volume), or the questions are posed with a quantification (e.g. potatoes), or a standard portion is used. The total daily intake of nutrients and energy was calculated according to values from the Norwegian Food Composition Table (116), and weights of the foods and the portions used are mostly derived from a Norwegian weights and measures table (117). Further information on the food and nutrition calculation has been described previously (118).

3.5.2 HELGA: the NSHDS FFQ

The Swedish FFQ included 84 food items (108) (Appendix 3). Daily intake was calculated by multiplying frequency of intake by a portion size value using the national food composition database (119). Portion sizes used were indicated on pictures, and natural sizes, or average portion sizes was determined in a national survey. Further information on the food and nutrition calculation can be read elsewhere (108).

3.5.3 HELGA: The Danish Diet, Cancer and Health Study FFQ

The Danish FFQ contained a 192-item FFQ (109) (Appendix 4). The participants were asked to report their average intake of different food and beverages within 12 possible categories ranging from never to 8 times or more per day. The daily intake of specific foods and nutrients was calculated using a software program, using specifically developed standardized recipes and portion sizes. Further information on the food and nutrition calculation can be read elsewhere (109).

3.5.4 Assessment of potato consumption

The questions on potato consumption varied between the three countries. Norway: The participants were asked one general question on how many potatoes they ate (never/seldom, 1-4 a week, 5-6 a week, 1 per day, 2 per day, 3 per day or 4+ per day). No questions on preparation method were asked (Appendix 2). The Swedish questionnaire contained five questions where the participants chose which preparation method (boiled/baked, roasted, French fries, mashed or potato salad) they had used, and how many times during a specific period of time they ate potatoes prepared in various ways: Never, sometimes during a year, per month (1-3 times), per week (1, 2-3, 4-6 times), or per day (1, 2-3, 4+). Portion sizes were indicated by color photographs of four plates of increasing portion sizes for e.g. meat, vegetables and potatoes (Appendix 3). Denmark: The questionnaire contained seven different questions, where the participants chose which preparation method (boiled, baked, roasted, mashed, stewed, potato salad or French fries) they had used, and they were asked how many times during a specific period of time they ate potatoes prepared in these various ways: Never, during a month (<1, 1, 2-3 times), per week (1, 2-4, 5-6 times), or per day (1, 2-3, 4-5, 6-7, 8+ times). For boiled and baked potatoes the portion size was specified as one potato, and the participants were asked how many times during a specific period of time they ate one boiled or baked potato (e.g. 1 potato 5-6 times per week would be 5-6 potatoes per week) (Appendix 4).

3.5.4.1 The potato variable

For paper 1 (NOWAC: only Norway) potato consumption was collapsed from the 7-category variable into a dichotomised variable with low and high potato consumption (low: ≤1 potato per day, high: ≥2 potatoes per day).

For paper 2 (NOWAC: only Norway) potato consumption was collapsed from the 7-category variable into a 3-category variable (0-7 potatoes per week, 2 potatoes per day and ≥3 potatoes per day), based on how the cases were distributed.

For paper 3 (HELGA: Norway, Sweden and Denmark), frequencies and portions had been combined for all preparation methods in the three cohorts into a general variable on potato consumption in grams per day, due to compatibility. We only had this general variable on total potato consumption available.

3.6 Covariates and adjustments

In paper 1, other variables examined were age, area of residence, income, education, smoking status, BMI, diabetes, physical activity, dieting, and household structure. Due to the fact that we included groups of participants with at least 5 years between data collection, we adjusted all analyses in paper 1 by sub-cohort. For non-dietary data, we presented one model adjusted for age and sub-cohort, and one in which all the variables were mutually adjusted. For the question on dieting we also adjusted for energy intake. All the food items were adjusted for age and sub-cohort, in addition to a model where we also adjusted for energy intake. Stratification by sub-cohort, rather than adjustment for this variable, did not influence the estimates. In addition, we tested for interactions between BMI and age, BMI and physical activity, and between age and energy intake. Also in the sub-cohort of women who were asked questions about dieting, we tested for interactions between energy intake and several variables (age, BMI, and physical activity), in addition to interaction between age and BMI.

In paper 2 we tested the following CRC risk factors defined by AICR/WCRF (4) for inclusion in the final adjusted models: education, HRT use, smoking status/intensity, physical activity and alcohol consumption.

Several continuous food variables (red meat, processed meat, milk, pasta, rice, fruit, vegetables and non-potato fiber, i.e. fiber from all food sources except potatoes), were tested for linearity and divided into quintiles, as they did not meet the requirements for linearity. As the dependent variable was not a continuous variable, adjustment for total daily energy intake was done by including carbohydrate and non-carbohydrate energy in the model. Details about energy adjustments can be read in paragraph 5.2.5.

We presented both a crude and two adjusted models; adjusted model 1 (full model) and adjusted model 2 (full model with alternative sources of carbohydrate). Adjusted model 2 was only used in the main analysis, and was constructed to look for associations with other sources of carbohydrate. Details about this energy adjustment can be read in paragraph 5.2.5.

Covariates were included in the final models if they were significantly associated with CRC, or if they influenced the hazard ratios by more than 10%. The final adjusted model 1 included education, HRT use, smoking status/intensity, red meat, processed meat, milk, non-potato

fiber, carbohydrate energy, and non-carbohydrate energy. Pasta, rice, fruit and vegetables were only included in adjusted model 2. Red meat, processed meat, and fiber are established risk factors for CRC, and these covariates were therefore included in the final models even though they did not have any effect on the estimates. By adjusting for non-potato fiber we would not remove the possible protective effect of potato fiber.

Since the two sub-cohorts had a difference in the date of data collection of at least 5 years, we stratified all regression analyses by sub-cohort (i.e. data collection in 1996-1998 or 2003-2004). However, as the results were similar, this stratification was not included in the final models.

The analyses were BMI-specific, as body fatness is an established risk factor for CRC. The possible association between potato consumption, GI, and body fatness prompted us to plan these analyses a priori.

In paper 3 all variables classified as "probably" or "convincingly" associated with risk of pancreatic cancer in the WCRF/AICR Research report (22) were tested as possible confounders or risk factors: BMI and smoking status. We also made a finer categorization of smoking. However, since this categorization did not have any material effect on the results, we used the more robust adjustment for smoking in the final models. Greater childhood growth measured as adult attained height and BMI at aged ~20 years, is also a probable risk factor, and hence we adjusted for height at baseline.

All continuous variables (potato consumption, total energy and height), were tested for linear associations with the outcome, and then divided into tertiles if they did not meet the requirements for linearity (potato consumption and total energy).

Additional variables associated with potato consumption in the Norwegian cohort (paper 1) were assessed for confounding effects: red and processed meat, vegetables, total energy intake, education and diabetes. We did some additional adjustments for paper 3 that were not included in the final models. The high potato consumers were likely to be less educated, had a higher BMI, consumed more fat, red & processed meat and carbonated/soft/isotonic drinks and diluted syrups, which all were being characteristics of an obesogenic environment and metabolic syndrome (120, 121). We included all of these variables in a preliminary

multivariable adjusted model, but they were not included in the final models, as they did not influence the results. These additional adjustments are discussed in the discussion section, in paragraph 5.3., where lifestyle factors as confounding variables are discussed.

In paper 3, we also did separate analysis by sex. Since the number of cases was relatively small, stratification by diabetes was not possible, but in addition to adjust for diabetes, we did sensitivity analyses excluding diabetics. Due to the small number of cases we did not do separate analyses by country, but we repeated all analyses in the Danish cohort only, as this was the largest sub-cohort containing most of the cases.

We presented one model adjusted for sex and total energy (kJ), and another adjusted model (additionally adjusted for BMI, height and smoking). Due to differences in the question formulation and general differences, procedures and measurements in the three cohorts, all analyses were stratified by country.

Variables were included in the final models if they were significantly associated with pancreatic cancer, or if they influenced the hazard ratios by more than 10%. We also adjusted for total energy intake, since this adjustment is usually appropriate to control for confounding in studies on disease and diet. More details about energy adjustments can be read in paragraph 5.2.5.

In addition, since our study consisted of three sub-cohorts in different countries, we adjusted for these sub-cohorts. This adjustment was done to try to attenuate possible differences in the information obtained from the FFQs. The final adjusted model included sex, BMI, height, smoking, total energy (kJ) and sub-cohorts.

3.7 Statistical analyses

Analyses were conducted using STATA version 12.0, 13.0, 14.0 and SAS version 9.2. Descriptive characteristics of the study population in each paper were presented as medians (5th-95th percentiles) and frequency distributions as appropriate. All p-values below 0.05 were considered statistically significant in all analyses in the three papers.

Paper 1 was a descriptive study, and the aim was to cross-sectionally investigate what characterises women who eat potatoes. Pearson’s chi square test, Wilcoxon test, and linear

regression analysis were used to test for significant differences between high and low potato consumption groups. In addition to be presented as medians (5th-95th percentile), all food items were presented by age-adjusted mean consumption with and age-adjusted nutrient density (per 1,000 kJ). In the logistic regression model the dependent variable was dichotomised as low and high potato consumption, and logistic regression analyses with 95% CIs and tests for linear trend across categories of age, income, and education were performed. Food items were divided into appropriate portion sizes and used as continuous variables.

In paper 2 and paper 3, Cox proportional hazards models with hazard ratios (HR) and 95% confidence intervals (CI) were used to estimate the association between potato consumption and the risk of CRC, colon cancer, and rectal cancer (paper 2), and pancreatic cancer (paper 3). Age was used as the time-scale, and the participants were followed from the date their questionnaires were received until the date of diagnosis with any cancer, date of death, date of emigration, or the end of follow-up, whichever occurred first. End of follow-up for the study in paper 2 was 31 December 2012. End of follow-up for the study in paper 3 was 31.12.2007 (Denmark) and 31.12.2008 (Sweden and Norway).

For paper 2 and 3 tests for trend were performed for all regression analyses. Since our exposure variable (potato consumption) was not a continuous one, the median consumption in each category of potato consumption was used in the test. We also performed sensitivity analyses after excluding participants with a CRC diagnosis (paper 2) less than 1 year (n=32) and 3 years (n=130) and participants with a pancreatic cancer diagnosis (paper 3) less than 1 year (n=12) and 3 years (n=34) after receiving the questionnaire, due to the possibility that preclinical symptoms affected eating habits. Interaction between potato consumption and BMI, red and processed meat was evaluated with the likelihood ratio test in paper 2. As we only found significant associations for women in paper 3, a chi square test was performed to check for heterogeneity between genders.

From the EPIC study, we acquired data from standardized 24-hour dietary recalls in 10 European countries that we used for paper 2. The data on preparation methods of potatoes was tabulated and presented in a supplementary table. The preparation methods were classified as boiled, baked and fried. This classification was mainly based on temperature during preparation, and for this reason, stewed with fat was categorized as boiled. However, this

preparation method was rarely used in Norway (0,5 % of consumption occasions).

3.7.1 Diagnostics for the regression analyses

Usual regression diagnostics were performed to assess model fit for all three papers. In paper 1, goodness of fit was tested with Hosmer-Lemeshow. In paper 2, proportional hazard assumptions were checked using Schoenfeld residual which showed no evidence of deviation from proportionality. Interaction between potato consumption and BMI, red and processed meat was evaluated with the likelihood ratio test. In paper 3, the proportional hazard assumptions showed sign of deviation from proportionality. Since our time variable was age, we tested for interaction between potato consumption and age and found a significant interaction. Due to this, we did age-specific analyses. The cut off was set to 57 years of age, based on the distribution of cases. When age-specific analyses were done, the proportional hazard assumption was not violated. A chi square test was performed to check for heterogeneity between genders.

All variables were checked for multicollinearity using variance inflation factor, and the results showed no violation of this assumption. All p-values below 0.05 were considered statistically significant.

4 Results – summary of papers

4.1 **Paper 1:** What characterises women who eat potatoes? A cross-sectional study among 74,208 women in the Norwegian Women and Cancer cohort

The objective of this study was to map which factors influence potato consumption among participants in the NOWAC study. A cross-sectional study using a postal questionnaire among 74,208 NOWAC participants aged 41–70 was performed. Results showed that 56% of the women ate at least two potatoes a day. A north–south gradient in potato consumption was observed in multivariable logistic regression models (OR: 3.41, 95% CI: 3.19–3.64 for the north compared to the capital). Women in households with children had lower odds of high potato consumption than women living only with a partner, and women who lived alone had the lowest odds of all (OR: 0.39, 95% CI: 0.37–0.41). Smokers had higher odds of high potato consumption, while diabetics had lower odds. The odds of high potato consumption were greater among older women, and among those with lower income and education. In a sub-cohort, women who were dieting had lower odds of high potato consumption. Consumption of different foods varied in the low versus the high potato consumption group, with largest effect for fish and pasta/rice. The groups had similar nutrient densities.

In conclusion, the high potato consumption group, on average, consisted of more elderly women, women with lower socioeconomic status, more smokers, and women living with a partner. In addition, there was a clear north–south gradient in potato consumption, where women living in the north had the highest odds of high potato consumption. Women with diabetes had lower odds of high potato consumption compared to non-diabetics. Women on a diet specifically cut down on potato consumption. Furthermore, the high potato consumption group had an especially higher consumption of fish and a lower consumption of pasta/rice. The nutrient density in the low and high potato consumption group was similar.

4.2 **Paper 2:** Potato consumption and risk of colorectal cancer in the Norwegian Women and Cancer cohort

This study aimed to investigate the association between potato consumption and the risk of CRC among 79,778 women aged 41-70, in the NOWAC cohort. Information on diet, lifestyle, and health was collected by questionnaire. CRC cases (n=912) were identified through registry linkage. Adjusted Cox proportional hazard models were used to estimate the association between potato consumption and the risk of CRC. Results showed that high potato consumption was associated with a higher risk of CRC in the adjusted model (adjusted for education, smoking, red meat, processed meat, milk, non-potato fiber, HRT, carbohydrate energy, and non-carbohydrate energy) (HR: 1.32, 95% CI: 1.10, 1.60 for ≥3 potatoes per day versus 0-7 potatoes per week). The same association was found for rectal cancer (HR: 1.68, 95% CI: 1.19, 2.36), and same tendencies were found for colon cancer (HR: 1.20, 95% CI: 0.96, 1.50). When stratified by BMI (<25 and ≥25 kg/m²), significant associations were found with BMI <25 kg/m² for CRC (HR: 1.48, 95% CI: 1.15, 1.89) and rectal cancer (HR: 1.95, 95% CI: 1.25, 3.06). The same tendencies were found for colon cancer (HR: 1.31, 95% CI: 0.97, 1.76).

In conclusion, in this study high potato consumption (≥3 potatoes per day) was associated with an increased risk of CRC among women with a BMI <25 kg/m^2. The explanation of this association is not clear. More research on the association between potato consumption and the risk of CRC is essential before further conclusions can be drawn and dietary recommendations made.

4.3 **Paper 3:** Potato consumption and risk of pancreatic cancer in the HELGA cohort

The aim of this study was to investigate the association between potato consumption and pancreatic cancer among 114,240 men and women in the prospective HELGA cohort. HELGA consists of three sub-cohorts in Norway, Sweden and Denmark. Information on diet, lifestyle and health was collected by questionnaire, and 221 pancreatic cancer cases were identified through cancer registries. Cox proportional hazard models were used to estimate the

association between potato consumption and pancreatic cancer. Higher consumption of potatoes was associated with higher risk of pancreatic cancer in the adjusted model (adjusted for BMI, total energy (kJ), height and stratified by country) (HR: 1.60, 95% CI: 1.12-2.29, p for trend: 0.007) when comparing the highest versus the lowest tertile of potato consumption. In sex-specific analyses, similar significant associations were only found for females (HR: 1.82, 95% CI: 1.10-3.01, p for trend: 0.018). A chi square test performed to check for heterogeneity between men and women showed no signs of heterogeneity. A significant interaction between potato consumption and age was found and age-specific analyses showed only significant associations for the oldest (>57 years) (HR: 2.08, 95% CI: 1.21-3.56).

In conclusion, a high potato consumption was associated with an increased risk of pancreatic cancer, although the association was only significant for women. In addition, there was an interaction between potato consumption and age, and age-specific analyses showed only significant association for the oldest age group. Since potatoes are usually eaten as part of a meal, we cannot conclude that the associations we found is caused by potatoes alone, and there is also a possibility that the associations we found were due to chance.

Potatoes are a staple food in many countries, and our results emphasize the need for more research on the association between potato consumption and pancreatic cancer, and potatoes and health in general.

5 Methodological considerations

The strengths and limitations of each of the three studies in this thesis have been discussed in the accompanying papers (papers 1, 2 and 3). Therefore, the issues discussed in this chapter will mostly be general.

5.1 Study design

The randomized controlled trial (RCT) is the "gold standard" in study designs for drawing causal inferences regarding associations between exposures, including dietary exposures, and health outcomes (122). In these experimental studies, participants are allocated randomly to receive one of several interventions. One of these interventions is usually a comparison or control who receives a placebo, or no intervention at all (123). However, not all associations between diet and health can be practically or ethically evaluated in RCTs (122). Many diet-related diseases develop over extended periods, with maybe decades of chronic exposure from dietary components, and RCTs are unfit for this kind of range. It would also be unethical to deliberate expose participants to a potentially harmful food.

There are three basic types of non-experimental (observational) study designs in epidemiology: the prospective cohort study, the case-control study and the cross-sectional study (124). For paper 1 in this thesis, a cross-sectional study design was used, while paper 2 and 3 had prospective cohort designs. In cross-sectional studies, snapshot views of the health status and/or behavior of the study population is taken at a given point in time, and it is therefore not possible to predict any risk of disease (124). The proper temporal sequence needed to establish causality cannot be firmly established, as it would be difficult no know which came first, the exposure of a risk factor or the disease. However, cross-sectional designs provide very useful information of the study populations health status and behavior, determining the prevalence of risk factors and the frequency of prevalent cases of some diseases. A cross-sectional study can also be useful for providing the baseline information for a prospective cohort follow-up to observe health outcomes, like in this case in paper 1: a characterization of women who eat potatoes, which have been useful for studying the effect

potatoes have on cancer in paper 2 and 3. Cross-sectional studies have the advantages of being fairly quick and easy to perform.

The prospective cohort study is considered the strongest study design secondary to RCTs (122). The prospective cohort differs from the other observational studies with some advantages. For instance, the measurement of a dietary exposure precedes the development of symptoms of the disease, which minimizes the risk of recall bias (which is explained more thoroughly in paragraph 5.2.2, information bias). In addition, prospective cohort studies allow researchers the opportunity to evaluate the long term effect of diet on disease outcomes. However, as the data is based on a single measurement, one has no control over eventual changes in diet over the study period. This is discussed more in paragraph 5.2.2.

5.2 Validity

In all epidemiological studies, there are many methodological aspects that needs to be taken into consideration, and errors can occur in any step of the research process (125). It is a challenge, not only for the researchers, but also for editors and the reader to point these out and consider how they might have affected the results. When evaluating these aspects, we must consider the internal validity, i.e. whether the study provide unbiased estimates, and the external validity, i.e. if the study results obtained in the study population can be generalized to target populations (125).

It is common to group all biases into three general categories that can compromise the validity: selection bias, information bias and confounding (125). A bias or differential error, is a serious error, that produces deviations or distortions that tend to be inaccurate in a particular direction (123), for instance one group systematically reports to high values. With random error, or non-differential error, the findings are too high and too low in approximately equal amounts. However, if the sample study is large, like in this thesis, random errors will lead to results that usually are correct estimates of the average value (123). Examples of these methodological aspects and biases, will be discussed in the following paragraphs.

5.2.1 Selection bias

Selection bias can occur during the inclusion of participants at the beginning of a study. Prospective cohort studies are not as vulnerable to potential selection biases as, for instance, case-control studies (125). Both NOWAC and the other cohorts incorporated in HELGA are population-based (104, 108, 109), which minimizes potential selection bias.
However, in a cohort study, the exposed and unexposed groups can differ in important aspects besides the investigated exposure (125). In NOWAC the participants were women, aged 30-70 years, who were sampled randomly from the Norwegian Central Person Register (107). In the Swedish cohort the participants, aged 30, 40, 50 or 60 years from a specific geographical area, were invited to attend a health screening, and the Danish participants, aged 50-64, also from specific geographical areas of Denmark were invited to participate in a study on diet, cancer and health (aged 50-64 years) (109, 111).

Randomization in the sampling process minimizes the chance for selection bias to occur, however the participants who chose to respond are not necessarily random. One example is how the non-respondents could differ from the respondents (125). It is likely that people with special interest for health issues are more prone to answer questions regarding their health and diet, than people with poorer health and/or less interest in these topics. In addition, the participants in all three cohorts in this thesis had a somewhat higher education than their respective source populations (107, 109, 126).

It is also known that low response rate can cause selection bias (127). The participation rate for the cohorts in the present thesis were close to 60 % for the Norwegian and the Swedish study (response rate of follow-up studies for NOWAC were about 80%) (107, 128), and 35 % for the Danish cohort (109). These response rates are similar to many other population-based cohorts (107). In addition, in these kinds of follow-up analyses, where the association between exposure and outcome is investigated, a low response rate does not necessarily have any impact as long as the study participants are representative to the population their supposed to represent (114). However, the rate for the Danish cohort was quite low. Further, due to the use of cancer registries and populations registry in the Scandinavian countries, loss to follow-up was minimal.

Due to this, the participants in the NOWAC – and HELGA cohort should be representative for the entire source population in Norway (only women), Sweden and Denmark in the corresponding age groups. However, there was an over-representation of people with a higher education. Though, age-specific rates for breast cancer from 1999 in NOWAC was similar to the general population in Norway (107), and it is known that women with higher socioeconomic status show significantly higher breast cancer incidence (129). As such, it is not likely that the overrepresentation of people with higher education influence cancer incidence in NOWAC. For the Danish cohort, several differences between non-respondents and respondents on socioeconomic factors were seen (109). However, studies on the external validity in NOWAC and the Swedish and the Danish cohort in HELGA found no noteworthy sources of selection bias, beyond the higher education level (107, 109, 126).

Another potential source for bias in self-administered questionnaires are missing values (114). There are several examples of how this occurs: participants forget to turn the pages in the questionnaire so just half of the questionnaire is filled out, they refrain to fill out questions they feel are too sensitive (e.g. income, weight, disease), health issues, time, questions are difficult to answer etc. It is important do get an overview over possible missing values in the data, assess why data is missing and how it should be handled. In most statistically analyses the participants with missing values will automatically be excluded, and if there is a large amount of missing, one could end up with a study sample too small to perform the analysis, or the results will not get significant. Consequently, the conclusions are weakened or bias can occur (114). Another potential problem is when participants that refrains to answer specific questions are different from the ones who answer. An example of this is when social desirability bias occurs: when those with e.g. unhealthier lifestyles refrains to answer questions regarding specific foods, alcohol, weight and smoking because the way they eat or live is not social desirable (130).

In paper 1, the variable regarding diabetes contained a lot of missing. Many participants (12,875) did not answer the questions concerning diabetes, 1,293 participants answered that they had diabetes, and 60,042 participants answered they did not have diabetes. This resulted in the loss of many participants. However, due to results from a validation study of self-reported diabetes in the NOWAC study (131), we recoded those with missing information as ‘not having diabetes’, as results from the validation study suggested that missing answer on

diabetes status could be interpreted as a negative response. In the questionnaire, there was no distinction between the type 1 and type 2 diabetes. However, according to the validation study, the diabetes cases are mainly type 2 diabetes (89.4%). Additionally, we have handled missing values in all papers by excluding them. However, continuous food variables (grams per day) with missing information was imputed as zero (not consumed). If, for instance, participants who ate much unhealthy food, chose to not answer these questions, this could lead to an underestimation of consumption. However, since earlier research has shown that non-respondents are similar to respondents on risk factors in NOWAC (132), this would probably not be a large problem.

In sum, based on the material available and earlier investigations in the NOWAC and the HELGA cohort, selection bias was not deemed to be a large problem in the studies comprising the present thesis. Randomization was used in the sampling process, the participants were to a large extent representative for the population in the respective age groups in the studies, and the response rate was largely good. In addition, there were few problems with missing data, and since the cohorts in this thesis are quite large, possible bias due to missing will likely not matter for the results. However, the participation rate in the Danish cohort was smaller (35%) and lot of the participants did not answer the question concerning diabetes. As such, selection bias could not be completely ruled out as a problem.

5.2.2 Information bias

Information bias occur when the study participants consciously or unconsciously give incorrect information, or the wrong information is somehow recorded by study personnel or measurement instruments (114). The advantage of using FFQs is that the liability for the participants are minor, which is important when a high response rate is desired. If the FFQs are self-administered, it is possible to reach out to many people by mail or email, which is quite simple and cheap (114). However, nutritional research is often complex, with a high amount of exposure factors, therefore it is likely for biases to occur. Accuracy is highly desired, but difficult to achieve. Recall bias is a kind of bias that may arise when people who have experienced a disease, wonder more about why they got the disease and are more likely to recall previous risk factors than people who did not get the disease (123). Recall bias is more of a concern in the context of case-control studies, when cases and controls are asked about exposures in the past (124), and because prospective cohort studies measure events in

chronological order, it will minimize the risk of this kind of bias. However, it is common that food questionnaires go somewhat back in time, and it can be difficult to remember what you have been eating. For instance, in the studies of this thesis, the participants had to remember their habitual diet over the previous year, which can be challenging to get accurate.

It is also likely that those with unhealthier diets consciously or unconsciously reports having a healthier diet and also a healthier lifestyle than they actually do, hence the already mentioned term "social desirability" bias. Consequently, they might report less smoking or less alcohol consumption. Even though self-reported information is known to be a source of measurement errors, this type of error will mostly dilute the associations, and will likely not cause any substantial problems in our studies. A validation study comparing the results from the NOWAC FFQ with measures from repeated 24-hour dietary recalls concluded that the relative validity of the FFQ was good for foods eaten frequently, and fairly good for macronutrients (105). The ranking abilities for some micronutrients and infrequently eaten food was weaker. It is therefore fair to conclude that the validity of the FFQ regarding potatoes was good, as potatoes are mostly eaten frequently. In addition, a test-retest reproducibility of the FFQ in NOWAC found the level of reproducibility for the FFQ to be within the range reported for similar instruments (133). The Swedish FFQ was found to have good reproducibility and an estimated level of validity similar to FFQ measurements in other prospective cohort studies (134). The Danish FFQ was concluded to be a useful instrument for categorizing individuals according to their intake of nutrients and energy in population-based studies (135).

The results in all three studies are based on only one measurement. It is therefore important to keep in mind that dietary changes could have occurred during the follow-up period, and as mentioned, consumption of potatoes has declined. However, studies have shown that the oldest eat most potatoes (45, 47), and it has been discussed (in paper 1 and paper 3) that this has to do with tradition and trends. Thus, it is possible that those who reported a high potato intake at baseline, have always had, and continued to have a high potato intake. Still, several factors could have influenced the dietary pattern during follow-up. One example of this is the entry of the famous "low carb"-diet (136), were the potato suddenly fell into disrepute.

Another important aspect is that the HELGA cohort used for paper 3 was gathered from three different cohorts. The questionnaires differed somewhat in formulation and procedures, and different biases could have occurred in the process of harmonizing them. The questions on potato intake varied quite a lot across the three cohorts, especially did the question in the Norwegian cohort differ substantially from the Swedish and the Danish cohort. Where the Norwegian had only one frequency question on number of eaten potatoes in general, the Swedish and Danish questionnaire contained additionally questions regarding several preparation methods (as described in more detail in paragraph 3.5.4 and paper 3). After exclusions of e.g. implausible energy and potato intake, the intake of potatoes ranged from 0-264 grams per day in the Norwegian cohort, and from 0-999 grams per day in the Swedish and Danish cohort. This is likely because the highest alternative the participants could mark on the Norwegian questionnaire was 4+ potatoes per day, which was calculated to 264 grams per day. Both the Swedish and Danish questionnaire contained alternatives that ranged higher (Appendix 3 and 4). It is therefore possible that some exposure misclassification could have occurred, where the potato intake in the Norwegian cohort was underestimated. Still, contrary to many other countries, it is common among Norwegians with only one hot meal per day (45), so it is not unlikely that maximum potato intake among women is about 4 potatoes per day. The multiple alternatives of answers in the Swedish and Danish questionnaire could also have overestimated the potato intake in the Danish and Swedish questionnaire. The Danish and Swedish questionnaire did include men, which theoretically could have influenced the differences in the amount of potatoes consumed compared to the Norwegian participants (who included only women). However, the tertiles for potato consumption was quite similar across sexes (Paper 3: Table 2). It is not likely that a possible underestimation of the Norwegian potato intake would have any effect on the results in the studies. In paper 2, an underestimation of the exposure would only dilute the associations found. In paper 3, this could cause weaker associations for the Norwegian participants compared to the Danish and Swedish participants. Still, the Norwegian cohort contained only 19 pancreatic cancer cases, and it is not likely that this influenced the results in a noteworthy manner. It is possible that the overestimation have affected the cut-offs for the tertiles. Thus, for instance, when they have reported 3 potatoes, they have actually eaten 2 potatoes. It is therefore a possibility that the effect of higher risk for pancreas could be present with less potato consumption, but it is

unknown where the true effect lies. However, by using a categorized potato variable, the analyses are less vulnerable for outliers and overestimation.

Additionally, validations of the studies have been done (105, 133-135), and the food data was harmonized through EPIC and standardized by common standardization guidelines. In addition, all analyses were stratified by country. The goal with this adjustment was to try to attenuate possible differences in the information obtained from the FFQs.

It is also a known problem in these kind of studies that participants overestimate their height and underestimates their weight and BMI (137). In NOWAC the measures of BMI were based on self-reported height and weight, which can cause measurement bias. However, a study on validity of self-reported weight and height in the NOWAC study concluded that these self-reported measures provide a valid ranking of BMI for middle-aged women (138), and height and weight were measured in the Swedish and Danish cohort in HELGA.

In sum, there are several sources for information bias in the studies included in the present thesis. For instance, it is difficult to remember eating habits for the last year, and it is not unlikely that participants reported eating healthier than they actually did. However, other studies indicate that these factors are not a considerable problem. A lager problem could be the fact that diet could change after reporting, and that the questionnaires was different in the different cohorts. It may be that formulation of the potato questions lead to an overestimation of exposure in Danish and Swedish participants, or an underestimation in the Norwegian participants. This could be a source of error. However, none of these problems are regarded as large problems. Information bias may have influenced results, but are not considered crucial.

5.2.3 Confounding

Confounding can be explained as mixing or blurring of effects (125). A confounding effect can be present when a researcher relates an exposure to an outcome, but actually measures the effect of a third variable – a confounding variable. A confounding variable is associated with both the exposure and the outcome, but it does not act as an intermediate link between the exposure and the outcome. In contrast to selection bias and information bias in a study, confounding can be controlled for before or after a study is done, if the confounding factors

are known and measured. In prospective cohorts, common methods used for this are multivariable techniques and stratification (125). In multivariable techniques, the potential effect of a variable (e.g. potatoes) is examined through mathematical modeling, while the effect of other variables (possible confounders), are controlled or adjusted for. This method has the advantage of being able to adjust for many factors at the same time (125). However, in order to adjust for many variables at the same time, particularly categorical variables, a large sample size is needed. The sample size has a deep impact on the chance of finding statistical significance (123). If the researcher plan to perform sub-group analyses and number of cases is small, including many variables in the analyses can cause the analyses to lose power and break down.

We identified several lifestyle factors that were associated with potato consumption (Paper 1), and this is congruent with other studies (45, 47), therefore it was important to adjust for possible confounding variables when investigating potato intake and cancer risk (in paper 2 and paper 3). Since the number of cancer cases was limited, especially in paper 3, it was important to consider how to approach this matter, to avoid too many adjusting variables in the analyses. Variables classified as "probably" or "convincingly" associated with CRC and pancreatic cancer by the WCRF/AICR (4, 22), were tested as possible confounders or risk factors. We left out variables classified as "limited/suggested" evidence, to reduce the number of variables in the analyses. Additionally, lifestyle factors associated with potato consumption and cancer were assessed for confounding effects. Finally, we only included adjustment variables that influenced the hazard ratios with more than 10%.

5.2.3.1 Controlling for confounding

We adjusted for several factors to try to control for confounding (3.6), but some desired adjustments were not possible to perform, which is a weakness in the corresponding studies. For instance, since we used a general variable on potato consumption in grams per day, we were not able to control for potential effects from acrylamide formation during preparation and fat as an added ingredient during preparation. This is discussed thoroughly in both paper 2 and paper 3. In addition, it is suggested that since boiling is the most common preparation method, it is not likely that acrylamide and added ingredients during preparation is the cause

of the positive associations we found between potato consumption and colorectal cancer and pancreatic cancer. However, we cannot exclude this possibility.

Further, in paper 2 and paper 3, GI and GL were discussed as possible causes for both CRC and pancreatic cancer. Ideally, we should have adjusted for glycemic index and load, however the FFQs were semi-quantitative, and not created to measure these factors, and we did not have a proper database that fitted our FFQs. Consequently, we were not able to exclude the possibility that GI and GL could influence the association we found between potato consumption and the cancers.

Another approach to control for confounding is stratification (125). The sample can be subdivided by any characteristics of the population of epidemiological interest (e.g. age, sex, occupations, smokers/nonsmokers etc.) (139). Such subdivided samples are called specific analyses (e.g. age-specific or sex-specific analyses). When the sample is divided into smaller sub-groups, the sample sizes in the sub-groups will consequently decrease. The sub-groups can end up being too small for analyses, or a value in one of the adjustment variables could lack in one of the groups, which is not a good basis for performing valid analyses. For instance, due to the small amount of pancreatic cancer cases in paper 3, we were not able to perform diabetes-specific analyses and country-specific analyses, which would have been a valuable contribution to our conclusion.

5.2.3.2 Residual confounding

There is also the possibility of residual confounding in the studies, due to unknown confounding factors. Residual confounding occurs either when some confounding variables remain unaccounted for, or when the categories of the confounder controlled for are too broad (124). An example of this is adjustment for smoking, using categorical definitions such as "never", "former" or "current". The variability in the cumulative dose within the last two categories may be large (i.e., in average number of cigarettes per day, pack-years, and time since quitting) (124), and this can result in residual confounding when associations between variables confounded by smoking are evaluated. Since smoking is such an established risk factor for both colorectal and pancreatic cancer (4, 22), and to minimize the possibility for residual confounding, we decided to use a finer categorization than "never", "former" or

"current" when adjusting for smoking in paper 2 and 3 (never, former <15 pack-years, former ≥15 pack years, current <15 pack-years, current ≥15 pack years; one pack-year is equal to smoking 20 cigarettes per day for 1 year, or 40 cigarettes per day for half a year, and so on) (140).

5.2.3.3 Interaction

Sometimes the effect of a variable will depend on the level of another variable (114). In these situations, we say that there is an interaction or an effect modification between two variables. The joint presence of interacting risk factors should always be considered when evaluating confounding effects (124). In paper 3 we found a significant interaction between potato consumption and age. Due to this, we did age-specific analyses. The cut off was set to 57 years of age, based on the distribution of cases. These age-specific analyses solved the problem with the violation of the proportional hazard assumption. Additionally, it led us to do a more detailed interpretation as it added an interaction in the observed association between high potato consumption and pancreatic cancer. Accordingly, the age-specific analyses showed only significant association for the oldest age group: high consumption of potatoes did only increase the risk of pancreatic cancer in the oldest age group (>57 years).

5.2.4 Chance

If the results of studies cannot be explained on the basis of selection bias, information bias or confounding, then the results can be due to chance (125). The first step to assess this is to state a null hypothesis: there is no difference between the groups being compared (123), e.g. those with high consumption of potatoes do not have increased risk of cancer compared to those with a low consumption. The alternative hypothesis states that there *is* a difference between the compared groups. The p-value obtained by the statistical tests, gives the probability of finding the observed result by chance rather than because of a true effect. It is common to state that a p-value below 0.05 is statistically significant. Thus, with a lower p-value it can be stated that there was a difference between the groups (123). However, it is important to keep in mind that even though your p-value is 0.05, there is still a 5% probability that your results are due to chance, and that a false positive conclusion is drawn. In studies with large sample size, even small irrelevant effects can turn out statistically significant.

Contrary, with a small study samples, a false negative conclusion may be drawn. Therefore, it is highly relevant to consider how large the effect size in the statistical analyses are, as it will not be influenced by sample size. In our studies we have used odds ratios (paper 1) and hazard ratios (paper 2 and paper 3) to measure these effect sizes.

The effect of the sample size can also be established from the width of the CI. A narrow CI indicates a large sample size, and "more confidence". A wide CI may mean that the sample is small, and the effect estimate is less precise, even if it is statistically significant. It is more likely that the results are due to chance. The results from the studies in this thesis are all showing narrow CIs, which reduces the probability that the results are due to chance. However, paper 3, we had quite few cases, and when comparing the CI for the overall analysis of associations between potato consumption and pancreatic cancer with sex-specific and age-specific analysis, we could see that the CI widened (Table 2 in paper 3). Thus, the effect estimates were less precise in these sub-analyses, and must be interpreted with more caution than the overall analysis.

5.2.5 Substitution effects and energy adjustments

An association between the consumption of a food or nutrient and a disease outcome could be an indication that this particular food under study (e.g. potatoes) is harmful or protective, or it could actually reflect the result of the displacement of other food and/or nutrients (122). Based on an isoenergetic model, the consequence of eating more of a food, or drinking more beverages containing energy, is that it would leave less room for other foods or beverages within the daily diet. This is known as the "displacement" or "substitutions" effects.

It is usually appropriate to adjust for total energy intake in epidemiological studies (141). Confounding can occur when total energy intake is associated with disease risk and level of physical activity, body size or metabolic efficiency are individual factors that can influence this. Most nutrients are correlated with total energy intake, either because of their contribution directly to energy intake or because those who consume more total energy, additionally eat more of all nutrients. Therefore, specific nutrients may be erroneous associated with disease because of confounding by total energy intake. In addition, associations can weaken if the variation from total energy intake is not removed (141). The average intake of total energy in our studies were higher in the categories of high potato consumption, and it was appropriate

to adjust for total energy so the analyses were based on an isoenergetic principle. Consequently, when we adjusted for total energy intake, a higher intake of potatoes resulted in a concomitant lower intake of other energy contributing foods. If we had neglected to adjust for total energy intake we would not be able to tell if the increased risk of cancer was due to a high potato consumption or was it simply that they ate more/they had a high total intake of energy. For instance, we would not be able to tell if there e.g. was a high consumption of meat that caused the increased risk instead of the potatoes.

There are several ways to adjust for total energy intake, and there is usually little statistical justification for choosing a specific model (141). Instead, the selection of the method must be based on biological considerations and the questions we want to address.

The nutrient density model is a traditional method in which nutrient intake is divided by total energy intake (141). It can be expressed as a percentage of energy or as intake per 1000 kcal (or per 4184 kJ). It can be calculated directly for an individual without the use of any statistical models, it is a well-known method used among nutritionists as a measure of dietary composition, and it is also used in dietary guidelines. Paper 1 was a descriptive paper, and we presented all food items with nutrient density per energy intake (per 1000 kJ), according to low and high potato consumption. The residual method was considered as an alternative method to control for confounding, and to remove extraneous variation due to energy intake (141). In this method, the residuals from a regression represent the differences between each individual`s actual intake and the intake predicted by their total energy intake. Since residuals have a mean of zero, and negative as well as positive values, a constant can be added to every value to convey the sense of an actual nutrient intake. These nutrient residuals is uncorrelated with total energy intake, and therefore the variation due to the nutrient composition of the diet (opposed to the combination of dietary composition and total amount of food), to be evaluated directly (141). However, in paper 1, 2 and 3 we adjusted for total energy intake (kJ) in multivariable models. We decided to stick with this method of energy adjustment, as the total energy intake (kJ) did not have any effect on either CRC or pancreatic cancer. Also, the residual method is performed as a linear regression with the exposure (i.e. potatoes) as a dependent variable, and since our potato variable was a categorical, non-linear variable, the residual method was not appropriate (141). In addition, keeping the exposure variable

(potatoes) "as is", makes the results easier to interpret. In another occasion, where the exposure variable is a linear one, and the energy intake is associated with the outcome, the residual method can be considered.

In paper 2 we adjusted for pasta and rice in a model, in addition to total energy. This was done to look for associations with other sources of carbohydrate. However, by including both pasta and rice in the model, we did not allow neither pasta or rice to be possible substitutes for the potato. Thus, other energy sources would therefore act as substitutions, and this could be any kind of energy contributing foods. It could be, for instance, that the substitutions were other vegetables, which have beneficial effects on cancer, or it could be meat with perhaps opposite implications. Accordingly, we chose another model in paper 3.

5.2.6 Statistical methods

We have focused on investigating potatoes as a single food, However, since it is difficult to separate the effect of single food on disease, it could be relevant to complement it with a dietary pattern analysis where the diet is considered in a more holistic way (101). However, associations between diet and disease are usually very modest, and if there are measurement errors present, it can be difficult to detect significant associations, even though there is an association (101, 102). Due to this, a combination of investigating potatoes as single food and as a dietary pattern could be valuable.

In paper 3 a chi square test was performed to check for heterogeneity between men and women, and this was a valuable contribution to our interpretation of the results. The test showed no signs of heterogeneity, which means there is no reason to believe that the association we found differed between sexes. The non-significant results regarding men could rather be due to power issues in our analysis. Therefore, a test of heterogeneity could also be valuable in paper 2, when associations between high potato consumption and CRC only were found among those with a BMI <25 kg/m^2.

In paper 3, the proportional hazards assumption was checked using Schoenfeld residuals, which showed sign of deviation from proportionality. We tested for interaction between potato consumption and age and found a significant interaction effect. Due to this, we did age-specific analyses, and in the age-specific analyses, the proportional hazard assumption

was no longer violated. Another alternative would be to use a flexible parametric survival model (142) instead of the Cox proportional hazards model (142), but it was considered too complex.

5.3 Discussion of main results

The main results have been discussed in details in the accompanying papers (papers 1, 2 and 3). This paragraph, along with the conclusion will present a more general discussion of the main findings.

The objective of paper 1 was to map which factors influence potato consumption among women in the Norwegian Women and Cancer (NOWAC) study. Important findings were that the high potato consumption group contained more smokers, older women and more women with lower education and socioeconomic status. These results are all congruent with other studies, which also include men (45, 47). As mentioned, it is important to consider these lifestyle factors as potential confounders when studying potato consumption and cancer risk. These factors were among the possible confounders and risk factors we adjusted for in paper 2, where the most important finding was that high potato consumption was associated with a higher risk of CRC when comparing the highest consumption with the lowest consumption. At first glance, it is easy to suspect that lifestyle or socioeconomic factors play a part as confounders, especially since the association we found was unexpected. Smoking, age and education are all associated with high potato intake and CRC, and could have had some influence on the associations, but the results of the crude and adjusted model was similar.

Further, it is interesting that we only found a significant association among those with a normal BMI (<25 kg/m²). It is possible that foods with a high GI have an effect on cancer risk independent of obesity. Although some studies have found slightly stronger associations for obese persons (73, 74), an Italian study found that BMI had no effect on the significant associations they observed between CRC and glycemic index (10). A possible mechanism for this association could be due to different diets between those with low/normal BMI and those with a high BMI. Foods and nutrients in meals interacts and influence absorption of other nutrients (93), and perhaps this could partly explain why we only found a significant

association for those with a low/normal BMI. However, the results for those with a BMI ≥25 kg/m², showed tendencies for a higher risk. It is possible that the non-significant results were due to lack of power, as this group contained less cases than the group with low/normal BMI (paper 2, Table 3).

High potato consumption was also associated with increased risk of pancreatic cancer (paper 3). The high potato consumers in paper 3 were more likely to be less educated, had a higher BMI, consumed more fat, red & processed meat and carbonated/soft/isotonic drinks and diluted syrups, all being characteristics of an obesogenic environment and metabolic syndrome (120, 121). In addition, even though results of previous studies have been contradictory and non-conclusive (51, 78, 79), two recent reviews have associated potato consumption with increased risk of developing hypertension (76) and diabetes type 2 (77). In addition, potatoes have been associated with obesity due its high GI (75). Due to this, we had included variables which characterize an obesogenic environment in a multivariable adjusted model, but they were not included in the final models, as they did not influence the results. The main reason for leaving them out of the final model, was the limited number of pancreatic cancer cases in our study sample, and we aimed to retain power in our statistical analyses.

Further, in paper 3, we had a significant interaction between potato consumption and age. Our age-specific analyses showed that it was the oldest participants (>57 years) with the highest consumption of potatoes that had an increased risk of pancreatic cancer. It is possible that the oldest who reported a high potato consumption at baseline, have always had a high potato consumption, and continued to have a high potato consumption based on tradition. As mentioned, studies have shown that the oldest eat more potatoes (45, 47). It is possible that potatoes (or components in potatoes) act as a probable carcinogen which require a long period of exposure to assert any risk. Several researchers have discussed that the exposure time to carcinogens is also an important risk factor, and how this could be part of the explanation of why cancer increases with age (143-145).

Several studies have found an association between potato consumption and cancer, but not all. The only other study on pancreatic cancer, a case-control study, was congruent with our

results, and found that a high potato consumption was associated with increased risk (80). In addition, two other case-control studies found a high potato consumption to be associated with increased risk of respectively rectal cancer (81) and colon cancer (82), though the latter showed only tendency of higher risk. This is congruent with the results for paper 2, where the significant associations were found for rectal cancer, but only tendencies for colon cancer. A cohort study found that intake of potato fiber was inversely related to colon cancer among men, however for women the intake of potato fiber was associated with a higher risk (90). In paper 2 we adjusted for non-potato fiber. This was done since dietary fiber was classified as a factor that convincingly decrease the risk of CRC (4), and we did not want to remove the possible effect of the potato fiber on cancer, by adjusting for it in the total dietary fiber variable. If paper 2 had included men, it would have been interesting to see if our results were congruent with the cohort that found potato fiber to be related to higher risk for CRC in women, but a lower risk for men (90).

Studies on dietary patterns are important to complement studies with single foods and nutrients. We can conclude that our findings are congruent with studies showing that a typical Western dietary pattern with high consumption of red and processed meat, potatoes, high fat, dairy products and eggs is associated with increased risk of both colorectal and pancreatic cancer (93-96, 146), although, regarding pancreatic cancer there are other studies where this association has not been found (97, 98).

The study results regarding how potato glycoalcaloids can significantly aggravate intestinal inflammation in mice (84, 85) are also interesting, as intestinal inflammation has been associated with risk of CRC (86, 87). However some short-term studies have implicated the opposite, were glycoalkaloids have anti-tumor effect (75).

As mentioned in the introduction, previous studies have suggested that the etiology differs within the different colon sub-sites (proximal and distal colon) and between the cancers of the colon and the rectum (17). Due to a relative small number of cases, we cannot, however, be certain if our findings regarding this were due to etiology, lack of power, or due to chance.

Further, there was another case-control study that found associations between potato consumption and increased risk of gastric cancer among women, but no associations were found for men (83). In paper 3, we found only significant associations for women, and it is possible that there are differences in risk between sexes. Still, we were not able to conclude with an observed difference, as the test for heterogeneity between men and women was not significant.

There are also some studies that have found associations between high potato consumption and other cancers (oral and pharyngeal cancer, and bladder cancer), (88, 91, 92), and two of them showed in fact beneficial associations with potato consumption (bladder cancer) (91, 92).

It has already been discussed how potatoes being part of a meal is challenging for the researcher when evaluating causation. It has also been described that our analyses are based on a general potato consumption variable, thus we have not been able to control for preparation methods. However, it is important to keep in mind that even though boiling is the most common preparation method in the countries under study, we cannot rule out the possibility that the CRC and pancreatic cancer cases are the particular participants who ate mostly fried and roasted potatoes. Thus, acrylamide, fat or salt could have caused the observed association with cancer. A recent review investigating the associations between potato consumption and lifestyle diseases, concluded that there is a lack of studies that have investigated the separate preparation methods for potatoes (79). The review also emphasized that too few studies adjusted properly for other risk factors for cancer in their analyses (79).

We do see that a high consumption of potatoes is associated with a higher risk of CRC and pancreatic cancer in our study material, even though there are some inconclusive and contradictory results, most of the studies point in this direction. But whether this risk is attributable to potato per se or a diet and/or lifestyle associated with high potato intake we cannot be certain of.

6 Conclusions and future perspectives

In this work, we found positive significant associations between high potato consumption and two types of cancer in the digestive system: CRC and pancreatic cancer. We also identified and confirmed previous findings regarding lifestyle factors and how they are associated with potato intake. These factors were important to consider as possible confounders and risk factors when analyzing the associations between potatoes as an exposure and cancer as an outcome.

Some restrictions apply to the associations we found. For instance, in paper 2, the associations were only significant for those with a BMI classified as normal or underweight. In addition, the study contained only women. In paper 3, both men and women were included, but the association was only significant for women. There was also an interaction between potato consumption and age, and the significant association was only found for the oldest age group (>57 years). These restrictions in both paper 2 and 3, challenged our discussion regarding possible explanations for the observed associations.

Additionally, chance, different biases, and confounding must always be considered as possible explanations for an association between an exposure and an outcome. Since we focused on potato consumption in general, and were not able to adjust for preparation methods, we could not conclude that the observed association was caused by potatoes alone. However, what we can conclude with is that high potato consumption acts as a marker of a lifestyle associated with higher risk of CRC and pancreatic cancer in our study material, and these findings are congruent with several studies investigating potato consumption and risk of cancer. This is complemented of studies of a typical Western dietary pattern containing potatoes, which has also been associated with increased risk of both CRC and pancreatic cancer.

Our findings show the importance of performing more research within this field, and to further investigate whether potatoes alone can increase the risk of cancer. Potatoes have been, and still are a staple food and an important contributor in human diets all across the world. The GI is a term that has been getting more attention due to its effect on health and cancer in the recent years. We were not able to adjust for GI and GL in our studies, and since potatoes

have a high GI, we recommend that this is done in future studies. Thus, it is important to establish how GI and GL might have influenced the observed associations. Additionally, we recommend dietary assessment methods that gather information on various preparation methods, sufficient adjustments for risk factors, adjustments for metabolic syndrome and stratification by diabetes. There is also a need of studies analyzing on repeated measurements. Further will larger studies with more cases, including both men and women, young and old, more types of cancer (especially cancers of the digestive system) be recommended.

It would serve the public health best when recommendations are made on the basis of the best available evidence. More research on the association between potato consumption and the risk of colorectal and pancreatic cancer is essential, with our recommended modifications regarding methodology, before further conclusions can be drawn and dietary recommendations made.

References

1. MANatomi. Human Anatomy. Digestive System. Available from: http://www.mananatomy.com/digestive-system. Accessed 23.06.2016.

2. Right Diagnosis. From healthgrades. Digestive system cancer. Available from: http://www.rightdiagnosis.com/d/digestive_system_cancer/intro.htm. Accessed 16.06.2016.

3. Global Burden of Disease Cancer C. THe global burden of cancer 2013. JAMA Oncology. 2015;1(4):505-27.

4. World Cancer Research Fund, American Institute for Cancer Research. Continous Update Project Report. Food, Nutrition, Physical Activity, and the Prevention of Colorectal Cancer. 2011.

5. Cancer Registry of Norway. The registries. Cancer statistics. Available from: https://www.kreftregisteret.no/en/The-Registries/Cancer-Statistics/. Accessed 23.01.2016.

6. Larsen IK, Bray F. Trends in colorectal cancer incidence in Norway 1962–2006: an interpretation of the temporal patterns by anatomic subsite. International Journal of Cancer. 2010;126(3):721-32.

7. Johnson CM, Wei C, Ensor JE, Smolenski DJ, Amos CI, Levin B, et al. Meta-analyses of Colorectal Cancer Risk Factors. Cancer causes & control : CCC. 2013;24(6):1207-22.

8. Barclay AW, Petocz P, McMillan-Price J, Flood VM, Prvan T, Mitchell P, et al. Glycemic index, glycemic load, and chronic disease risk—a meta-analysis of observational studies. Am J Clin Nutr. 2008;87(3):627-37.

9. Hu J, La Vecchia C, Augustin LS, Negri E, de Groh M, Morrison H, et al. Glycemic index, glycemic load and cancer risk. Annals of Oncology. 2013;24(1):245-51.

10. Sieri S, Krogh V, Agnoli C, Ricceri F, Palli D, Masala G, et al. Dietary glycemic index and glycemic load and risk of colorectal cancer: results from the EPIC-Italy study. International Journal of Cancer. 2015;136(12):2923-31.

11. Turati F, Galeone C, Gandini S, Augustin LS, Jenkins DJA, Pelucchi C, et al. High glycemic index and glycemic load are associated with moderately increased cancer risk. Molecular Nutrition & Food Research. 2015;59(7):1384-94.

12. Lynch HT, de la Chapelle A. Hereditary Colorectal Cancer. New England Journal of Medicine. 2003;348(10):919-32.

13. Center MM, Jemal A, Ward E. International Trends in Colorectal Cancer Incidence Rates. Cancer Epidemiology Biomarkers & Prevention. 2009;18(6):1688-94.

14. Parkin DM. International variation. Oncogene. 2004;23(38):6329-40.

15. Kuriki K TK. The increasing incidence of colorectal cancer and the preventive strategy in Japan. Asian Pacific Journal of Cancer Prevention. 2006;7(3):495-501.

16. World Cancer Research Fund. American Institute for Cancer Research. Executive summary. Policy and Action for Cancer Prevention. Food, Nutrition and Physical Activity. With an added US Perspective. 2010.

17. Li F-y, Lai M-d. Colorectal cancer, one entity or three. Journal of Zhejiang University Science B. 2009;10(3):219-29.

18. Iacopetta B. Are there two sides to colorectal cancer? International Journal of Cancer. 2002;101(5):403-8.

19. PubMed Health. Proximal Colon. Available from: http://www.ncbi.nlm.nih.gov/pubmedhealth/PMHT0022241/. Accessed 23.06.2016.

20. PubMed Health. Distal Colon. Available from: http://www.ncbi.nlm.nih.gov/pubmedhealth/PMHT0022240/. Accessed 23.06.2016.

21. PubMed Health. Rectum. Available from: http://www.ncbi.nlm.nih.gov/pubmedhealth/PMHT0022230/. Accessed 23.06.2016.

22. World Cancer Research Fund/American Institute for Cancer Research. Continous Update Project Report. Food, Nutrition, Physical Activity, and the Prevention of Pancreatic Cancer. 2012. Available from: http://www.dietandcancerreport.org. Accessed 15.05.2016.

23. World Cancer Research Fund International. Pancreatic cancer statistics. Available from: http://www.wcrf.org/int/cancer-facts-figures/data-specific-cancers/pancreatic-cancer-statistics. Accessed 15.05.2016.

24. The Association of the Nordic Cancer Registries (ANCR). Cancer Fact Sheets. Nordic countries. Pancreatic cancer. Available from: http://www-dep.iarc.fr/NORDCAN/NO/StatsFact.asp?cancer=150&country=0. Accessed 15.05.2016.

25. The Association of the Nordic Cancer Registries (ANCR). Cancer Fact Sheets. Norway. Pancreatic cancer. Available from: http://www-dep.iarc.fr/NORDCAN/NO/StatsFact.asp?cancer=150&country=578. Accessed 15.05.2016.

26. The Association of the Nordic Cancer Registries (ANCR). Cancer Fact Sheets. Denmark. Pancreatic cancer. Available from: http://www-dep.iarc.fr/NORDCAN/NO/StatsFact.asp?cancer=150&country=208. Accessed 15.05.2016.

27. The Association of the Nordic Cancer Registries (ANCR). Cancer Fact Sheets. Sweden. Pancreatic cancer. Available from: http://www-dep.iarc.fr/NORDCAN/NO/StatsFact.asp?cancer=150&country=752. Accessed 15.05.2016.

28. The Association of the Nordic Cancer Registries (ANCR). Cancer Fact Sheets. Finland. Pancreatic cancer. Available from: http://www-dep.iarc.fr/NORDCAN/NO/StatsFact.asp?cancer=150&country=246. Accessed 15.05.2016.

29. Yeo TP, Lowenfels AB. Demographics and Epidemiology of Pancreatic Cancer. The Cancer Journal. 2012;18(6):477-84.

30. Lowenfels AB, Maisonneuve P. Epidemiology and risk factors for pancreatic cancer. Best Practice & Research Clinical Gastroenterology. 2006;20(2):197-209.

31. Casari I, Falasca M. Diet and Pancreatic Cancer Prevention. Cancers. 2015;7(4):0892.

32. Lei Q, Zheng H, Bi J, Wang X, Jiang T, Gao X, et al. Whole Grain Intake Reduces Pancreatic Cancer Risk: A Meta-Analysis of Observational Studies. Medicine. 2016;95(9):e2747.

33. Wang C-H, Qiao C, Wang R-C, Zhou W-P. Dietary fiber intake and pancreatic cancer risk: a meta-analysis of epidemiologic studies. Scientific Reports. 2015;5:10834.

34. Choi Y, Giovannucci E, Lee JE. Glycaemic index and glycaemic load in relation to risk of diabetes-related cancers: a meta-analysis. British Journal of Nutrition. 2012;108(11):1934-47.

35. Aune D, Chan DSM, Vieira AR, Navarro Rosenblatt DA, Vieira R, Greenwood DC, et al. Dietary fructose, carbohydrates, glycemic indices and pancreatic cancer risk: a systematic review and meta-analysis of cohort studies. Annals of Oncology. 2012;23(10):2536-46.

36. Merriam-Webster. Medical Dictionary. Medical Definition of retroperitoneum. Available from: http://www.merriam-webster.com/medical/retroperitoneum. Accessed 15.05.2016.

37. Food and Agriculture Organization of the United Nations. International Year of the Potato Secretariat. The Potato. Available from: ftp://ftp.fao.org/docrep/fao/011/i0500e/i0500e02.pdf. 16.05.2016.

38. Lyngø IJ, Bratberg E, editors. Det var en gang en potet…2008. Norsk Landbruksmuseum; 2008.

39. Zaheer K, Akhtar MH. Potato production, usage, nutrition-a Review. Critical Reviews in Food Science and Nutrition. 2014;56(5):711-21.

40. Food and Agriculture Organization of the United Nations. International Year of the POTATO 2008. Europe. Available from: http://www.fao.org/potato-2008/en/world/europe.html. Accessed 16.05.2016.

41. Food and Agriculture Organization of the United Nations. International Year of the POTATO 2008. Potato world. Available from: http://www.fao.org/potato-2008/en/world/. Accessed 16.05.2016.

42. PotatoPro.com. Denmark. Consumption Statistics. Available from: http://www.potatopro.com/denmark/potato-statistics. Accessed 26.05.2016.

43. PotatoPro.com. Norway. Consumption Statistics. Available from: http://www.potatopro.com/norway/potato-statistics. Accessed 26.05.2016.

44. POtatoPro.com. Sweden. Consumption statistics. Available from: http://www.potatopro.com/sweden/potato-statistics. Accessed 26.05.2016.

45. Wandel M, Fagerli R, Kjærnes U. Changes in potato consumption in different stages of life in Norway. Appetite. 2001;36(3):211-23.

46. Livsmedelsverket. RIKSMATEN - VUXNA 2010-11. Vad äter svenskarna? Livsmedels- och näringsintag bland vuxna i Sverige. 2012.

47. Totland TH, Melnes BK, Lundberg-Hallén N, Helland-Kigen KM. Norkost 3. En landsomfattende kostholdsundersøkelse blant menn og kvinner i Norge i alderen 18-70 år, 2010-11 (Nationwide dietary survey in Norway among men and women aged 18-70 years, 2010-11). Oslo: University of Oslo, Norwegian Food Safety Authority, Norwegian Directorate of Health, 2012.

48. Danmarks Fødevare- og Veterinærforskning. Afdeling for Ernæring. Udviklingen i danskernes kost 1985-2001. Med fokus på sukker og alkohol samt motivation. 2004.

49. King JC, Slavin JL. White Potatoes, Human Health, and Dietary Guidance. Advances in Nutrition: An International Review Journal. 2013;4(3):393S-401S.

50. Ezekiel R, Singh N, Sharma S, Kaur A. Beneficial phytochemicals in potato — a review. Food Research International. 2013;50(2):487-96.

51. McGill CR, Kurilich AC, Davignon J. The role of potatoes and potato components in cardiometabolic health: A review. Ann Med. 2013;45(7):467-73.

52. Tian J, Chen J, Ye X, Chen S. Health benefits of the potato affected by domestic cooking: A review. Food Chemistry. 2016;202:165-75.

53. Lawley R. Food Safety Watch. The science of safe food. Glycoalkaloids. 2013. Available from: http://www.foodsafetywatch.org/factsheets/glycoalkaloids/. Accessed 12.06.2016.

54. Food and Agriculture Organization of the United Nations. International Year of the POTATO 2008. Potatoes, nutrition and diet. Available from: http://www.fao.org/potato-2008/en/potato/factsheets.html. Accessed 16.06.2016.

55. Mottram DS, Wedzicha BL, Dodson AT. Food chemistry: Acrylamide is formed in the Maillard reaction. Nature. 2002;419(6906):448-9.

56. Stadler RH, Blank I, Varga N, Robert F, Hau J, Guy PA, et al. Food chemistry: Acrylamide from Maillard reaction products. Nature. 2002;419(6906):449-50.

57. IARC. IARC Monographs on the evaluation of carcinogenic risks to humans - some industrial chemicals. Lyon, France: 60;1994.

58. Lipworth L, Sonderman JS, Tarone RE, McLaughlin JK. Review of epidemiologic studies of dietary acrylamide intake and the risk of cancer. European Journal of Cancer Prevention. 2012;21(4):375-86.

59. EFSA (European Food Safety Authority). Outcome of the public consultation on the draft Scientific Opinion of the EFSA Panel on Contaminants in the Food Chain (CONTAM) on acrylamide in food. EFSA supporting publication 2015:EN-817, 95 pp.

60. Ludwig DS. The glycemic index: Physiological mechanisms relating to obesity, diabetes, and cardiovascular disease. JAMA. 2002;287(18):2414-23.

61. van Bakel MME, Kaaks R, Feskens EJM, Rohrmann S. Dietary glycaemic index and glycaemic load in the European Prospective Investigation into Cancer and Nutrition. Eur J Clin Nutr. 2009;63(S4):S188-S205.

62. Wirfält E, McTaggart A, Pala V, Gullberg B, Frasca G, Panico S, et al. Food sources of carbohydrates in a European cohort of adults. Public Health Nutr. 2002;5:1197-215.

63. OSU. Oregon State University. Micronutrient Information Center. Glycemic Index and Glycemic Load. 2016. Available from: http://lpi.oregonstate.edu/mic/food-beverages/glycemic-index-glycemic-load. Accessed 16.06.2016.

64. American Diabetes Association. Glycemic Index. Diabetes. Alexandria USA. Available from: http://www.diabetes.org/food-and-fitness/food/what-can-i-eat/understanding-carbohydrates/glycemic-index-and-diabetes.html?referrer=https://www.google.no/%20-%20sthash.bvC8wza4.dpuf. Accessed 16.06.2016.

65. Greenwood DC, Threapleton DE, Evans CEL, Cleghorn CL, Nykjaer C, Woodhead C, et al. Glycemic Index, Glycemic Load, Carbohydrates, and Type 2 Diabetes. Systematic review and dose–response meta-analysis of prospective studies. 2013;36(12):4166-71.

66. Gnagnarella P, Gandini S, La Vecchia C, Maisonneuve P. Glycemic index, glycemic load, and cancer risk: a meta-analysis. The American Journal of Clinical Nutrition. 2008;87(6):1793-801.

67. Pisani P. Hyper-insulinaemia and cancer, meta-analyses of epidemiological studies. Archives of Physiology and Biochemistry. 2008;114(1):63-70.

68. Stolzenberg-Solomon RZ, Graubard BI, Chari S, et al. INsulin, glucose, insulin resistance, and pancreatic cancer in male smokers. JAMA. 2005;294(22):2872-8.

69. Gapstur SM, Gann PH, Lowe W, Liu K, Colangelo L, Dyer A. ABnormal glucose metabolism and pancreatic cancer mortality. JAMA. 2000;283(19):2552-8.

70. Jee S, Ohrr H, Sull J, Yun J, Ji M, Samet JM. FAsting serum glucose level and cancer risk in korean men and women. JAMA. 2005;293(2):194-202.

71. Giovannucci E. Insulin, Insulin-Like Growth Factors and Colon Cancer: A Review of the Evidence. The Journal of Nutrition. 2001;131(11):3109S-20S.

72. Kaaks R, Lukanova A. Energy balance and cancer: the role of insulin and insulin-like growth factor-I. Proceedings of the Nutrition Society. 2001;60(01):91-106.

73. McCarl M, Harnack L, Limburg PJ, Anderson KE, Folsom AR. Incidence of Colorectal Cancer in Relation to Glycemic Index and Load in a Cohort of Women. Cancer Epidemiology Biomarkers & Prevention. 2006;15(5):892-6.

74. Michaud DS, Fuchs CS, Liu S, Willett WC, Colditz GA, Giovannucci E. Dietary Glycemic Load, Carbohydrate, Sugar, and Colorectal Cancer Risk in Men and Women. Cancer Epidemiology Biomarkers & Prevention. 2005;14(1):138-47.

75. Camire ME, Kubow S, Donnelly DJ. Potatoes and Human Health. Crit Rev Food Sci Nutr. 2009;49(10):823-40.

76. Borgi L, Rimm EB, Willett WC, Forman JP. Potato intake and incidence of hypertension: results from three prospective US cohort studies. BMJ. 2016;353.

77. Muraki I, Rimm EB, Willett WC, Manson JE, Hu FB, Sun Q. Potato Consumption and Risk of Type 2 Diabetes: Results From Three Prospective Cohort Studies. Diabetes Care. 2016;39(3):376-84.

78. Åkesson A, Andersen LF, Kristjánsdóttir ÁG, Roos E, Trolle E, Voutilainen E, et al. Health effects associated with foods characteristic of the Nordic diet: a systematic literature review. Food & Nutrition Research. 2013;57:10.3402/fnr.v57i0.22790.

79. Hagen ML. Poteter og livsstilssykdommer. En systematisk oversiktsartikkel. Norsk Tidsskrift for Ernæring. 2016;2.

80. Polesel J, Talamini R, Negri E, Bosetti C, Boz G, Lucenteforte E, et al. Dietary habits and risk of pancreatic cancer: an Italian case–control study. Cancer Causes & Control. 2010;21(4):493-500.

81. Williams CD, Satia JA, Adair LS, Stevens J, Galanko J, Keku TO, et al. Dietary patterns, food groups, and rectal cancer risk in Whites and African Americans. Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology. 2009;18(5):1552-61.

82. Steinmetz KA, Potter JD. Food-group consumption and colon cancer in the adelaide case-control study. I. Vegetables and fruit. International Journal of Cancer. 1993;53(5):711-9.

83. De Stefani E, Correa P, Boffetta P, Deneo-Pellegrini H, Ronco LA, Mendilaharsu M. Dietary patterns and risk of gastric cancer: a case-control study in Uruguay. Gastric Cancer. 2004;7(4):211-20.

84. Iablokov V, Sydora BC, Foshaug R, Meddings J, Driedger D, Churchill T, et al. Naturally Occurring Glycoalkaloids in Potatoes Aggravate Intestinal Inflammation in Two Mouse Models of Inflammatory Bowel Disease. Digestive Diseases and Sciences. 2010;55(11):3078-85.

85. Patel B SR, Sporns P, Doyle J, Jewel L, Fedorak RN. Potato glycoalkaloids adversely affect intestinal permeability and aggravate inflammatory bowel disease. Inflamm Bowel Dis. 2002;8(5):340-6.

86. Ullman TA, Itzkowitz SH. Intestinal Inflammation and Cancer. Gastroenterology. 2011;140(6):1807-16.e1.

87. Greer JB, Whitcomb DC. Inflammation and pancreatic cancer: an evidence-based review. Current Opinion in Pharmacology. 2009;9(4):411-8.

88. Bravi F, Bosetti C, Filomeno M, Levi F, Garavello W, Galimberti S, et al. Foods, nutrients and the risk of oral and pharyngeal cancer. British Journal of Cancer. 2013;109(11):2904-10.

89. Deneo-Pellegrini H, Boffetta P, De Stefani E, Ronco A, Brennan P, Mendilaharsu M. Plant foods and differences between colon and rectal cancers. European Journal of Cancer Prevention. 2002;11(4):369-75.

90. Hansen L, Skeie G, Landberg R, Lund E, Palmqvist R, Johansson I, et al. Intake of dietary fiber, especially from cereal foods, is associated with lower incidence of colon cancer in the HELGA cohort. International Journal of Cancer. 2012;131(2):469-78.

91. Balbi JC, Larrinaga MT, De Stefani E, Mendilaharsu M, Ronco AL, Boffetta P, et al. Foods and risk of bladder cancer: a case–control study in Uruguay. European Journal of Cancer Prevention. 2001;10(5):453-8.

92. Isa F, Xie L-P, Hu Z, Zhong Z, Hemelt M, Reulen RC, et al. Dietary consumption and diet diversity and risk of developing bladder cancer: results from the South and East China case–control study. Cancer Causes & Control. 2013;24(5):885-95.

93. Miller PE, Lesko SM, Muscat JE, Lazarus P, Hartman TJ. Dietary Patterns and Colorectal Adenoma and Cancer Risk: A Review of the Epidemiological Evidence. Nutrition and Cancer. 2010;62(4):413-24.

94. Afzaninawati Y, Zaleha MI, Shah SA. Dietary Patterns and Risk of Colorectal Cancer: A Systematic Review of Cohort Studies (2000-2011). Asian Pacific Journal of Cancer Prevention. 2012;13(9):4713-7.

95. Randi G, Edefonti V, Ferraroni M, La Vecchia C, Decarli A. Dietary patterns and the risk of colorectal cancer and adenomas. Nutrition Reviews. 2010;68(7):389-408.

96. Chan JM GZ, Holly EA, Bracci PM. Dietary patterns and risk of pancreatic cancer in a large population-based case-control study in the San Francisco Bay Area. Nutrition and cancer. 2013;65(1):157-64.

97. Nkondjock A, Krewski D, Johnson KC, Ghadirian P, Canadian Cancer Registries Epidemiology Research G. Dietary patterns and risk of pancreatic cancer. International Journal of Cancer. 2005;114(5):817-23.

98. Michaud DS, Skinner HG, Wu K, Hu F, Giovannucci E, Willett WC, et al. Dietary Patterns and Pancreatic Cancer Risk in Men and Women. Journal of the National Cancer Institute. 2005;97(7):518-24.

99. Inoue-Choi M, Flood A, Robien K, Anderson K. Nutrients, Food Groups, Dietary Patterns and Risk of Pancreatic Cancer in Postmenopausal Women. Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology. 2011;20(4):711-4.

100. Waijers PM FE, Ocke MC. A critical review of predifined diet quality scores. Br J Nutr. 2007;97:219-31.

101. Hu FB. Dietary pattern analysis: a new direction in nutritional epidemiology. Current Opinion in Lipidology. 2002;13(1):3-9.

102. Bountziouka V, Tzavelas G, Polychronopoulos E, Constantinidis TC, Panagiotakos DB. Validity of dietary patterns derived in nutrition surveys using a priori and a posteriori multivariate statistical methods. International Journal of Food Sciences and Nutrition. 2011;62(6):617-27.

103. Slimani N, Kaaks R, Ferrari P, Casagrande C, Clavel-Chapelon F, Lotze G, et al. European Prospective Investigation into Cancer and Nutrition (EPIC) calibration study: rationale, design and population characteristics. Public Health Nutrition. 2002;5(6b):1125-45.

104. Lund E, Dumeaux V, Braaten T, Hjartåker A, Engeset D, Skeie G, et al. Cohort Profile: The Norwegian Women and Cancer Study—NOWAC—Kvinner og kreft. Int J Epidemiol. 2008;37(1):36-41.

105. Hjartåker A. Comparison of diet measures from a food-frequency questionnaire with measures from repeated 24-hour dietary recalls. The Norwegian Women and Cancer Study. Public Health Nutr. 2007;10(10).

106. Brustad M, Skeie G, Braaten T, Slimani N, Lund E. Comparison of telephone vs face-to-face interviews in the assessment of dietary intake by the 24[emsp14]h recall EPIC SOFT program[mdash]the Norwegian calibration study. Eur J Clin Nutr. 2003;57(1):107-13.

107. Lund E, Kumle M, Braaten T, Hjartåker A, Bakken K, Eggen E, et al. External Validity in a Population-Based National Prospective Study: The Norwegian Women and Cancer Study (NOWAC). Cancer Causes Control. 2003;14(10):1001-8.

108. Winkvist A, Hörnell A, Hallmans G, Lindahl B, Weinehall L, I. J. More distinct food intake patterns among women than men in northern Sweden: a population-based survey Nutrition Journal. 2009;8(12).

109. Tjønneland A, Olsen A, Boll K, Stripp C, Christensen J, Engholm G, et al. Study design, exposure variables, and socioeconomic determinants of participation in Diet, Cancer and Health: A population-based prospective cohort study of 57,053 men and women in Denmark. Scandinavian Journal of Public Health. 2007;35(4):432-41.

110. Riboli E, Hunt K, Slimani N, Ferrari P, Norat T, Fahey M, et al. European Prospective Investigation into Cancer and Nutrition (EPIC): study populations and data collection. Public Health Nutrition. 2002;5(6b):1113-24.

111. Hallmans G AA, Johansson G, Johansson A, Stegmayr B, Jansson JH, Lindahl B, Rolandsson O, Söderberg S, Nilsson M, Johansson I, Weinehall L. Cardiovascular disease and diabetes in the Northern Sweden Health and Disease Study Cohort - evaluation of risk factors and their interactions. Scand J Public Health Suppl. 2003;61:18-24.

112. Kreftregisteret Oslo. Available from: https://www.kreftregisteret.no/. Accessed 26.06.2016.

113. Skatteetaten. Folkeregister. Available from: http://www.skatteetaten.no/se/Person/Folkeregister/. Accessed 26.06.2016.

114. Laake P HA, Thelle DS, Veierod MB. Epidemiologiske og kliniske forskningmetoder. Oslo, Norway: Gyldendal Norsk Forlag AS; 2007.

115. Willett W. Nutritional Epidemiology. 3 ed. New York: Oxford University Press; 2013.

116. Matvaretabellen 2016. Mattilsynet. Helsedirektoratet og Universitetet i Oslo. Available from: www.matvaretabellen.no. Accessed 26.06.2016.

117. Matportalen.no. Mål, vekt og porsjonsstørrelser for matvarer. Available from: http://www.matportalen.no/verktoy/kostholdsplanleggeren/maal_vekt_og_porsjonsstorrelser_for_matvarer-1. Accessed 26.06.2016.

118. Hjartåker A, Lund E. Relationship between dietary habits, age, lifestyle, and socioeconomic status among adult Norwegian women. The Norwegian Women and Cancer Study. European Journal of Clinical Nutrition. 1998;52(8):565-72.

119. Bergström L KE, Hagman U, Eriksson H, Bruce Å. The food composition data base system (KOST-systemet) – its use for nutrient values. . Vår Föda. 1991;43:439-47.

120. Lake A, Townshend T. Obesogenic environments: exploring the built and food environments. The Journal of the Royal Society for the Promotion of Health. 2006;126(6):262-7.

121. National Heart, Lung and Blood Institute. What is Metabolic Syndrome? : National Institute of Health. Available from: http://www.nhlbi.nih.gov/health/health-topics/topics/ms. Accessed 26.06.2016.

122. Maki KC, Slavin JL, Rains TM, Kris-Etherton PM. Limitations of Observational Evidence: Implications for Evidence-Based Dietary Recommendations. Advances in Nutrition: An International Review Journal. 2014;5(1):7-15.

123. Jekel JF KD, Elmore, JG, Wild DMG. Epidemiology, Biostatistics, and Preventive Medicine. 3 ed. Philadelphia: Saunders Elsevier; 2007.

124. Szklo M NF. Epidemiology. Beyond the Basics. 3 ed. Burlington: Jones & Bartlett Learning; 2014.

125. Grimes DA, Schulz KF. Bias and causal associations in observational research. The Lancet. 2002;359(9302):248-52.

126. Weinehall L HC, Westman G, Janlert U, Wall S. Reduction of selection bias in primary prevention of cardiovascular disease through involvement of primary health care. Scand J Prim Health Care. 1998;16(3):171-6.

127. Pearce N, Checkoway H, Kriebel D. Bias in occupational epidemiology studies. Occupational and Environmental Medicine. 2007;64(8):562-8.

128. Van Guelpen B, Hultdin J, Johansson I, Stegmayr B, Hallmans G, K. Nilsson T, et al. Folate, Vitamin B12, and Risk of Ischemic and Hemorrhagic Stroke: A Prospective, Nested Case-Referent Study of Plasma Concentrations and Dietary Intake. Stroke. 2005;36(7):1426-31.

129. Lundqvist A, Andersson E, Ahlberg I, Nilbert M, Gerdtham U. Socioeconomic inequalities in breast cancer incidence and mortality in Europe—a systematic review and meta-analysis. The European Journal of Public Health. 2016. pii: ckw070.

130. Grimm P. Social Desirability Bias. Wiley International Encyclopedia of Marketing: John Wiley & Sons, Ltd; 2010.

131. Rylander C, Sandanger TM, Engeset D, Lund E. Consumption of Lean Fish Reduces the Risk of Type 2 Diabetes Mellitus: A Prospective Population Based Cohort Study of Norwegian Women. PLoS One. 2014;9(2):e89845.

132. Lund E GI. Resonse rate according to title and length of questionnaire. Scand J Soc med. 1998;26.

133. Parr C, Veierod M, Laake P, Lund E, Hjartaker A. Test-retest reproducibility of a food frequency questionnaire (FFQ) and estimated effects on disease risk in the Norwegian Women and Cancer Study (NOWAC). Nutr J. 2006;5(1):4.

134. Johansson I HG, Wikman A, Biessy C, Riboli E, Kaaks R. Validation and calibration of food-frequency questionnaire measurements in the Northern Sweden Health and Disease cohort. Public Health Nutrition. 2002;5(3):487-96.

135. Tjønneland A, Overvad K, Haraldsdòttir J, Bang S, Ewertz M, Jensen O. Validation of a Semiquantitative Food Frequency Questionnaire Developed in Denmark. International Journal of Epidemiology. 1991;20(4):906-12.

136. American Diabetes Association. ADA Issues New Clinical Practice Recommendations. 2007. Available from: http://www.diabetes.org/newsroom/press-releases/2007/new-clinical-practice-recommendations-122807.html. 27.06.2016.

137. Gorber SC, Tremblay M, Moher D, Gorber B. A comparison of direct vs. self-report measures for assessing height, weight and body mass index: a systematic review. Obes Rev. 2007;8(4):307-26.

138. Skeie G, Mode N, Henningsen M, Borch K. Validity of self-reported body mass index among middle-aged participants in the Norwegian Women and Cancer Study. Clinical Epidemiology 2015;7:313-23.

139. Bhopal R. Concepts of epidemiology. United Kingdom: Oxford; 2008.

140. National Cancer Institute. NCI Dictionary of Cancer Terms. Available from: http://www.cancer.gov/publications/dictionaries/cancer-terms?CdrID=306510. 27.06.2016.

141. Willett WC, Howe GR, Kushi LH. Adjustment for total energy intake in epidemiologic studies. The American Journal of Clinical Nutrition. 1997;65(4):1220S-8S.

142. Royston P LP. Flexible Parametric Survival Analysis Using Stata: Beyond the cox Model Stata Press; 2011.

143. de Magalhaes JP. How ageing processes influence cancer. Nat Rev Cancer. 2013;13(5):357-65.

144. Peto J. Cancer epidemiology in the last century and the next decade. Nature. 2001;411(6835):390-5.

145. Peto R, Doll R. There is no such thing as aging. BMJ. 1997;315:1030-2.

146. Bosetti C, Bravi F, Turati F, Edefonti V, Polesel J, Decarli A, et al. Nutrient-based dietary patterns and pancreatic cancer risk. Annals of Epidemiology. 2013;23(3):124-8.

APPENDIX 1

Example of invitation letter in NOWAC

INSTITUTT FOR SAMFUNNSMEDISIN
UNIVERSITETET I TROMSØ
9037 TROMSØ
Telefon 77 64 48 16

KVINNER OG KREFT

Orientering om undersøkelsen

Institutt for samfunnsmedisin ved Universitetet i Tromsø gjennomfører en spørreundersøkelse om levesett og kreft blant norske kvinner. En slik undersøkelse gir et verdifullt grunnlag for å studere mulige sammenhenger mellom f. eks. barnefødsler, p-piller, solvaner og utviklingen av kreftsykdommer som særlig rammer kvinner. Resultatene vil bli publisert i dagspressen og i internasjonale fagtidsskrifter. Ansvarlig for undersøkelsen er professor Eiliv Lund.

Du forespørres hermed om å delta i undersøkelsen. Alle som blir forespurt er trukket ut tilfeldig. Statistisk Sentralbyrå har trukket utvalget og står for utsending av spørreskjemaene.
Med noen års mellomrom fram til 2017 vil vi sammenholde opplysningene som er gitt i undersøkelsen med opplysninger fra Kreftregisteret og Dødsårsaksregisteret. Alle opplysninger fra undersøkelsen og fra registrene vil bli behandlet konfidensielt og etter de regler Datatilsynet har gitt i sin tillatelse. På spørreskjemaet er navn og fødselsnummer erstattet med et løpenummer slik at ingen av de som mottar og tar hånd om skjemaene vil kjenne din identitet. Undersøkelsen er tilrådd av den regionale etiske komite for Nord-Norge.

Vi vil be deg om å besvare det vedlagte spørreskjemaet så riktig som mulig. Dersom ingen av oppgitte svaralternativ dekker din situasjon, sett kryss for det alternativet som ligger nærmest. Gi eventuelt tilleggsopplysninger i skjemaet. Du behøver ikke å svare på alle spørsmål.

Vi spør også alle som deltar om tillatelse til fornyet skriftlig kontakt om noen år i form av et liknende spørreskjema. For et mindre, tilfeldig utvalg ønsker vi i tillegg mer detaljerte opplysninger om siste døgns kosthold.

Det er frivillig om du vil være med i undersøkelsen. Det er også adgang til å trekke seg senere, hvis du skulle ønske det. Du kan få slettet dine opplysninger hvis du krever det.

Ditt bidrag til undersøkelsen vil være å svare på spørsmålene i det spørreskjemaet som følger med. For spørsmål om hormoner og p-pille bruk finner du bilder i denne brosjyren som skal være et hjelpemiddel til å svare riktig (brosjyren skal ikke returneres). Spørreskjemaet returneres i vedlagte konvolutt med betalt svarporto.

Med hilsen

Eiliv Lund
Professor dr. med.

APPENDIX 2

Example of questionnaire in NOWAC

Vinter 2004

KVINNER OG KREFT

KONFIDENSIELT

Hvis du samtykker i å være med, sett kryss for JA i ruten ved siden av. Dersom du ikke ønsker å delta kan du unngå purring ved å sette kryss for NEI og returnere skjemaet i vedlagte svarkonvolutt.
Vi ber deg fylle ut spørreskjemaet så nøye som mulig.

Skjemaet skal leses optisk. Vennligst bruk blå eller sort penn.
Du kan ikke bruke komma, bruk blokkbokstaver.

Med vennlig hilsen
Eiliv Lund
Professor dr. med

Jeg samtykker i å delta i spørreskjemaundersøkelsen JA ☐ NEI ☐

Forhold i oppveksten

I hvilken kommune har du bodd lengre enn ett år?

		Alder		
1. Fødested:	Fra	0 år til		år
2.	Fra	år til		år
3.	Fra	år til		år
4.	Fra	år til		år
5.	Fra	år til		år
6.	Fra	år til		år
7.	Fra	år til		år

Høyde og vekt

Hvor høy er du? (i hele cm.) .....

Hvor mye veide du da du var 18 år? (i hele kg.)

Hvor mye veier du i dag? (i hele kg.) .....

Kroppstype i 1. klasse. (Sett ett kryss)

☐ veldig tynn ☐ tynn ☐ normal ☐ tykk ☐ veldig tykk

Selvopplevd helse

Oppfatter du din egen helse som; (Sett ett kryss)

Meget god ☐ God ☐ Dårlig ☐ Meget dårlig ☐

Menstruasjonsforhold

Hvor gammel var du da du fikk menstruasjon første gang?

Hvor mange år tok det før menstruasjonen ble regelmessig?

☐ Ett år eller mindre ☐ Mer enn ett år
☐ Aldri ☐ Husker ikke

Overgangsalder

Har du regelmessig menstruasjon fremdeles?

☐ Ja ☐ Har uregelmessig menstruasjon
☐ Vet ikke (menstruasjon uteblitt pga. sykdom o.l.)
☐ Bruk av hormonpreparat med østrogen
☐ Nei

Hvis Nei;

har den stoppet av seg selv? ..... ☐
operert vekk eggstokkene? ..... ☐
operert vekk livmoren? ..... ☐
annet? ..... ☐

Alder da menstruasjonen opphørte?

Graviditeter, fødsler og amming

Har du noen gang vært gravid? Ja ☐ Nei ☐

Hvis Ja; fyll ut for hvert barn du har født opplysninger om fødselsår og antall måneder du ammet (fylles også ut for dødfødte eller for barn som er døde senere i livet). Dersom du ikke har født barn fortsetter du ved neste spørsmål.

Barn	Fødselsår	Antall måneder med amming	Barn	Fødselsår	Antall måneder med amming
1			5		
2			6		
3			7		
4			8		

Bruk av hormonpreparater med østrogen i overgangsalderen

Har du noen gang brukt østrogen-tabletter/plaster? ..... Ja ☐ Nei ☐

Hvis Ja; hvor mange år har du brukt østrogentabletter/plaster i alt? .....

Hvor gammel var du første gang du brukte østrogentabletter/plaster? .....

Bruker du tabletter/plaster nå? ..... Ja ☐ Nei ☐

UTFYLLENDE SPØRSMÅL TIL ALLE SOM HAR BRUKT ELLER BRUKER PREPARATER MED ØSTROGEN I FORM AV TABLETTER ELLER PLASTER.

Hvis du har svart «nei» på spørsmålene om hormonbruk i overgangsalderen, kan du gå videre til spørsmålene under «**P-piller**». Har du svart «ja», ber vi deg utdype dette nærmere ved å svare på spørsmålene nedenfor. For hver periode med sammenhengende bruk av samme hormonpreparat håper vi du kan si oss hvor gammel du var da du startet, hvor lenge du brukte det samme hormonpreparatet og navnet på dette. Dersom du har hatt opphold eller skiftet merke skal du besvare spørsmålene for en ny periode. Dersom du ikke husker navnet på hormonpreparatet, sett «usikker». For å hjelpe deg til å huske navnet på hormonpreparatene ber vi deg bruke den vedlagte brosjyre som viser bilder av hormonpreparater som har vært solgt i Norge. Vennligst oppgi også nummer på hormontabletten/plasteret som står i brosjyren.

Periode	Alder ved start	Brukt samme hormontablett/plaster/ sammenhengende år	måned	Nr.	Hormontablett/ plaster/ (se brosjyre) Navn
1.					
2.					
3.					
4.					
5.					

P-pillebruk

Har du brukt p-piller eller minipiller? ..... Ja ☐ Nei ☐

Hvis ja, hvor mange år har du brukt p-piller i alt .....

Bruker du p-piller nå? ..... Ja ☐ Nei ☐

For p-pillebruk ønsker vi å få vite navnet på p-pillen, årstallet du startet å bruke den og hvor lenge du brukte dette merket sammenhengende. Dersom du har hatt opphold eller skiftet merke start på ny linje. For å hjelpe deg å huske navnet ber vi deg bruke den vedlagte brosjyren. Vennligst oppgi nummeret på p-pillen.

Periode	Alder ved start	Brukt samme p-piller sammenhengende år	måned	Nr.	P-piller (se brosjyre) Navn
1.					
2.					
3.					
4.					
5.					
6.					

Hormonspiral

Har du noen gang brukt hormonspiral (Levonova)? ..... Ja ☐ Nei ☐

Hvis Ja; hvor mange hele år har du brukt hormonspiral i alt? .....

Hvor gammel var du første gang du fikk innsatt hormonspiral?

Bruker du hormonspiral nå? ..... Ja ☐ Nei ☐

Østrogenpreparat til lokal bruk i skjeden

Har du noen gang brukt østrogen-krem/stikkpille? ..... Ja ☐ Nei ☐

Hvis Ja; bruker du krem/stikkpille nå? ..... Ja ☐ Nei ☐

Andre legemidler

Bruker du noen av disse legemidlene daglig nå?

Fontex, Fluoxetin ..... Ja ☐ Nei ☐

Cipramil, Citalopram, Desital ..... Ja ☐ Nei ☐

Seroxat, Paroxetin ..... Ja ☐ Nei ☐

Zoloft ..... Ja ☐ Nei ☐

Fevarin ..... Ja ☐ Nei ☐

Cipralex ..... Ja ☐ Nei ☐

Hvis Ja; hvor lenge har du brukt dette legemidlet sammenhengede? Måneder ☐ År ☐

Har du benyttet noen av disse legemidlene tidligere? Ja ☐ Nei ☐

Hvis Ja; hvor lenge har du benyttet disse legemidlene i alt? År ☐

Sykdom

Har du eller har du hatt noen av følgende sykdommer?

	Ja	Nei	Hvis ja: Alder ved start
Kreft	☐	☐	
Høyt blodtrykk	☐	☐	
Hjertesvikt/hjertekrampe	☐	☐	
Hjerteinfarkt	☐	☐	
Slag	☐	☐	
Sukkersyke (diabetes)	☐	☐	
Depresjon (oppsøkt lege)	☐	☐	

Røykevaner

Har du i løpet av livet røykt mer enn 100 sigaretter til sammen? Ja ☐ Nei ☐

Hvor gammel var du da du tok din første sigarett? ☐☐

Hvis Ja, ber vi deg om å fylle ut for hver aldersgruppe i livet hvor mange sigaretter du i gjennomsnitt røykte pr. dag i den perioden.

Antall sigaretter hver dag

Alder	0	1-4	5-9	10-14	15-19	20-24	25+
10-14	☐	☐	☐	☐	☐	☐	☐
15-19	☐	☐	☐	☐	☐	☐	☐
20-29	☐	☐	☐	☐	☐	☐	☐
30-39	☐	☐	☐	☐	☐	☐	☐
40-49	☐	☐	☐	☐	☐	☐	☐
50+	☐	☐	☐	☐	☐	☐	☐

	Ja	Nei
Røyker du daglig nå?	☐	☐
Røykte noen av dine foreldre da du var barn?	☐	☐

Hvis Ja, hvor mange sigaretter røykte de til sammen pr. dag? ☐☐

Brystkreft i nærmeste familie

Har noen nære slektninger hatt brystkreft?

	Ja	Nei	Vet ikke	Alder ved start
Datter	☐	☐	☐	☐☐
Mor	☐	☐	☐	☐☐
Søster	☐	☐	☐	☐☐

Mammografiundersøkelse

Har du vært til undersøkelse av brystene med mammografi Ja ☐ Nei ☐

Hvis Ja;
hvor gammel var du første gangen? (hele år) ☐☐

Hvor mange ganger har du vært undersøkt?

-etter invitasjon fra Mammografiprogrammet ☐☐

-etter henvisning fra lege ☐☐

-uten henvisning fra lege ☐☐

Fysisk aktivitet

Vi ber deg angi din fysiske aktivitet etter en skala fra svært lite til svært mye. Skalaen nedenfor går fra 1-10. Med fysisk aktivitet mener vi både arbeid i hjemmet og i yrkeslivet, samt trening og annen fysisk aktivitet som turgåing o.l. Sett kryss over det tallet som best angir ditt nivå av fysisk aktivitet.

Alder	Svært lite									Svært mye
14 år	1	2	3	4	5	6	7	8	9	10
30 år	1	2	3	4	5	6	7	8	9	10
I dag	1	2	3	4	5	6	7	8	9	10

Hvor mange timer <u>pr. dag</u> i gjennomsnitt går eller spaserer du utendørs?

	sjelden/ aldri	mindre enn 1/2 time	1/2-1 time	1-2 timer	mer enn 2 timer
Vinter	☐	☐	☐	☐	☐
Vår	☐	☐	☐	☐	☐
Sommer	☐	☐	☐	☐	☐
Høst	☐	☐	☐	☐	☐

For hver av følgende aktiviteter du deltar i, ber vi deg oppgi <u>hvor mange minutter pr. dag</u> du bruker i gjennomsnitt til hver av aktivitetene.

Fritidsaktivitet	Vinter	Vår	Sommer	Høst
Se på TV	☐☐	☐☐	☐☐	☐☐
Lesing	☐☐	☐☐	☐☐	☐☐
Håndarbeid/hobby	☐☐	☐☐	☐☐	☐☐
Hagearbeid	☐☐	☐☐	☐☐	☐☐
Dusj/bad/egenpleie	☐☐	☐☐	☐☐	☐☐
Trening/jogging	☐☐	☐☐	☐☐	☐☐
Sykling	☐☐	☐☐	☐☐	☐☐

Hvor mange hele timer pr. <u>dag</u> bruker du på <u>arbeidsplassen</u> i gjennomsnitt til å

Sitte ☐

Stå ☐

Gå ☐

Løfte ☐

Tunge løft/pleie ☐

Hvor mange trapper (hele etasjer) går du i gjennomsnitt pr. dag. ☐

Kosthold

Påvirker noen av følgende forhold kostholdet ditt?
(sett gjerne flere kryss)

- ☐ Er vegetarianer/veganer
- ☐ Har anoreksi
- ☐ Spiser ikke norsk kost til daglig
- ☐ Har allergi/intoleranse
- ☐ Har bulimi
- ☐ Kronisk sykdom
- ☐ Prøver å gå ned i vekt

Vi er interessert i å få kjennskap til hvordan kostholdet ditt er vanligvis. Kryss av for hvert spørsmål om hvor ofte du i gjennomsnitt siste året har brukt den aktuelle matvaren, og hvor mye du pleier å spise/drikke hver gang.

Hvor mange glass melk drikker du vanligvis av hver type? (Sett ett kryss pr. linje)

	aldri/ sjelden	1-4 pr. uke	5-6 pr. uke	1 pr. dag	2-3 pr. dag	4+ pr. dag
Helmelk (søt, sur)	☐	☐	☐	☐	☐	☐
Lettmelk (søt, sur)	☐	☐	☐	☐	☐	☐
Ekstra lettmelk	☐	☐	☐	☐	☐	☐
Skummet (søt, sur)	☐	☐	☐	☐	☐	☐

Hvor mange kopper kaffe/te drikker du vanligvis av hver sort? (Sett ett kryss for hver linje)

	aldri/ sjelden	1-6 pr. uke	1 pr. dag	2-3 pr. dag	4-5 pr. dag	6-7 pr. dag	8+ pr. dag
Kokekaffe	☐	☐	☐	☐	☐	☐	☐
Traktekaffe	☐	☐	☐	☐	☐	☐	☐
Pulverkaffe	☐	☐	☐	☐	☐	☐	☐
Svart te	☐	☐	☐	☐	☐	☐	☐
Grønn te	☐	☐	☐	☐	☐	☐	☐

Bruker du til kaffe eller te følgende:

	Kaffe		Te	
Sukker (ikke kunstig søtstoff	☐ Ja	☐ Nei	☐ Ja	☐ Nei
Melk eller fløte	☐ Ja	☐ Nei	☐ Ja	☐ Nei

Hvor mange glass vann drikker du vanligvis?
(Sett ett kryss for hver linje)

	aldri/ sjelden	1-3 pr. uke	4-6 pr. uke	1 pr. dag	2-3 pr. dag	4+ pr. dag
Springvann/flaskevann	☐	☐	☐	☐	☐	☐

Hvor mange glass appelsinjuice, saft og brus drikker du vanligvis? (Sett ett kryss for hver linje)

	aldri/ sjelden	1-3 pr. uke	4-6 pr. uke	1 pr. dag	2-3 pr. dag	4+ pr. dag
Appelsinjuice	☐	☐	☐	☐	☐	☐
Saft/brus med sukker	☐	☐	☐	☐	☐	☐
Saft/brus sukkerfri	☐	☐	☐	☐	☐	☐

Hvor ofte spiser du yoghurt (1 beger)? (Sett ett kryss)

☐ Aldri/sjelden ☐ 1 pr. uke ☐ 2-3 pr. uke ☐ 4+ pr. uke

Hvor ofte spiser du kornblanding, havregryn eller müsli? (Sett ett kryss)

☐ Aldri/sjelden ☐ 1-3 pr. uke ☐ 4-6 pr. uke ☐ 1 pr. dag

Hvor mange skiver brød/rundstykker og knekkebrød/skonrokker spiser du vanligvis?
(1/2 rundstykke = 1 brødskive) (Sett ett kryss for hver linje)

	aldri/ sjelden	1-4 pr. uke	5-7 pr. uke	2-3 pr. dag	4-5 pr. dag	6+ pr. dag
Grovt brød	☐	☐	☐	☐	☐	☐
Kneipp/halvfint	☐	☐	☐	☐	☐	☐
Fint brød	☐	☐	☐	☐	☐	☐
Knekkebrød o.l.	☐	☐	☐	☐	☐	☐

Nedenfor er det spørsmål om bruk av ulike påleggstyper. Vi spør om hvor mange brødskiver med det aktuelle pålegget du pleier å spise. Dersom du også bruker matvarene i andre sammenhenger enn til brød (f. eks. til vafler, frokostblandinger, grøt), ber vi om at du tar med dette når du besvarer spørsmålene.

På hvor mange brødskiver bruker du? (Sett ett kryss pr. linje)

	0 pr. uke	1-3 pr. uke	4-6 pr. uke	1 pr. dag	2-3 pr. dag	4+ pr. dag
Syltetøy	☐	☐	☐	☐	☐	☐
Brun ost, helfet	☐	☐	☐	☐	☐	☐
Brunost, halvfet/mager	☐	☐	☐	☐	☐	☐
Hvitost, helfet	☐	☐	☐	☐	☐	☐
Hvitost, halvfet/mager	☐	☐	☐	☐	☐	☐
Kjøttpålegg, Leverpostei	☐	☐	☐	☐	☐	☐
Rekesalat, italiensk o.l.	☐	☐	☐	☐	☐	☐

På hvor mange brødskiver pr. uke har du i gjennomsnitt siste året spist? (Sett ett kryss pr. linje)

	0 pr. uke	1 pr.uke	2-3 pr.uke	4-6 pr.uke	7-9 pr.uke	10+ pr.uke
Makrell i tomat, røkt makrell	☐	☐	☐	☐	☐	☐
Kaviar	☐	☐	☐	☐	☐	☐
Sild/Ansjos	☐	☐	☐	☐	☐	☐
Laks (gravet/røkt)	☐	☐	☐	☐	☐	☐
Annet fiskepålegg	☐	☐	☐	☐	☐	☐

Hva slags fett bruker du vanligvis på brødet?
(Sett gjerne flere kryss)

- ☐ Bruker ikke fett på brødet
- ☐ Smør
- ☐ Hard margarin (f. eks. Per, Melange)
- ☐ Myk margarin (f. eks. Soft, Vita, Solsikke)
- ☐ Smørblandet margarin (f.eks. Bremyk)
- ☐ Brelett
- ☐ Lettmargarin (f. eks. Soft light, Letta)
- ☐ Middels lett margarin (f. eks. Olivero, Omega)

Dersom du bruker fett på brødet, hvor tykt lag pleier du å smøre på? (En kuvertpakke med margarin veier 12 gram).
(Sett ett kryss)

☐ Skrapet (3 g) ☐ Tynt lag (5 g) ☐ Godt dekket (8 g) ☐ Tykt lag (12 g)

Hvor ofte spiser du frukt? (Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr.mnd.	1 pr.uke	2-4 pr.uke	5-6 pr.uke	1 pr.dag	2+ pr. dag
Epler/pærer	☐	☐	☐	☐	☐	☐	☐
Appelsiner o.l.	☐	☐	☐	☐	☐	☐	☐
Bananer	☐	☐	☐	☐	☐	☐	☐
Annen frukt	☐	☐	☐	☐	☐	☐	☐

Hvor ofte spiser du ulike typer grønnsaker?
(Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr.mnd.	1 pr.uke	2 pr.uke	3 pr.uke	4-5 pr.uke	6-7 pr. uke
Gulrøtter	☐	☐	☐	☐	☐	☐	☐
Kål	☐	☐	☐	☐	☐	☐	☐
Kålrot	☐	☐	☐	☐	☐	☐	☐
Brokkoli/blomkål	☐	☐	☐	☐	☐	☐	☐
Blandet salat	☐	☐	☐	☐	☐	☐	☐
Tomat	☐	☐	☐	☐	☐	☐	☐
Grønnsakblanding (frossen)	☐	☐	☐	☐	☐	☐	☐
Andre grønnsaker	☐	☐	☐	☐	☐	☐	☐

For de grønnsakene du spiser, kryss av for hvor mye du spiser hver gang. (Sett ett kryss for hver sort)

- gulrøtter	☐ 1/2 stk.	☐ 1 stk.	☐ 1 1/2 stk.	☐ 2+ stk.
- kål	☐ 1/2 dl	☐ 1 dl	☐ 1 1/2 dl	☐ 2+ dl
- kålrot	☐ 1/2 dl	☐ 1 dl	☐ 1 1/2 dl	☐ 2+ dl
- brokkoli/blomkål	☐ 1-2 buketter	☐ 3-4 buketter	☐ 5+ buketter	
- blandet salat	☐ 1 dl	☐ 2 dl	☐ 3 dl	☐ 4+ dl
- tomat	☐ 1/4	☐ 1/2	☐ 1	☐ 2+
- grønnsakblanding	☐ 1/2 dl	☐ 1 dl	☐ 2 dl	☐ 3+ dl

Hvor mange poteter spiser du vanligvis (kokte, stekte, mos)? (Sett ett kryss)

☐ Spiser ikke/spiser sjelden poteter
☐ 1-4 pr. uke ☐ 5-6 pr. uke ☐ 1 pr. dag ☐ 2 pr. dag
☐ 3 pr. dag ☐ 4+ pr. dag

Hvor ofte bruker du ris og spagetti/makaroni ?
(Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2 pr. uke	3+ pr. uke
Ris	☐	☐	☐	☐	☐
Spagetti, makaroni, nudler	☐	☐	☐	☐	☐

Hvor ofte spiser du grøt ? (Sett ett kryss pr. linje)

	aldri/ sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2-6 pr. uke	1+ pr. dag
Risengrynsgrøt	☐	☐	☐	☐	☐	☐
Annen grøt (havre o.l.)	☐	☐	☐	☐	☐	☐

Fisk

Vi vil gjerne vite hvor ofte du pleier å spise fisk, og ber deg fylle ut spørsmålene om fiskeforbruk så godt du kan. Tilgangen på fisk kan variere gjennom året. Vær vennlig å markere i hvilke årstider du spiser de ulike fiskeslagene.

	aldri/ sjelden	like mye hele året	vinter	vår	sommer	høst
Torsk, sei, hyse, lyr	☐	☐	☐	☐	☐	☐
Steinbit, flyndre, uer	☐	☐	☐	☐	☐	☐
Laks, ørret	☐	☐	☐	☐	☐	☐
Makrell	☐	☐	☐	☐	☐	☐
Sild	☐	☐	☐	☐	☐	☐
Annen fisk	☐	☐	☐	☐	☐	☐

Med tanke på de periodene av året der du spiser fisk, hvor ofte pleier du å spise følgende til middag?
(Sett ett kryss pr. linje)

	aldri/ sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2+ pr. uke
Kokt torsk, sei, hyse, lyr	☐	☐	☐	☐	☐
Stekt torsk, sei, hyse, lyr	☐	☐	☐	☐	☐
Steinbit, flyndre, uer	☐	☐	☐	☐	☐
Laks, ørret	☐	☐	☐	☐	☐
Makrell	☐	☐	☐	☐	☐
Sild	☐	☐	☐	☐	☐
Annen fisk	☐	☐	☐	☐	☐

Dersom du spiser fisk, hvor mye spiser du vanligvis pr. gang? (1 skive/stykke = 150 gram)

Kokt fisk (skive) ☐ 1 ☐ 1,5 ☐ 2 ☐ 3+

Stekt fisk (stykke) ☐ 1 ☐ 1,5 ☐ 2 ☐ 3+

Hvor mange ganger pr. år spiser du fiskeinnmat?
(Sett ett kryss pr. linje)

	0	1-3	4-6	7-9	10+
Rogn	☐	☐	☐	☐	☐
Fiskelever	☐	☐	☐	☐	☐

Dersom du spiser fiskelever, hvor mange spiseskjeer pleier du å spise hver gang? (Sett ett kryss)

1	2	3-4	5-6	7+
☐	☐	☐	☐	☐

Hvor ofte bruker du følgende typer fiskemat?
(Sett ett kryss pr. linje)

	aldri/ sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2+ pr. uke
Fiskekaker/pudding/boller	☐	☐	☐	☐	☐
Plukkfisk/fiskegrateng	☐	☐	☐	☐	☐
Frityrfisk/fiskepinner	☐	☐	☐	☐	☐
Andre fiskeretter	☐	☐	☐	☐	☐

Hvor stor mengde pleier du vanligvis å spise av de ulike rettene? (Sett ett kryss for hver linje)

- fiskekaker/pudding/boller (stk.) (2 fiskeboller=1 fiskekake)	☐ 1	☐ 2	☐ 3	☐ 4+
- plukkfisk, fiskegrateng (dl)	☐ 1-2	☐ 3-4	☐ 5+	
- frityrfisk, fiskepinner (stk.)	☐ 1-2	☐ 3-4	☐ 5-6	☐ 7+

I tillegg til informasjon om fiskeforbruk er det viktig å få kartlagt hvilket tilbehør som blir servert til fisk. Hvor ofte bruker du følgende til fisk? (Sett ett kryss pr. linje)

	aldri/ sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2+ pr. uke
Smeltet smør	☐	☐	☐	☐	☐
Smeltet eller fast margarin/fett	☐	☐	☐	☐	☐
Seterrømme (35%)	☐	☐	☐	☐	☐
Lettrømme (20%)	☐	☐	☐	☐	☐
Saus med fett (hvit/brun)	☐	☐	☐	☐	☐
Saus uten fett (hvit/brun)	☐	☐	☐	☐	☐

For de ulike typene tilbehør du bruker til fisk, vær vennlig å kryss av for hvor mye du vanligvis pleier å spise.

- smeltet smør (ss)	☐ 1/2	☐ 1	☐ 2	☐ 3	☐ 4+
- smeltet margasin (ss)	☐ 1/2	☐ 1	☐ 2	☐ 3	☐ 4+
- seterrømme (ss)	☐ 1/2	☐ 1	☐ 2	☐ 3	☐ 4+
- lettrømme (ss)	☐ 1/2	☐ 1	☐ 2	☐ 3	☐ 4+
- saus med fett (dl)	☐ 1/4	☐ 1/2	☐ 3/4	☐ 1	☐ 2+
- saus uten fett (dl)	☐ 1/4	☐ 1/2	☐ 3/4	☐ 1	☐ 2+

Hvor ofte spiser du skalldyr (f. eks. reker, krabbe og skjell)**?** (Sett ett kryss)

☐ Aldri/sjelden ☐ 1 pr. mnd ☐ 2-3 pr. mnd ☐ 1+ pr. uke

Andre matvarer

Hvor ofte spiser du reinkjøtt?

☐ Aldri/sjelden ☐ 1 pr. mnd. ☐ 2-3 pr. mnd. ☐ 1 pr. uke
☐ 2-3 pr. uke ☐ 4+ pr. uke

Hvor ofte spiser du følgende kjøtt- og fjærkreretter? (Sett ett kryss for hver rett)

	aldri/ sjelden	1 pr.mnd.	2-3 pr.mnd.	1 pr.uke	2+ pr.uke
Steik (okse, svin, får)	☐	☐	☐	☐	☐
Koteletter	☐	☐	☐	☐	☐
Biff	☐	☐	☐	☐	☐
Kjøttkaker, karbonader	☐	☐	☐	☐	☐
Pølser	☐	☐	☐	☐	☐
Gryterett, lapskaus	☐	☐	☐	☐	☐
Pizza med kjøtt	☐	☐	☐	☐	☐
Kylling	☐	☐	☐	☐	☐
Andre kjøttretter	☐	☐	☐	☐	☐

Dersom du spiser følgende retter, oppgi mengden du vanligvis spiser: (Sett ett kryss for hver linje)

- steik (skiver)	☐ 1	☐ 2	☐ 3	☐ 4+
- koteletter (stk.)	☐ 1/2	☐ 1	☐ 1,5	☐ 2+
- kjøttkaker, karbonader (stk.)	☐ 1	☐ 2	☐ 3	☐ 4+
- pølser (stk. à 150g)	☐ 1/2	☐ 1	☐ 1,5	☐ 2+
- gryterett, lapskaus (dl)	☐ 1-2	☐ 3	☐ 4	☐ 5+
- pizza m/kjøtt (stykke à 100 g)	☐ 1	☐ 2	☐ 3	☐ 4+

Hvor mange egg spiser du vanligvis i løpet av en uke?(stekte, kokte, eggerøre, omelett) (Sett ett kryss)

☐ 0 ☐ 1 ☐ 2 ☐ 3-4
☐ 5-6 ☐ 7+

Hvor ofte spiser du iskrem? (til dessert, krone-is osv.) Sett ett kryss for hvor ofte du spiser iskrem om sommeren, og ett kryss for resten av året)

	aldri/ sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2+ pr. uke
-Om sommeren	☐	☐	☐	☐	☐
-Resten av året	☐	☐	☐	☐	☐

Hvor mye is spiser du vanligvis pr. gang? (Sett ett kryss)

☐ 1dl ☐ 2 dl ☐ 3 dl ☐ 4+ dl

Hvor ofte spiser du bakevarer som boller kaker, wienerbrød eller småkaker (Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2-3 pr uke	4-6 pr. uke	1+ pr. dag
Gjærbakst (boller o.l.)	☐	☐	☐	☐	☐	☐
Wienerbrød, kringle	☐	☐	☐	☐	☐	☐
Kaker	☐	☐	☐	☐	☐	☐
Pannekaker	☐	☐	☐	☐	☐	☐
Vafler	☐	☐	☐	☐	☐	☐
Småkaker, kjeks	☐	☐	☐	☐	☐	☐

Hvor ofte spiser du dessert? (Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2-3 pr uke	4-6 pr. uke	1+ pr. dag
Pudding sjokolade/karamell	☐	☐	☐	☐	☐	☐
Riskrem, fromasj	☐	☐	☐	☐	☐	☐
Kompott, fruktgrøt, hermetisk frukt	☐	☐	☐	☐	☐	☐
Jordbær (friske, frosne)	☐	☐	☐	☐	☐	☐
Andre bær (friske, frosne)	☐	☐	☐	☐	☐	☐

Hvor ofte spiser du sjokolade? (Sett ett kryss)

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2-3 pr uke	4-6 pr. uke	1+ pr. dag
Mørk sjokolade	☐	☐	☐	☐	☐	☐
Lys sjokolade	☐	☐	☐	☐	☐	☐

Dersom du spiser sjokolade, hvor mye pleier du vanligvis å spise hver gang? Tenk deg størrelsen på en Kvikk-Lunsj sjokolade, og oppgi hvor mye du spiser i forhold til den.

☐ 1/4 ☐ 1/2 ☐ 3/4 ☐ 1 ☐ 1,5 ☐ 2+

Hvor ofte spiser du snacks? (Sett ett kryss)

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2-3 pr. uke	4-6 pr. uke	7+ pr. uke
Potetchips	☐	☐	☐	☐	☐	☐
Peanøtter	☐	☐	☐	☐	☐	☐
Andre nøtter	☐	☐	☐	☐	☐	☐
Annen snacks	☐	☐	☐	☐	☐	☐

Tran og fiskeoljekapsler

Bruker du tran (flytende)? Ja ☐ Nei ☐

Hvis ja; hvor ofte tar du tran?
Sett ett kryss for hver linje.

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2-6 pr. uke	daglig
Om vinteren	☐	☐	☐	☐	☐
Resten av året	☐	☐	☐	☐	☐

Hvor mye tran pleier du å ta hver gang?

☐ 1 ts. ☐ 1/2 ss. ☐ 1+ ss.

Bruker du tranpiller/fiskeoljekapsler? Ja ☐ Nei ☐

Hvis ja; hvor ofte tar du tranpiller/fiskeoljekapsler?
Sett ett kryss for hver linje.

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2-6 pr. uke	daglig
Om vinteren	☐	☐	☐	☐	☐
Resten av året	☐	☐	☐	☐	☐

Hvilken type tranpiller/fiskeoljekapsler bruker du vanligvis, og hvor mange pleier du å ta hver gang? Antall

Navn _____ ☐

Kosttilskudd

Bruker du kosttilskudd? Ja ☐ Nei ☐

Hvis ja, hvor ofte bruker du kosttilskudd?
(Sett ett kryss pr. linje)

Navn på vitamin/mineraltilskudd:	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2-6 pr. uke	daglig
_____	☐	☐	☐	☐	☐
_____	☐	☐	☐	☐	☐
_____	☐	☐	☐	☐	☐
_____	☐	☐	☐	☐	☐

Bruker du soyapreparater mot plager i overgangsalderen? Ja ☐ Nei ☐

Varm mat

Hvor mange ganger i løpet av en måned spiser du varm mat? Antall

Til frokost ..... ☐

Til lunsj ..... ☐

Til middag ..... ☐

Til kvelds ..... ☐

Alkohol

Er du totalavholdskvinne? Ja ☐ Nei ☐

Hvis Nei; hvor ofte og hvor mye drakk du i gjennomsnitt siste året? (Sett ett kryss for hver linje)

	aldri/ sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2-4 pr. uke	5-6 pr. uke	1 pr. dag	2+ pr. dag
Øl (1/2 l.)	☐	☐	☐	☐	☐	☐	☐	☐
Vin (glass)	☐	☐	☐	☐	☐	☐	☐	☐
Brennevin (drink)	☐	☐	☐	☐	☐	☐	☐	☐
Likør/Hetvin	☐	☐	☐	☐	☐	☐	☐	☐

Sosiale forhold

Er du: (Sett ett kryss)

☐ gift ☐ samboer ☐ ugift ☐ skilt ☐ enke

Hvor mange års skolegang/yrkesutdannelse har du i alt, ta med folkeskole og ungdomsskole? ☐

Hvor mange personer er det i ditt hushold? ☐

Hvor høy er bruttoinntekten i husholdet pr. år?

under 150.000 kr.	☐	151.000-300.000 kr.	☐
301.000-450.000 kr.	☐	451.000-600.000 kr.	☐
601.000-750.000 kr.	☐	over 750.000 kr.	☐

Hva er din arbeidssituasjon? (sett kryss)

☐ Arbeider heltid ☐ Arbeider deltid ☐ Pensjonist

☐ Hjemmearbeidende ☐ Under utdanning ☐ Uføretrygdet

☐ Under attføring ☐ Arbeidssøkende

Yrke: _____

Hvordan var de økonomiske forhold i oppveksten?

☐ Meget gode ☐ Gode

☐ Dårlige ☐ Meget dårlige

Arbeider du utendørs i yrkessammenheng? Ja ☐ Nei ☐

Hvis Ja;
hvor mange timer pr. uke? .....Sommer .....vinter

Solvaner

Får du fregner når du soler deg? Ja ☐ Nei ☐

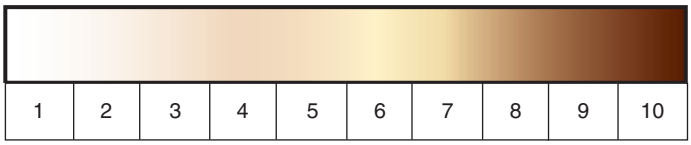
Hvilken øyefarge har du? (sett ett kryss)

☐ brun ☐ grå, grønn eller blanding ☐ blå

Hva er din opprinnelige hårfarge? (sett ett kryss)

☐ mørkbrun, svart ☐ brun ☐ blond, gul ☐ rød

For å kunne studere effekten av soling på risiko for hudkreft ber vi deg gi opplysninger om hudfarge
Sett ett kryss på det tallet under fargen som best passer din naturlige hudfarge (uten soling)



1	2	3	4	5	6	7	8	9	10

Hvor mange ganger pr. år er du blitt forbrent av solen slik at du har fått svie og blemmer med avflassing etterpå? (ett kryss for hver aldersgruppe)

Alder	Aldri	Høyst 1 gang pr. år	2-3 g. pr. år	4-5 g. pr. år	6 eller flere ganger
Før 10 år	☐	☐	☐	☐	☐
10-19 år	☐	☐	☐	☐	☐
20-29 år	☐	☐	☐	☐	☐
30-39 år	☐	☐	☐	☐	☐
40+ år	☐	☐	☐	☐	☐

Hvor mange uker soler du deg pr. år i syden?

Alder	Aldri	1 uke	2-3 uker	4-5 uker	7 uker eller mer
Før 10 år	☐	☐	☐	☐	☐
10-19 år	☐	☐	☐	☐	☐
20-29 år	☐	☐	☐	☐	☐
30-39 år	☐	☐	☐	☐	☐
40+ år	☐	☐	☐	☐	☐
Siste 12 mnd.	☐	☐	☐	☐	☐

Hvor mange uker pr. år soler du deg i Norge eller utenfor syden?

Alder	Aldri	1 uke	2-3 uker	4-5 uker	7 uker eller mer
Før 10 år	☐	☐	☐	☐	☐
10-19 år	☐	☐	☐	☐	☐
20-29 år	☐	☐	☐	☐	☐
30-39 år	☐	☐	☐	☐	☐
40+ år	☐	☐	☐	☐	☐
Siste 12 mnd.	☐	☐	☐	☐	☐

Hvor ofte dusjer eller bader du?

	mer enn 1 g. dagl.	1 g. dagl.	4-6 g. pr. uke	2-3 g. pr. uke	1 g. pr. uke	2-3 g. pr. mnd	sjel-den/ aldri
Med såpe/shampo	☐	☐	☐	☐	☐	☐	☐
Uten såpe/shampo	☐	☐	☐	☐	☐	☐	☐

Når bruker du krem med solfaktor? (sett evt. flere kryss):

☐ i påsken ☐ i Norge eller utenfor syden ☐ solferie i syden ☐ aldri

Hvilken solfaktor bruker du i disse periodene?

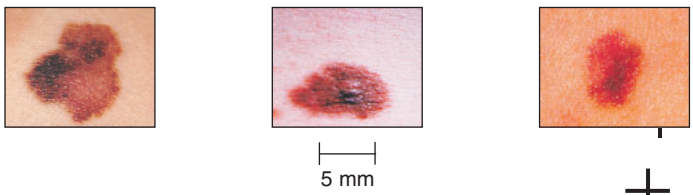
	påsken	i Norge eller utenfor syden	solferie i syden
I dag	☐☐	☐☐	☐☐
For 10 år siden	☐☐	☐☐	☐☐

Hvor ofte har du solt deg i solarium?

Alder	Aldri	Sjelden	1 gang pr. mnd.	2 ganger pr. mnd.	3-4 ganger pr. mnd	oftere enn1 gang pr. uke
Før 10 år	☐	☐	☐	☐	☐	☐
10-19 år	☐	☐	☐	☐	☐	☐
20-29 år	☐	☐	☐	☐	☐	☐
30-39 år	☐	☐	☐	☐	☐	☐
40+ år	☐	☐	☐	☐	☐	☐
Siste 12 mnd.	☐	☐	☐	☐	☐	☐

Hvor mange uregelmessige føflekker større enn 5 mm har du sammenlagt på begge beina (fra tærne til lysken)? Tre eksempler på føflekker større enn 5 mm med uregelmessig form er vist i nedenfor.

☐ 0 ☐ 1 ☐ 2-3 ☐ 4-6 ☐ 7-12 ☐ 13-24 ☐ 25+



Hvor ofte bruker du følgende hudpleiemidler?

(Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr.mnd.	1 pr.uke	2-4 pr.uke	5-6 pr.uke	1 pr.dag	2+ pr. dag
Ansiktskrem	☐	☐	☐	☐	☐	☐	☐
Håndkrem	☐	☐	☐	☐	☐	☐	☐
Body lotion	☐	☐	☐	☐	☐	☐	☐
Parfyme	☐	☐	☐	☐	☐	☐	☐

Til slutt vil vi spørre deg om ditt samtykke til å kontakte deg på nytt pr. post. Vi vil hente adressen fra det sentrale personregister.

Ja ☐ Nei ☐

Er du villig til å avgi en blodprøve?

Ja ☐ Nei ☐

Takk for at du ville delta i undersøkelsen

APPENDIX 3

Example of questionnaire in The Northern Sweden Health and Disease Study Cohort (NSHDS) questionnaire.

VÄSTERBOTTENS PROJEKTET

22602

1

TEXTA TYDLIGT!

Efternamn

Tilltalsnamn

VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
- **Sudda noga** *(kryssa ej över)* markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

OBS **Nedanstående uppgifter på denna sida ifylles av sjuksköterska/vårdpersonal i samband med hälsoundersökningen** **OBS**

Vårdcentral/Företagshälsovård, Ort

Kod

Provdatum

År Mån Dag

Längd

Vikt

Personnummer

1. Skriv först ditt personnummer med siffror (vid **A**)
2. Fyll sedan i motsvarande ruta under varje siffra (vid **B**)
3. Kontrollera att alla siffror och markeringar är korrekta

Personnummer

A ➧ År Mån Dag - Nummer

B

Antal timmars fasta

1 Mer än 8 tim

2 4-8 tim

3 Mindre än 4 tim

S-kol

S-TG

HDL

Blods

Blods,2

SBT

DBT

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VÄSTERBOTTENS PROJEKTET

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2

VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
  Sudda noga *(kryssa ej över)*
  markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

Yrke, civilstånd och boende

B1. Vilket är Ditt civilstånd?

1 ⬭ Ogift
2 ⬭ Gift/Sammaboende
3 ⬭ Änka/Änkling
4 ⬭ Frånskild/Separerad
5 ⬭ Omgift

B2. Vilken är den högsta utbildningsnivå som Du har avslutat?

1 ⬭ Folkskola
2 ⬭ 9-årig grundskola
3 ⬭ Folkhögskola motsv. grundskola
4 ⬭ Realskola
5 ⬭ Flickskola
6 ⬭ Yrkesskola/fackskola
7 ⬭ Folkhögskola motsv. gymnasium
8 ⬭ Gymnasieskola
9 ⬭ Akademisk utbildning/högskola

B3. Vilka personer sammanbor Du med?

(Markera lämpliga alternativ.)

1 ⬭ Vuxen (make, maka, sambo)
2 ⬭ Barn
3 ⬭ Syskon
4 ⬭ Mor
5 ⬭ Far
6 ⬭ Både mor och far
7 ⬭ Annan
8 ⬭ Bor helt ensam

B4. Vilket yrke har Du?

(Ange Din huvudsakliga sysselsättning. Om Du ej förvärvsarbetar, ange vad Du gör på dagarna.)

Yrke

Kod (ifylles ej)

0 0 0 0
1 1 1 1
2 2 2 2
3 3 3 3
4 4 4 4
5 5 5 5
6 6 6 6
7 7 7 7
8 8 8 8
9 9 9 9

Har Du skiftarbete/helgtjänstgöring?

1 ⬭ Ja
2 ⬭ Nej

Har Du varit långtidssjukskriven mer än 6 månader?

1 ⬭ Ja
2 ⬭ Nej

B5. Vilken typ av anställning har Du för närvarande?

1 ⬭ Fast anställning
2 ⬭ Tillfällig anställning, vikariat
3 ⬭ Arbetar i hemmet
4 ⬭ Arbetslös
5 ⬭ Studerande
6 ⬭ Egenföretagare
7 ⬭ Förtids-/sjukpensionerad, hel pension
8 ⬭ Förtids-/sjukpensionerad, delpension

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VÄSTERBOTTENS PROJEKTET

22602

3

VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
- **Sudda noga** *(kryssa ej över)* markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

Hälsoläge

C0. Hur bedömer Du Ditt allmänna hälsotillstånd jämfört med andra i Din egen ålder?

1 ⬭ Det är bättre
2 ⬭ Sämre
3 ⬭ Ungefär lika

C1. Hur tycker Du att Ditt hälsotillstånd varit det senaste året?

1 ⬭ Mycket gott
2 ⬭ Ganska gott
3 ⬭ Någorlunda
4 ⬭ Tämligen dåligt
5 ⬭ Dåligt

C2. Har någon av Dina föräldrar eller syskon före 60 års ålder drabbats av hjärtinfarkt eller hjärnblödning/propp i hjärnan?

1 ⬭ Ja
2 ⬭ Nej

C3. Förekommer diabetes hos någon av Dina föräldrar eller syskon?

1 ⬭ Ja
2 ⬭ Nej

C4. Har Du vid något tillfälle av läkare eller annan sjukvårdspersonal fått besked om att Du har högt blodtryck?

1 ⬭ Ja
2 ⬭ Nej

C5. Har Du under den senaste 14 dagarsperioden använt några av följande mediciner?

(Markera lämpliga alternativ.)

1 ⬭ Ja, blodtrycksmedicin
2 ⬭ Ja, hjärt/kärlkrampsmedicin
3 ⬭ Ja, lugnande medel eller sömnmedel
4 ⬭ Ja, magsårs/magkatarrmedicin
5 ⬭ Ja, blodfettssänkande
6 ⬭ Nej använder inga av ovanstående mediciner

C6. Har Du diabetes?

1 ⬭ Ja
2 ⬭ Nej

C7. Om Du svarat "Ja" på fråga C6, behandlas Du med?

1 ⬭ Enbart diet och motion
2 ⬭ Tabletter
3 ⬭ Insulin
4 ⬭ Ingen behandling med ovanstående

C8. Har Du legat på sjukhus för säker hjärtinfarkt (propp i hjärtat)?

1 ⬭ Ja → Ange årtal
2 ⬭ Nej

0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

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VÄSTERBOTTENS PROJEKTET

22602

4

VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
- **Sudda noga** *(kryssa ej över)* markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

Socialt stöd och socialt nätverk

De följande frågorna handlar om Dina personliga förhållanden och om människorna i Din omgivning. Frågorna handlar både om människor som står Dig mycket nära, om vänner och om bekanta. Vissa frågor kan kanske kännas främmande men försök att besvara dem ändå! Några frågor kan kännas väldigt lika, även om formuleringarna är olika. Försök ändå besvara dem så noggrant som möjligt.

E1. Hur många människor känner Du och har kontakt med, som har samma intresse som Du?

1 ○ Ingen
2 ○ 1 - 2 personer
3 ○ 3 - 5 personer
4 ○ 6 - 10 personer
5 ○ 11 -15 personer
6 ○ Mer än 15 personer

E2. Hur många människor, som Du känner, träffar eller samtalar Du med under en vanlig vecka.

(Räkna inte med människor som Du knappast kommer att återse, ex kunder i en affär)

1 ○ Ingen
2 ○ 1 - 2 personer
3 ○ 3 - 5 personer
4 ○ 6 - 10 personer
5 ○ 11 -15 personer
6 ○ Mer än 15 personer

E3. Är det ungefär lagom många människor Du träffar i ditt vanliga liv? Skulle Du vilja träffa fler eller färre människor?

1 ○ Färre
2 ○ Lagom många
3 ○ Fler

E4. Hur många vänner har Du som kan komma hem till dig när som helst och känna sig hemma?

De skulle inte bry sig om, om det var ostädat eller om Du höll på att äta. Nära släktingar skall inte räknas med.

1 ○ Ingen
2 ○ 1 - 2 personer
3 ○ 3 - 5 personer
4 ○ 6 - 10 personer
5 ○ 11 -15 personer
6 ○ Mer än 15 personer

E5. Hur många finns det, i Din familj och bland Dina vänner, som Du kan tala öppet med utan att behöva tänka Dig för?

1 ○ Ingen
2 ○ 1 - 2 personer
3 ○ 3 - 5 personer
4 ○ 6 - 10 personer
5 ○ 11 -15 personer
6 ○ Mer än 15 personer

E6. Finns det någon särskild person som Du känner att Du verkligen kan få stöd av?

1 ○ Nej
2 ○ Ja, men jag behöver det inte
3 ○ Ja

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VÄSTERBOTTENS PROJEKTET

22602

5

VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
- **Sudda noga** *(kryssa ej över)* markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

E7. Finns det någon särskild person som känner sig stå väldigt nära Dig?

1 ⬭ Nej
2 ⬭ Är inte säker
3 ⬭ Ja

E8. Har Du någon särskild person som Du kan dela Dina innersta känslor med när Du känner Dig lycklig? Någon som själv känner sig lycklig bara för att Du är det?

1 ⬭ Nej
2 ⬭ Ja

E9. Har Du någon Du kan dela Dina innersta känslor med och anförtro Dig åt?

1 ⬭ Nej
2 ⬭ Ja

E10. Händer det att någon håller om Dig till tröst och stöd?

1 ⬭ Nej
2 ⬭ Ja

E11. Tror Du att de därhemma eller några andra verkligen uppskattar vad Du gör?

1 ⬭ Ja
2 ⬭ Inte tillräckligt
3 ⬭ Nej

E12. Finns det människor i Din omgivning som Du lätt kan be om saker, t.ex människor som Du känner så väl att Du kan låna verktyg eller köksgrejor?

1 ⬭ Nej
2 ⬭ Ja

E13. Bortsett från dem därhemma, finns det någon Du kan vända Dig till om Du är i svårigheter? Någon som Du lätt kan träffa och som Du litar på och kan få verklig hjälp av när Du har det besvärligt?

1 ⬭ Nej
2 ⬭ Ja

E14. Har Du under det senaste året deltagit i någon föreningsaktivitet, frivillig organisation etc. tillsammans med andra (t ex sport, studiecirkel, teatergrupp, sångkör, politisk förening)?

1 ⬭ Ja
2 ⬭ Nej → gå till fråga F1

E15. Hur ofta ägnar Du Dig åt föreningsaktivitet, klubbverksamhet, studiecirkel etc. tillsammans med andra?

1 ⬭ 1-2 gånger per år
2 ⬭ 1-2 gånger per månad
3 ⬭ 1-2 gånger per vecka
4 ⬭ Varje dag
5 ⬭ Vet ej

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VÄSTERBOTTENS PROJEKTET

22602

6

VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
- **Sudda noga** *(kryssa ej över)* markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

Arbetet

Med arbete avses här Din huvudsakliga sysselsättning oavsett om Du yrkesarbetar eller är hemarbetande. (Markera enbart det svarsalternativ som bäst överensstämmer med Din uppfattning)

	Ja, ofta	Ja, ibland	Nej, sällan	Nej, så gott som aldrig
F1. Är Ditt arbete fysiskt (kroppsligt) tungt?	○	○	○	○
F2. Kräver Ditt arbete att Du arbetar mycket fort?	○	○	○	○
F3. Är Ditt arbete psykiskt påfrestande?	○	○	○	○
F4. Har Du tillräckligt med tid för att hinna med Dina arbetsuppgifter?	○	○	○	○
F5. Förekommer det ofta motstridiga krav i Ditt arbete?	○	○	○	○
F6. Får Du lära Dig nya saker i Ditt arbete?	○	○	○	○
F7. Kräver Ditt arbete skicklighet?	○	○	○	○
F8. Kräver Ditt arbete påhittighet?	○	○	○	○
F9. Innebär Ditt arbete att man ofta gör samma sak om och om igen?	○	○	○	○
F10. Har Du frihet att bestämma hur Ditt arbete ska utföras?	○	○	○	○
F11. Har Du frihet att bestämma vad som skall utföras i Ditt arbete?	○	○	○	○

F12. Har Du i vanliga fall möjlighet att tala med Dina arbetskamrater under raster, om Du skulle vilja det?

1 ○ Ja, alltid 2 ○ Ja, för det mesta 3 ○ Nej, jag har inga raster 4 ○ Nej, jag har inga raster med arbetskamrater

F13. Är Ditt arbete av den karaktären att Du kan lämna det ett tag om Du vill tala med en arbetskamrat?

1 ○ Ja, för det mesta
2 ○ Ja, ibland
3 ○ Bara för brådskande ärenden
4 ○ Nej, det är helt omöjligt

F14. Har Du, som en del i Ditt arbete, en mängd kontakter med Dina arbetskamrater?

1 ○ Ja, ständigt kontakter i arbetet
2 ○ En eller ett par ggr/månad
3 ○ Nej, jag arbetar för det mesta ensam
4 ○ Sällan eller aldrig

F15. Hur ofta är Du vanligen tillsammans med en eller flera av Dina arbetskamrater på fritid?

1 ○ En eller flera ggr/vecka
2 ○ En eller ett par ggr/månad
3 ○ En eller ett par ggr/år
4 ○ Sällan eller aldrig

F16. När besökte någon av Dina arbetskamrater Dig senast?

1 ○ För en till fyra veckor sedan
2 ○ För en till tolv månader sedan
3 ○ För mer än ett år sedan
4 ○ Har aldrig haft besök av någon arbetskamrat

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VÄSTERBOTTENS PROJEKTET

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7

VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
- **Sudda noga** *(kryssa ej över)* markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

Fysisk aktivitet

Med "**vardagsmotion**" menas den kroppsliga ansträngning Du får, när Du tar Dig till och från arbetet, under arbetet och av fritidsaktiviteter.

G1. Markera i tabellen nedan hur Du oftast färdas till och från arbetet för varje årstid.

(Markera endast i EN ruta för varje årstid).

	Vår	Sommar	Höst	Vinter
1 Bil	1	1	1	1
2 Buss	2	2	2	2
3 Promenerar	3	3	3	3
4 Cyklar	4	4	4	4

Hur många km har Du till arbetet? (enkel resa)

Km			1	2	3	4	5	6	7	8	9
	0	1	2	3	4	5	6	7	8	9	

G2. Markera det alternativ som bäst beskriver Ditt arbete!

1 Stillasittande eller stående
2 Lätt men delvis rörligt
3 Lätt och rörligt
4 Ibland fysiskt tungt
5 Fysiskt tungt större delen av tiden

G3. Vilka fritidsaktiviteter har Du som ger Dig en viss kroppslig ansträngning?

(Markera lämplig ruta för varje rad)

	Aldrig	1-2 ggr mån	3-4 ggr mån	2-3 ggr vecka	Varje dag
Promenader	0	1	2	3	4
Cykelturer	0	1	2	3	4

	Aldrig	Sällan	Någon gång varje månad	Varje vecka	Varje dag
Gammel/folkdans	0	1	2	3	4
Snöskottning*	0	1	2	3	4
Trädgårdsarbete*	0	1	2	3	4
Jakt/fisketurer*	0	1	2	3	4
Bär/svampplock*	0	1	2	3	4

*Under säsong

G4. Har Du ändrat Din "vardagsmotion" under det senaste året?

1 Minskat mycket
2 Minskat något
3 Som tidigare
4 Ökat något
5 Ökat mycket

G5. "Den vardagsmotion jag får tillfredsställer mitt behov av att röra på mig". Stämmer detta påstående in på Dig?

1 Inte alls
2 Ganska dåligt
3 Delvis
4 Helt och hållet

Följande tre frågor avser "**ombytt motion**", dvs kroppslig ansträngning i träningskläder.

G6. Hur ofta har Du tränat eller motionerat i träningskläder de senaste tre månaderna, i syfte att förbättra Din kondition och/eller för att må bra?

1 Aldrig
2 Då och då - ej regelbundet
3 1-2 ggr/vecka
4 2-3 ggr/vecka
5 Mer än 3 ggr/vecka

G7. Om Du motionerar - har Du ändrat Dina motions vanor under det senaste året?

1 Minskat mycket
2 Minskat något
3 Som tidigare
4 Ökat något
5 Ökat mycket

G8. Hur fysiskt aktiv var Du före 20-års ålder?

1 Befriad från skolgymnastik
2 Deltog enbart i skolgymnastik
3 Tränade utan att tävla
4 Deltog i både träning och tävling (ej på elitnivå)
5 Tränade och tävlade på elitnivå

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VÄSTERBOTTENS PROJEKTET

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8

VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
- **Sudda noga** *(kryssa ej över)* markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

Rök-, snus-, och alkoholvanor

H1. Röker Du för närvarande?

(Flera alternativ kan vara aktuella. Markera i lämplig/a ruta/rutor. Markera även hur många cigaretter Du röker per dag)

1 ○ Nej, har aldrig rökt → gå till fråga H4
2 ○ Ja, jag röker cigaretter →
3 ○ Ja, jag röker cigarrer
4 ○ Ja, jag röker pipa
5 ○ Ja, jag röker då och då (ej dagligen)
6 ○ Inte nu, men rökte tidigare regelbundet
7 ○ Inte nu, men rökte tidigare då och då → gå till fråga H3

Antal cigaretter/dag
- ○ 1-4
- ○ 5-14
- ○ 15-24
- ○ 25 eller mer

H2. Hur gammal var Du när Du började röka regelbundet?

(Skriv och markera)

Ålder			1	2	3	4	5	6	7	8	9
		0	1	2	3	4	5	6	7	8	9

H3 besvaras endast av de som slutat röka.

H3. Om Du slutat röka, vilket år slutade Du?

(Skriv och markera)

Slutade år			1	2	3	4	5	6	7	8	9
		0	1	2	3	4	5	6	7	8	9

H4. Har Du någonsin använt snus?

(Markera endast ett alternativ)

1 ○ Nej → gå till fråga I1
2 ○ Ja, brukade göra det tidigare, men inte nu längre
3 ○ Ja, snusar mindre än 2 dosor per vecka
4 ○ Ja, snusar 2-4 dosor/vecka
5 ○ Ja, snusar mer än 4 men mindre än 7 dosor/vecka
6 ○ Ja, snusar 7 dosor eller fler per vecka

H5. Hur lång tid har Du snusat?

(Skriv och markera)

Antal år			1	2	3	4	5	6	7	8	9
		0	1	2	3	4	5	6	7	8	9

H6. Började Du snusa i samband med att Du slutade röka?

1 ○ Ja
2 ○ Nej
3 ○ Jag både röker och snusar

I1. Är Du absolutist?

1 ○ Ja → gå till fråga I 1 2 ○ Nej

I2. Har Du någonsin tyckt att Du borde minska på Din alkoholkonsumtion?

1 ○ Ja 2 ○ Nej

I3. Har andra människor irriterat Dig genom att kritisera Ditt drickande?

1 ○ Ja 2 ○ Nej

I4. Har Du någonsin känt Dig illa till mods eller haft skuldkänslor för Ditt sätt att dricka?

1 ○ Ja 2 ○ Nej

I5. Har Du någonsin druckit det första Du gör på morgonen för att lugna nerverna eller för att bota baksmälla (tagit en "återställare")?

1 ○ Ja 2 ○ Nej

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VÄSTERBOTTENS PROJEKTET

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9

VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
- **Sudda noga** *(kryssa ej över)* markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

Matvanor

Detta är frågor om Dina matvanor det senaste året. Markera det svarsalternativ som stämmer bäst för Dig!

L1. Vilket av följande alternativ på morgonmål stämmer bäst överens med Ditt eget?

(Markera endast ett alternativ)

1 ⬭ Kaffe/te och smörgås
2 ⬭ Kaffe/te och vetebröd eller skorpor
3 ⬭ Fil, flingor, med eller utan smörgås
4 ⬭ Gröt, med eller utan smörgås
5 ⬭ Välling, med eller utan smörgås
6 ⬭ Jag äter inget morgonmål alls

L2. Äter Du vanligen lunch?

1 ⬭ Ja
2 ⬭ Nej

L3. Äter Du vanligen middag?

1 ⬭ Ja
2 ⬭ Nej

L4. Vad består vanligen Dina dagliga mellanmål av?

Välj något eller några av följande alternativ och markera Dina mellanmål (så många som Du vanligen har).

	Frukt	Smör-gås	Vete-bröd/ kaka	"Gobitar" wiener-bröd	Kräm/ frukt-soppa	Godis	Glass	Läsk	Saft	Mjölk/ choklad/ fil	Juice	Kaffe/ te
Mellanmål 1	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭
Mellanmål 2	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭
Mellanmål 3	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭
Mellanmål 4	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭
Mellanmål 5	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭	⬭

L5. Har Du ätit något eller några av följande kosttillskott?

Markera lämplig/a rader och ange gärna preparatnamn!

Det senaste året	De senaste 14 dagarna
1 ⬭ Inga kosttillskott	1 ⬭ Inga kosttillskott
2 ⬭ Multi-Vitaminer	2 ⬭ Multi-Vitaminer
3 ⬭ Multi-Mineraler	3 ⬭ Multi-Mineraler
4 ⬭ Järn	4 ⬭ Järn
5 ⬭ Selen	5 ⬭ Selen
6 ⬭ Annat	6 ⬭ Annat

Om annat eller om Du är osäker ange preparatnamn

.....

.....

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VÄSTERBOTTENS PROJEKTET

22602

10

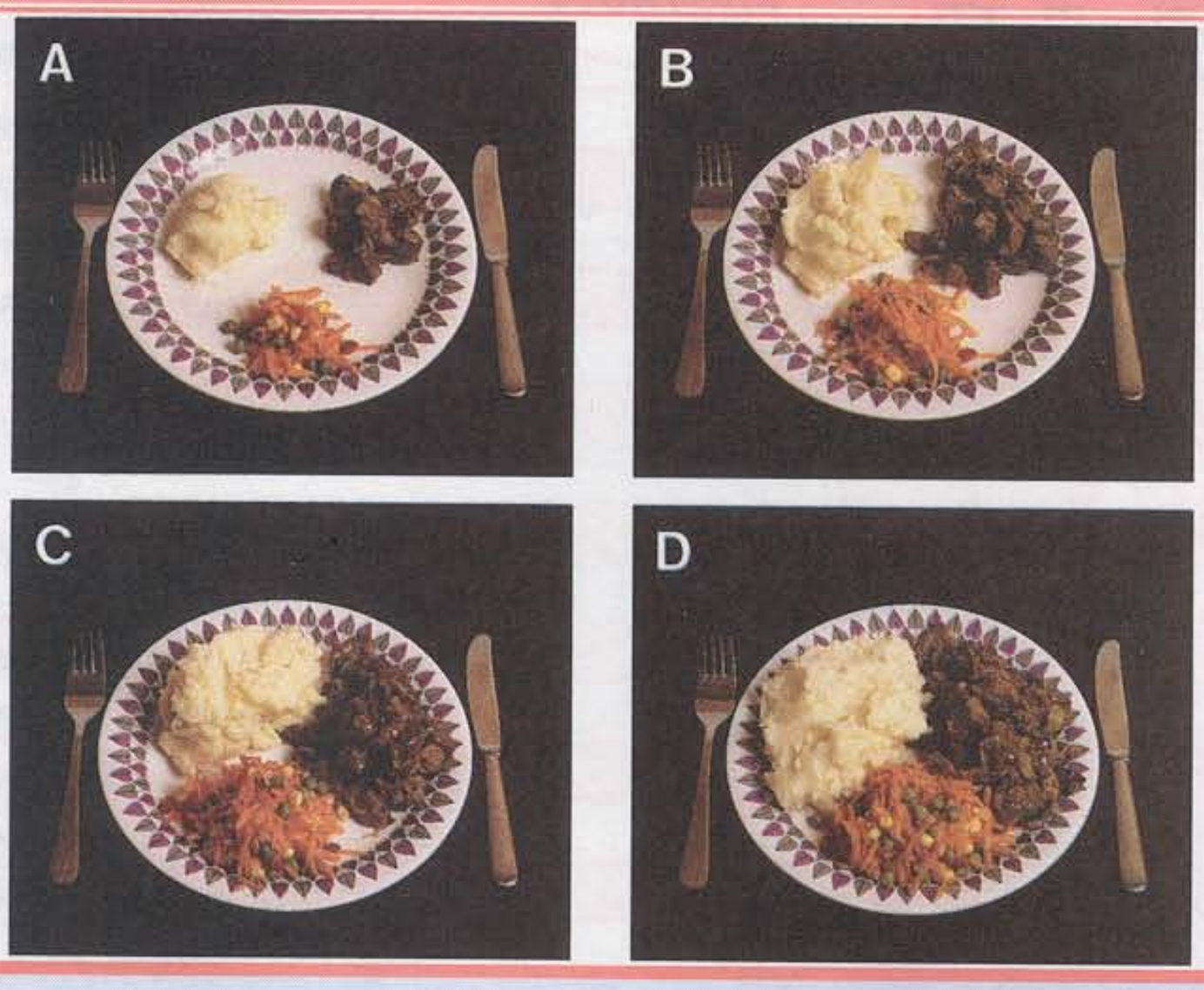
VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
- **Sudda noga** *(kryssa ej över)* markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

Titta på nedanstående foto och markera den bokstav som visar den portion som mest liknar Din normalportion för:



Potatis/Ris/Makaroner

A B C D

Kött/Fisk

A B C D

Grönsaker

A B C D

Hur ofta äter Du nedanstående livsmedel?
Markera genomsnittlig konsumtion det senaste året. Markera endast ett alternativ på varje rad.

Födoämne \ Frekvens	Aldrig 1	Någon gång per år 2	1-3 ggr per månad 3	1 gång per vecka 4	2-3 ggr per vecka 5	4-6 ggr per vecka 6	1 gång per dag 7	2-3 ggr per dag 8	4 ggr per dag el mer 9
Bregott på smörgås	1	2	3	4	5	6	7	8	9
Smör på smörgås	1	2	3	4	5	6	7	8	9
Lättmargarin på smörgås	1	2	3	4	5	6	7	8	9
Margarin på smörgås	1	2	3	4	5	6	7	8	9
Smör till matlagning	1	2	3	4	5	6	7	8	9
Margarin till matlagning	1	2	3	4	5	6	7	8	9
Olja till matlagning	1	2	3	4	5	6	7	8	9
Salladsdressing med olja	1	2	3	4	5	6	7	8	9
Grädde, creme fraiche, gräddfil	1	2	3	4	5	6	7	8	9
Hårt bröd (ex Husmans)	1	2	3	4	5	6	7	8	9
Grovt mjukt fullkornsbröd	1	2	3	4	5	6	7	8	9
Vitt bröd, limpa	1	2	3	4	5	6	7	8	9
Ljusugns-, tunnbröd, veteknäcke	1	2	3	4	5	6	7	8	9
Bullar, skorpor	1	2	3	4	5	6	7	8	9
Mellanfet hårdost 28% (ex Grevé)	1	2	3	4	5	6	7	8	9

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VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
- **Sudda noga** *(kryssa ej över)* markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

Födoämne \ Frekvens	Aldrig 1	Någon gång per år 2	1-3 ggr per månad 3	1 gång per vecka 4	2-3 ggr per vecka 5	4-6 ggr per vecka 6	1 gång per dag 7	2-3 ggr per dag 8	4 ggr per dag el mer 9
Mager hårdost 10-17% (ex Drabant)	1	2	3	4	5	6	7	8	9
Mjukost	1	2	3	4	5	6	7	8	9
Messmör	1	2	3	4	5	6	7	8	9
Korv som pålägg	1	2	3	4	5	6	7	8	9
Kött som pålägg	1	2	3	4	5	6	7	8	9
Leverpastej	1	2	3	4	5	6	7	8	9
Gröt av havre	1	2	3	4	5	6	7	8	9
Gröt av graham, råg eller korn	1	2	3	4	5	6	7	8	9
Nypon-, saftsoppa, kräm	1	2	3	4	5	6	7	8	9
Fil, yoghurt, kefir	1	2	3	4	5	6	7	8	9
Lättfil, lättyoghurt, hälsofil	1	2	3	4	5	6	7	8	9
Fiberrika flingor ex müsli	1	2	3	4	5	6	7	8	9
Cornflakes, K-spec, mm	1	2	3	4	5	6	7	8	9
Bär, färska eller djupfrysta	1	2	3	4	5	6	7	8	9
Äpplen, päron, persikor	1	2	3	4	5	6	7	8	9
Apelsin, mandarin, grapefrukt	1	2	3	4	5	6	7	8	9
Banan	1	2	3	4	5	6	7	8	9
Vitkål	1	2	3	4	5	6	7	8	9
Rotfrukter, morötter	1	2	3	4	5	6	7	8	9
Tomat, gurka	1	2	3	4	5	6	7	8	9
Sallad, salladskål	1	2	3	4	5	6	7	8	9
Spenat, grönkål	1	2	3	4	5	6	7	8	9
Frysta grönsaksblandningar	1	2	3	4	5	6	7	8	9
Kokt eller bakad potatis	1	2	3	4	5	6	7	8	9
Stekt potatis	1	2	3	4	5	6	7	8	9
Pommes frites	1	2	3	4	5	6	7	8	9
Potatismos	1	2	3	4	5	6	7	8	9
Potatissallad	1	2	3	4	5	6	7	8	9
Ris	1	2	3	4	5	6	7	8	9
Spaghetti, makaroner	1	2	3	4	5	6	7	8	9
Bruna bönor, ärtsoppa	1	2	3	4	5	6	7	8	9
Blöta (buljong + bröd)	1	2	3	4	5	6	7	8	9
Pannkaka, våfflor	1	2	3	4	5	6	7	8	9
Palt, kroppkakor	1	2	3	4	5	6	7	8	9
Pizza	1	2	3	4	5	6	7	8	9

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VÄSTERBOTTENS PROJEKTET

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VIKTIGT!

- Använd **endast blyertspenna**
- **Fyll hela** rutan
- **Sudda noga** *(kryssa ej över)* markeringar som du vill ändra
- **Vik ej** detta papper

Markera så:

Inte så:

Födoämne \ Frekvens	Aldrig 1	Någon gång per år 2	1-3 ggr per månad 3	1 gång per vecka 4	2-3 ggr per vecka 5	4-6 ggr per vecka 6	1 gång per dag 7	2-3 ggr per dag 8	4 ggr per dag el mer 9
Köttfärsrätter	1	2	3	4	5	6	7	8	9
Grytor med kött	1	2	3	4	5	6	7	8	9
Helt kött, ex stek, kotlett	1	2	3	4	5	6	7	8	9
Bacon sidfläsk, "syltefläsk"	1	2	3	4	5	6	7	8	9
Korv som maträtt	1	2	3	4	5	6	7	8	9
Hamburgare	1	2	3	4	5	6	7	8	9
Kyckling, höns	1	2	3	4	5	6	7	8	9
Blodmat	1	2	3	4	5	6	7	8	9
Lever, njure	1	2	3	4	5	6	7	8	9
Mager fisk (ex aborre, torsk)	1	2	3	4	5	6	7	8	9
Fet fisk Rå fisk (ex sill strömming, sik, lax)	1	2	3	4	5	6	7	8	9
Skaldjur (ex räkor, musslor)	1	2	3	4	5	6	7	8	9
Salt fisk (salt sill, strömming)	1	2	3	4	5	6	7	8	9
Rökt fisk, rökt kött	1	2	3	4	5	6	7	8	9
Glass	1	2	3	4	5	6	7	8	9
Sötsaker (choklad, godis)	1	2	3	4	5	6	7	8	9
Sockerbitar, strösocker, honung	1	2	3	4	5	6	7	8	9
Marmelad, sylt	1	2	3	4	5	6	7	8	9
Kakor, bakelser	1	2	3	4	5	6	7	8	9
Chips, popcorn, salta nötter mm	1	2	3	4	5	6	7	8	9
Lättmjölk 0.5%, Minimjölk	1	2	3	4	5	6	7	8	9
Mellan -1,5%	1	2	3	4	5	6	7	8	9
Standard -3%, "Hemmjölk"	1	2	3	4	5	6	7	8	9
Saft, nektar	1	2	3	4	5	6	7	8	9
Läskedrycker, Coca-cola	1	2	3	4	5	6	7	8	9
Juice	1	2	3	4	5	6	7	8	9
Bryggkaffe	1	2	3	4	5	6	7	8	9
Kokkaffe	1	2	3	4	5	6	7	8	9
Te	1	2	3	4	5	6	7	8	9
Lättöl	1	2	3	4	5	6	7	8	9
Folköl	1	2	3	4	5	6	7	8	9
Starköl	1	2	3	4	5	6	7	8	9
Vin	1	2	3	4	5	6	7	8	9
Sprit	1	2	3	4	5	6	7	8	9

TACK FÖR DIN MEDVERKAN!
Kontrollera gärna en gång till att Du fyllt i alla frågor.

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APPENDIX 4

Example of questionnaire in The Danish Diet, Cancer and Health Study

Kost, kræft og helbred

KOSTSPØRGESKEMA

Eksempel 1.

Rigtig markering skal se sådan ud: ■ Forkert markering: ⊠
Feltet skal fyldes helt ud

Eksempel 2.

Én markering for hvert levnedsmiddel
Hvis De drikker 2 glas sødmælk om dagen, ét glas kærnemælk 2 gange om ugen og aldrig drikker hverken letmælk eller skummetmælk, bliver svaret således:

Levnedsmiddel		Aldrig	Pr. måned			Pr. uge			Pr. dag				
			Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Sødmælk	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	■	❑	❑	❑
Letmælk	(1 glas)	■	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Skummetmælk	(1 glas)	■	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kærnemælk	(1 glas)	❑	❑	❑	❑	❑	■	❑	❑	❑	❑	❑	❑

Eksempel 3.

Mængdeangivelse
For en del levnedsmidler har vi angivet en mængde. For kogte kartofler har vi for eksempel angivet en mængde på 1 stk. Hvis De spiser 4 kogte kartofler hver dag, bliver svaret således:

Levnedsmiddel		Aldrig	Pr. måned			Pr. uge			Pr. dag				
			Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Kogte kartofler	(1 stk.)	❑	❑	❑	❑	❑	❑	❑	❑	❑	■	❑	❑

Vejledning

Dette spørgeskema vedrører Deres kostvaner. Når De udfylder skemaet, skal De tænke på, hvordan Deres kost har været gennem det sidste år og angive et gennemsnit.

Vi anbefaler, at De ser spørgeskemaet igennem, inden De begynder at udfylde det.

Spørgeskemaet udfyldes med blyant
Det er vigtigt, at spørgeskemaet udfyldes med blyant. Skemaet bliver læst og bearbejdet maskinelt ved hjælp af en scanner, som kun kan læse skemaer, hvor hele feltet er udfyldt (eksempel 1).

Eksempler
På modstående side finder De eksempler på, hvordan spørgeskemaet skal udfyldes.

Én markering i hver linie
Alle linier skal udfyldes med én markering (eksempel 1 og 2). Markeringen skal angive, hvor ofte De spiser eller drikker det pågældende levnedsmiddel. Hvis der er levnedsmidler, De aldrig får, angives dette med en markering i rubrikken »Aldrig« (eksempel 2).

Mængdeangivelse
For en del levnedsmidler har vi angivet en mængde. I disse tilfælde skal De markere, hvor ofte De spiser eller drikker denne mængde (eksempel 2 og 3).

Andre levnedsmidler
Vi spørger ikke om alle levnedsmidler. På side 19 kan De anføre levnedsmidler, som De mener er af betydning for Deres kost, men som vi ikke har spurgt om.

Tak for hjælpen

Anne Tjønneland
læge

Kræftens Bekæmpelse
Sektor for Kræftepidemiologi

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læge

Institut for Epidemiologi og
Socialmedicin
Aarhus Universitet

Måltider

De første spørgsmål drejer sig om måltider. Her skal De markere, hvor ofte De spiser de nævnte måltider. Ved et mellemmåltid forstås et mindre måltid, hvor De spiser frugt, kage, slik eller lignende. Drikkevarer uden tilbehør betragtes ikke som et mellemmåltid.

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Morgenmad	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Mellemmåltid, formiddag	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Frokost	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Mellemmåltid, eftermiddag	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Aftensmad	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Mellemmåltid, aften	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Drikkevarer

For alle drikkevarer har vi angivet en mængde. Her skal De markere, hvor ofte De drikker den angivne mængde (eksempel 2).
Sodavand og mineralvand er angivet i glas. En lille glasflaske svarer til 1 glas. En halv liters plastikflaske svarer til 2 glas.
Kaffe og the er angivet i kopper. Ét krus svarer til 2 kopper.

Levnedsmiddel		Aldrig	Pr. måned			Pr. uge			Pr. dag				
			Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Vand	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sødmælk	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Letmælk	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Skummetmælk	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kærnemælk	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Appelsin- og grapejuice	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Gulerodssaft	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Tomatjuice	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Saftevand (alm. m. sukker)	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Saftevand light (kunstigt sødet)	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sodavand/cola (alm. m. sukker)	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sodavand/cola (kunstigt sødet)	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Mineralvand	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Lys øl	(1 flaske)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Almindelig øl	(1 flaske)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Stærk øl	(1 flaske)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Vin (rød, hvid og rosé)	(1 glas)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Hedvin (f.eks. portvin)	(1 genstand)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Spiritus (f.eks. snaps)	(1 genstand)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kaffe	(1 kop)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
The	(1 kop)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Morgenmadsprodukter

Nedenfor er nævnt nogle morgenmadsprodukter. Hvis De spiser dem på andre tider af dagen, skal de medregnes her. Vi spørger til æggeretter senere i spørgeskemaet.

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Havregryn og mysli	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
A-38 og lignende surmælksprodukter (af sødmælk, fedtindhold 3,5%)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Ylette og lignende surmælksprodukter (af letmælk, fedtindhold 1,5%)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Yoghurt med frugt (af sødmælk, fedtindhold 3,5%)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Yoghurt med frugt (af letmælk, fedtindhold 1,5%)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Æg, kogt eller spejlet (1 stk.)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Brød, fedtstof og pålæg

De følgende 4 sider omhandler brød samt fedtstof og pålæg på brød. Vi har opdelt spørgsmålene i 3 kategorier. Først spørger vi om hvor mange skiver brød, De spiser af de forskellige typer. Dernæst spørger vi om henholdsvis fedtstof og pålæg på brød. Når De svarer på spørgsmålene, skal De tænke på alle måltider både morgenmåltider, frokost, aftensmåltider og mellemmåltider.

Brød

Et halvt rundstykke, en halv bolle eller et stykke flûte svarer til en skive franskbrød.

Levnedsmiddel		Aldrig	Pr. måned			Pr. uge			Pr. dag				
			Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Rugbrød	(½ skive)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Lyst franskbrød	(1 skive)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Groft franskbrød	(1 skive)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Knækbrød	(1 skive)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Fedtstof på brød

Her skal De markere, hvor mange skiver brød De smører fedtstof på. Hvis De smører fedtstof på alle de skiver brød, De spiser, vil Deres markeringer her svare til markeringerne ovenfor ved brød. Vi spørger til typer af fedtstof senere i spørgeskemaet.

Levnedsmiddel		Aldrig	Pr. måned			Pr. uge			Pr. dag				
			Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Rugbrød med fedtstof	(½ skive)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Lyst franskbrød med fedtstof	(1 skive)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Groft franskbrød med fedtstof	(1 skive)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Knækbrød med fedtstof	(1 skive)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Pålæg på brød

De følgende 3 sider indeholder spørgsmål om pålæg på brød. De skal markere, hvor mange skiver brød De spiser i alt med de nævnte typer pålæg. Spørgsmålene dækker alle typer brød både rugbrød, franskbrød og knækbrød. På denne side spørges til grupper af pålæg. På de efterfølgende 2 sider spørges til specifikke typer af pålæg.

Oversigtsspørgsmål

Levnedsmiddel		Aldrig	Pr. måned			Pr. uge			Pr. dag				
			Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Kødpålæg	(alle typer)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Fiskepålæg	(alle typer)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Pålægssalater	(alle typer)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Ost	(alle typer)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Pålæg på brød (fortsat)

Som på den foregående side skal De markere, hvor mange skiver brød, De spiser med de nævnte typer pålæg.

Kødpålæg

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Leverpostej	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Spegepølse	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kødpølse	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Rullepølse	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Skinke og hamburgerryg	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Roastbeef	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Svinefilét og salt kød	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kylling- og kalkunpålæg	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Flæskesteg	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Stegt lever	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Hakkebøf og frikadelle	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Pålægssalat med kød (f.eks. skinkesalat, hønsesalat)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Ost

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Skæreost (f.eks. Danbo, Havarti)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Brie, Camembert og lignende	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Danablu, Roquefort og lignende	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Hytteost og rygeost	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Smøreost og flødeost	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Pålæg på brød (fortsat)

Fiskepålæg

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Røget sild og makrel	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Marineret sild og lignende	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Makrel i tomat	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Tun (i vand, olie eller tomat)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sardin i olie	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Torskerogn	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Fiskefrikadelle	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Fiskefilét	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Rejer	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kaviar	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Pålægssalat med fisk (f.eks. makrelsalat, rejesalat, tunsalat)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Andre typer pålæg

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Æg	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Tomat	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kogt kartoffel	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Avocado	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Marmelade og syltetøj	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Honning	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Mayonnaise og remoulade	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Varm mad

De følgende 4 sider omhandler varm mad. Spørgsmålene herunder vedrører grupper af varm mad. På de efterfølgende 3 sider spørges til specifikke retter.

Oversigtsspørgsmål

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Kød (oksekød, kalvekød, svinekød, lammekød)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Fjerkræ (f.eks. kylling, kalkun)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Indmad (lever, hjerte, nyre)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Fisk	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Æggeretter (f.eks. æggekage, omelet, gratin)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Grøntsags- og vegetarretter	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Grød	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Varm mad (fortsat)

På de følgende 3 sider ønsker vi mere detaljerede oplysninger om, hvilke typer varm mad De spiser. Skemaerne er opdelt i grupper. Retter med hakket kød, f.eks. hakkebøf og millionbøf, er samlet i en gruppe for sig.

Svinekød

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Flæskesteg og ribbensteg	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Hamburgerryg og skinke	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Stegt flæsk	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Mørbradbøf	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Svinekotelet	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Skinkeschnitzel	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sammenkogte retter med svinekød	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Okse- og kalvekød

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Oksesteg og kalvesteg	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Oksebøf (ikke hakkebøf)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kalvekotelet og kalveschnitzel	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sammenkogte retter med okse- og kalvekød (f.eks. gullasch, bøf stroganoff)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Lammekød

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Lammesteg (f.eks. lammekølle)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Lammekotelet	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sammenkogte retter med lammekød	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Varm mad (fortsat)

Fjerkræ

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Kylling og høne	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kalkunschnitzel	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sammenkogte retter med kylling, høne og kalkun	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Hakket kød

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Frikadelle	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Hakkebøf	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Karbonade	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Medisterpølse	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Wienerpølse og anden pølse	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sammenkogte retter med hakket kød (f.eks. millionbøf)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Forloren hare, farsbudding og lignende	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Indmad

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Stegt lever	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sammenkogte retter med lever	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sammenkogte retter med hjerte	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Varm mad (fortsat)

Stegt fisk

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Stegt rødspætte, skrubbe	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Stegt sild	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Stegt makrel	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Stegt torsk, sej	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Stegt hornfisk	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Stegt laks, ørred og forel	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Stegt torskerogn	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Fiskefrikadelle	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Kogt fisk og fisk tilberedt i ovnen

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Kogt rødspætte, skrubbe	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kogt torsk, sej	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kogt laks, ørred og forel	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kogt makrel	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kogt torskerogn	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Andre retter

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Æggekage og omelet	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Gratin	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Grøntsagsbøf	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Grøntsagstærte	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Sammenkogte grøntsagsretter	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Pizza	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Tilbehør

De følgende 3 sider omhandler tilbehør. Spørgsmålene drejer sig først og fremmest om tilbehør til varme retter, men spiser De for eksempel blandet grøn salat til frokost, skal det medtages her.

Oversigtsspørgsmål

Som for pålæg og varm mad vedrører de første spørgsmål grupper af tilbehør.

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Kogte kartofler	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Ris	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Pasta (f.eks. spaghetti, makaroni)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Tilberedte grøntsager	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Blandet salat og råkost	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Tilbehør (fortsat)

Kartofler

Nedenstående spørgsmål drejer sig om tilberedningsformen for de kartofler, De spiser (eksempel 3).

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Kogte kartofler (1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Bagt kartoffel (1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Brasede og stegte kartofler	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kartoffelmos	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Stuvede kartofler	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kartoffelsalat	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Pommes frites	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Rå grøntsager

Med »blandet salat« menes salat, som overvejende består af finere grøntsager, eksempelvis grøn salat, tomat og agurk. Med »råkost« menes en blanding af grovere grøntsager, for eksempel hvidkål, gulerod, rødkål og selleri.

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Blandet salat	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Råkost	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Rå gulerod (1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Dressing til salat og råkost	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Tilbehør (fortsat)

Tilberedte grøntsager

Disse spørgsmål dækker grøntsager, der er kogte eller tilberedte på anden måde, eksempelvis stuvede. Grøntsager, som indgår i færdige grøntsagsblandinger, skal ikke anføres under de enkelte grøntsager.

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Grøntsagsblanding, (alle former)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Blomkål	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Rosenkål	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Broccoli	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Grønkål	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Hvidkål og spidskål	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Rødkål	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Gulerødder	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Ærter	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Bønner	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Majs	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Porre	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Spinat	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Løg	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Hvidløg	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Champignon	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Andre svampe	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Frugt, desserter, kager, slik og snacks

De følgende 3 sider indeholder spørgsmål om frugt, desserter, kager, slik og snacks. Som tidligere stiller vi først nogle spørgsmål om grupper. På de følgende 2 sider spørges til de specifikke typer af frugt, desserter, kager, slik og snacks.

Oversigtsspørgsmål

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Frisk frugt	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Dessert	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kager og wienerbrød	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Chokolade og slik	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Snacks og chips	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Frisk frugt

Levnedsmiddel		Aldrig	Pr. måned			Pr. uge			Pr. dag				
			Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Æble	(1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Pære	(1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Appelsin og mandarin	(1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Grapefrugt	(½ stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Banan	(1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Fersken og nektarin	(1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Jordbær	(1 portion)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kiwifrugt	(1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Vandmelon	(1 skive)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Anden type melon (f.eks. honningmelon)	(1 skive)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Desserter

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Frugtgrød	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Syltede frugter (f.eks. ferskner)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Kærnemælkskoldskål	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Is	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Kager

Levnedsmiddel		Aldrig	Pr. måned			Pr. uge			Pr. dag				
			Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Sandkage og tørkage	(1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Wienerbrød	(1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Flødeskumskage og lagkage	(1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Småkager og kiks	(1 stk)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Chokolade og slik

Levnedsmiddel		Aldrig	Pr. måned			Pr. uge			Pr. dag				
			Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Chokolade	(50 gram)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Karameller	(1 pose)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Bolcher	(1 pose)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Lakrids	(1 pose)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Lakridskonfekt	(1 pose)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Vingummi	(1 pose)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Snacks

Levnedsmiddel	Aldrig	Pr. måned			Pr. uge			Pr. dag				
		Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
Peanuts	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Chips (f.eks. franske kartofler)	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
Flæskesvær	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Øvrige levnedsmidler

Vi har ikke spurgt om alle levnedsmidler. Hvis der er andre levnedsmidler, som De spiser mindst én gang om måneden, kan De anføre dem i skemaet herunder.

Levnedsmiddel	Pr. måned			Pr. uge			Pr. dag				
	Mindre end 1	1	2-3	1	2-4	5-6	1	2-3	4-5	6-7	8 eller flere
	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑	❑

Kommentarer ______________________________

Kosttilskud

På denne side skal De anføre eventuelle kosttilskud, De har spist inden for det sidste år. Almindelige vitamin- og mineralpiller anføres også.

Har De spist kosttilskud inden for det sidste år? Ja ❑ Nej ❑ Hvis nej, gå til side 21

Hvis ja, udfyldes nedenstående skema for hvert kosttilskud.
Hvis det drejer sig om enkelt-vitaminer eller enkelt-mineraler, anføres mængden så vidt muligt. Mængden er oplyst på glasset eller pakningen, og kan f.eks. være angivet i mg.

Kosttilskud	Hvor mange måneder har De i alt spist tilskuddet inden for det sidste år?	Hvor mange tabletter har De spist i den nævnte periode?	Har De spist tilskuddet i den sidste måned?
Navn ______ Mængde ______	Mindre end 1 måned ❑ 1-3 måneder ❑ 4-6 måneder ❑ 7-9 måneder ❑ 10-12 måneder ❑	Mindre end 1. pr. uge ❑ 1-3 pr. uge ❑ 4-6 pr. uge ❑ 1 pr. dag ❑ 2-3 pr. dag ❑ 4 eller flere pr. dag ❑	Ja ❑ Nej ❑
Navn ______ Mængde ______	Mindre end 1 måned ❑ 1-3 måneder ❑ 4-6 måneder ❑ 7-9 måneder ❑ 10-12 måneder ❑	Mindre end 1. pr. uge ❑ 1-3 pr. uge ❑ 4-6 pr. uge ❑ 1 pr. dag ❑ 2-3 pr. dag ❑ 4 eller flere pr. dag ❑	Ja ❑ Nej ❑
Navn ______ Mængde ______	Mindre end 1 måned ❑ 1-3 måneder ❑ 4-6 måneder ❑ 7-9 måneder ❑ 10-12 måneder ❑	Mindre end 1. pr. uge ❑ 1-3 pr. uge ❑ 4-6 pr. uge ❑ 1 pr. dag ❑ 2-3 pr. dag ❑ 4 eller flere pr. dag ❑	Ja ❑ Nej ❑
Navn ______ Mængde ______	Mindre end 1 måned ❑ 1-3 måneder ❑ 4-6 måneder ❑ 7-9 måneder ❑ 10-12 måneder ❑	Mindre end 1. pr. uge ❑ 1-3 pr. uge ❑ 4-6 pr. uge ❑ 1 pr. dag ❑ 2-3 pr. dag ❑ 4 eller flere pr. dag ❑	Ja ❑ Nej ❑
Navn ______ Mængde ______	Mindre end 1 måned ❑ 1-3 måneder ❑ 4-6 måneder ❑ 7-9 måneder ❑ 10-12 måneder ❑	Mindre end 1. pr. uge ❑ 1-3 pr. uge ❑ 4-6 pr. uge ❑ 1 pr. dag ❑ 2-3 pr. dag ❑ 4 eller flere pr. dag ❑	Ja ❑ Nej ❑

Hvis der ikke er plads til alle kosttilskud, bedes de medbringe oplysninger om præparaterne svarende til ovenstående.

Fedtstoffer

Her ønsker vi oplysninger om hvilke typer af fedtstof, De smører på brød og bruger til madlavning. De skal skrive navnet på det pågældende fedtstof på den tomme linie.

Fedtstof på brød
Her skal de for hver type brød skrive navnet på den type fedtstof, De oftest har brugt inden for det sidste år. Spiser De ikke fedtstof på den pågældende type brød, eller spiser De slet ikke den nævnte brødtype, skrives dette på linien.

Fedtstof på rugbrød: _____

Fedtstof på franskbrød: _____

Fedtstof på knækbrød: _____

Fedtstof til madlavning
Her skal De skrive navnet på den type fedtstof, De oftest har brugt til madlavning inden for det sidste år. Bruger De aldrig fedtstof til madlavning, skrives dette på linien.

Fedtstof til madlavning: _____

Tilberedning

Hvordan tilbereder De oftest kød og fisk?
De skal kun sætte én markering.

- ❑ Kogning
- ❑ Pandestegning
- ❑ Ovnstegning, almindelig ovn
- ❑ Ovnstegning, mikrobølgeovn

Hvordan vil De beskrive overfladen
på kød og fisk, De har stegt på panden?
De skal kun sætte én markering.

- ❑ Overfladen er mørk
- ❑ Overfladen er brun
- ❑ Overfladen er gylden
- ❑ Overfladen er lys

De er færdig med kostspørgeskemaet. Tak for hjælpen.