The university of Bergen

Faculty of Medicine

MASTER THESIS

Ingrid Østebø Olsen

Experiences and Perceptions of Food Security Among Community-dwelling Older Adults in Oslo and Bergen, Norway: A Qualitative Study

Department of Global Public Health and Primary Care (IGS)

Institute of Centre for International Health (CIH)

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Main supervisor: Ingunn Marie Stadskleiv Engebretsen

Co-supervisors: Inger Aakre & Hanne Rosendahl-Riise

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Ingrid Østebø Olsen

Abstract

Background: Aging involves bodily changes that impact both the nutritional status and the diet of individuals. Maintaining a healthy diet can reduce the risk of developing diseases and frailty. Older adults' independence can be prolonged if they have supportive physical and social surroundings. There are more than 1 billion older people in the world today, and the older adult population is estimated to double by 2050. The global burden of Disability-adjusted life years is expected to raise. Simultaneously, the fertility is declining. Therefore, the current and upcoming burden of an aging population can benefit strongly from facilitating a supportive environment for older adults. There is limited data on prevalence and burden of malnutrition among older adults, especially in Low- and Middle-Income Countries. The data is also scant in High Income Countries. Most of the data on malnutrition among older adults in Norway is collected from older people living in institutions. As the population of older people is growing in Norway as well as worldwide, we should ensure that older adults can access food that meets their nutritional requirements. Previous studies about older adults and nutrition in Norway have usually focused on the older adults' nutritional status or their knowledge about nutrition, but there is a knowledge gap on their food security situation.

Objectives: Explore the experiences of food security among older adults living at home in Oslo, Norway. In addition, this study explored the perception of older adult's food security according to home care service staff in Oslo and Bergen, Norway.

Methods: This study used a descriptive qualitative design, including in-depth interviews with older adults and semi-structured interviews with staff. The older adult participants were recruited through nonprobability convenience sampling by municipal health care workers and the interviews were conducted in the participants' own homes. The home care service staff were recruited by home care service staff leaders in Nordre Aker, Oslo and Arna and Åsane, Bergen, and the interviews took place in the staffs' respective departments. The interviews were audio taped, and the recordings were stored safely. Analysis was conducted using the NVivo 12 PLUS software, involving inductive coding and theme development. Ethical approval was acquired from the regional ethical committee REK, and written informed consent was collected from all participants.

Results: The study found that food security experiences of older adults could be divided into the following themes: The first theme, securing food, revealed how finances impact food choices although none of the participants considered their financial status to be poor. In addition, conversations on food planning and purchasing highlighted food security barriers, where it was revealed how some older adults would rely on transportation options, municipal food services and non-municipal food services to access food. The second theme, preparing food, introduced the topics of pre-made or homemade food and how it was related to food security. The third theme, food intake, showed that the food items chosen, and variation reflected the food access the older adults had. Taste of food,

the social aspect of eating and health was connected to appetite and food intake. The final theme, opinions about food security, highlighted how the older adults believed their nutritional status as a responsibility mainly was their own, shared with family and the municipality under certain circumstances. In addition, the participants revealed that it was difficult to put into words how older adults get malnourished. Conversations with home care service staff revealed additional information on barriers to a sufficient nutritional intake among older adults, including personal weight management, nutrition knowledge, loss of independence, loneliness, and depression.

Conclusion: This study explored food security experiences of older adults in Oslo, and views by home care service staff in Oslo and Bergen, identifying factors such as finances, mobility, family support and health issues. The importance of food preferences and loneliness and mental health were identified as potential threats for food security. Future research should aim to include several demographics and regions of Norway to uncover more experiences, to be able to fully address the food security challenges older adults in Norway face. The study may inform the public health sector facing an increasing older adult population living alone or with limited social networks.

Key words: Food security, Food insecurity, Food Access, Nutrition, Malnutrition, Older adults, Older persons, Elderly

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Acronyms and abbreviations

AOA – Anorexia of aging

BIS – Building Stronger Public Health Institutions and Systems

BMI – Body Mass Index

DALYS – Disability Adjusted Life Years

DBM – Double Burden of Malnutrition

DRM – Disease-Related Malnutrition

FAO – Food and Agriculture Organization

FIES-SM – Food Security Experience Scale – Survey Mode

GHPP – Global Health Preparedness Program

GLM – Global Leadership Initiative on Malnutrition

IFAD – International Fund for Agricultural Development

HFIAS – Household Food Insecurity Scale

HICS – High Income Countries

LICS – Low Income Countries

LMICS – Low- and Middle-Income Countries

MAF – Ministry of Agriculture and Food

MI – Motivational interview

MICS – Middle Income Countries

MNA – Mini Nutritional Assessment

MST – Malnutrition Screening Tool

NIBIO – Norwegian Institute of Bioeconomy Research

NIPH – Norwegian Institute of Public Health

NUFFE(-NO) – Nutritional Form for Elderly (Norwegian)

PEM – Protein Energy Malnutrition

POU – Prevalence of Undernourishment

REC - Regional Ethical Committee

SDGs – Sustainable Development Goals

UHC – Universal Health Coverage

UN – United Nations

WHO – World Health Organization

Operational definitions

Disability-adjusted life years (DALYs): "One DALY represents the loss of the equivalent of one year of full health. DALYs for a disease or health condition are the sum of the years of life lost due to premature mortality (YLLs) and the years lived with a disability (YLDs) due to prevalent cases of the disease or health condition in a population" (WHO, 2021a).

Double burden of malnutrition (DBM): The coexistence of undernutrition and overnutrition and diet-related and non-communicable diseases in a society, within individuals, households and populations (WHO, 2017).

Fjordland: Fjordland is a brand that has several refrigerated pre-made dinners in single-serving containers. They can be warmed up in the microwave and are ready to be served after a few minutes. Their selection includes traditional Norwegian dinners in a home-cooked style. Fjordland was the first brand famous for making pre-made food in Norway, which is why most will refer to any pre-made refrigerated meal as "Fjordland" in lay language, even if a product is from another company. Therefore, in this text, "Fjordland" refers to all pre-made refrigerated food.

Food security: "When all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996).

Globalization: "Globalization is characterized by increasing economic integration, particularly trade and capital flows between countries" (Dixon et al., 2015).

Malnutrition: The World Health Organization refers to malnutrition as deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients (WHO, 2020c).

The **GLIM** criteria for malnutrition diagnosis includes the following (Cederholm et al., 2019):

Weight loss, Low Mody Mass Index (BMI), Reduced muscle mass, Reduced food intake or assimilation.

The **ESPEN** guidelines provide the following definitions:

Malnutrition/undernutrition: a state resulting from lack of intake or uptake of nutrition that leads to altered body composition (decreased fat free mass) and body cell mass leading to diminished physical and mental function and impaired clinical outcome from disease. Malnutrition can result from starvation, disease or advanced aging (e.g. >80 years), alone or in combination" (Cederholm et al., 2017).

*Malnutrition exists in different forms, such as disease-related malnutrition (**DRM**) with inflammation, Chronic DRM with inflammation, Acute disease- or injury-related malnutrition, DRM without inflammation, Malnutrition/undernutrition without disease, and Protein Energy Malnutrition (PEM).*

Older adult, older people, older person: The age where one is considered an older adult varies from country to country, from organization to organization, between the genders and within the literature. In Norway, older adults is sometimes defined from the general retirement age of 67 (SSB, 1999), and the government define older adults as 65 year olds (Meld. St. 15 (2017–2018)). The World Health Organization refers to older adults as people above 60 years of age (WHO, 2021d), so does The United Nations (UNDP, 2017). That means that in the literature listed, there will also be various definitions and exclusion criteria, all starting from 60 years and up.

Primary contact: The home care services connect each patient to a primary contact. The goal of the arrangement is to give the patient, as well as the next to kin, a sense of safety by having a primary contact person to reach out to when they are in need of help or have questions (Meld. St. 15 (2017–2018)).

Senior center: A building that serves as a social arena with activities for older adults, that usually has a café or restaurant with food semi-subsidized by the municipality.

Urbanization: The centration of human populations into discrete areas, in other words, the process where people emigrate from rural to urban areas (US EPA, 2015).

1. Background

1.1. Aging and nutrition

Aging involves bodily changes that affect both the nutritional status and the diet of individuals. Aging can be detected at a cellular level, where interconnections of hallmarks that regulate various cellular processes such as metabolism, protein synthesis, and cellular defense pathways, weakens (López-Otín et al., 2023). Genetic instability, telomere attrition where chromosomes get shorter or broken, dysfunction in protein homeostasis (proteostasis), and reduced function of the nutrient-sensing network all play a vital role for health and increases the risk of developing diseases (López-Otín et al., 2023). Aging can be recognized by the reduced function of the cardiovascular system, such as in the immune system; oral health; kidneys; and lungs (Elliott et al., 2021). Furthermore, loss of muscle mass and less physical activity is an expected part of the aging process, which leads to a decrease in energy needs (Norman et al., 2021). In the aging process one may also notice a decrease in appetite and hunger (Lean et al., 2017). However, older adults still need the same amount of nutrients, if not more, than younger adults. In addition, there is a high occurrence of cardiovascular diseases, type 2 diabetes, cancer, and dementia among older adults, all of which can affect and be affected by the diet and nutritional status of individuals (Engdahl et al., 2019). Hence, maintaining a diet that contains sufficient nutrients can reduce the risk of developing diseases. A sufficiently nutritious diet can also slow down the decline in mental and physical capacity, and vice versa, an insufficient nutritional intake may lead to fragility and loss of independence (Borg et al., 2015; Caçador et al., 2021; Ritchie & Yukawa, 2022). Previous studies show that treating malnutrition and diseases that are caused by or worsened by malnutrition may be difficult, and thus it is important to prevent malnutrition in the first place (Norman et al., 2021; Ritchie & Yukawa, 2022).

The pace of the aging process is not equal for everyone (Elliott et al., 2021). Being the same chronological age as someone does not equal being the same biological age, even though biological age is influenced by the chronological age. Additionally, biological age is impacted by ethnicity, sex, family history, prenatal fetal growth and genetics, all which are nonmodifiable (Laurent et al., 2019). However, vascular aging can also be affected by determinants such as high blood pressure, smoking, alcohol consumption, abnormal sleeping patterns, social deprivation, hormonal status, lack of physical activity, high perceived stress, oxidative stress, obesity, abdominal fat, and a high-fat diet among others. Thus, not smoking, working out, eating healthy, having normal lipid levels, normal weight and eating less salt may slow down the pace of biological aging (Laurent et al., 2019).

1.2. Healthy aging and functional ability

While the pace of biological aging is caused by many factors, the inequality in aging is mostly caused by the environments a person lives in and has lived in (WHO, 2021d). The Word Health Organizations (WHO) *Decade of Healthy Aging baseline report* emphasized how healthy aging could be achieved through the interplay between the environment and the functional ability of a person (WHO, 2020a). WHO

defines Healthy Aging as “the process of developing and maintaining the functional ability that enables well-being in older age” (WHO, 2015). It was further proposed that functional ability included being able to 1) meet one’s own basic needs, such as affording an adequate diet or buy clothing; 2) learn, grown and make decisions, which is important for the persons autonomy and independence; 3) be mobile, to be able to get daily tasks done as well as participate in activities; 4) maintain or build new relationships, with e.g., family, partners, or neighbors; and 5) contribute to society, such as being a mentor, helping family or by volunteering (WHO, 2020a). The more an older person’s intrinsic capacity, which includes their physical and mental capacity, is declining, the more important it is to facilitate a supportive and age-friendly environment, where their home, community and society are supportive in a way that enable people to continue doing what they enjoy (WHO, 2020b, 2020a).

1.3. Demography of older adults globally

WHO estimates that there will be about 2.1 billion adults over 60 years old in the world by 2050 (WHO, 2021c). The biggest cluster of older adults is currently found in High-Income Countries (HICs). Monaco and Japan currently have the biggest population of older adults, estimated to make up respectively 36% and 30% of the total population (World Bank, 2022) . However, by 2050, two thirds of the world’s older adults are expected to be found in current Low- and Middle- Income Countries (LMICs) (Tan, 2022; WHO, 2021d). In addition, it is the oldest group among older adults that is growing the quickest, meaning that there is and will be a rapid increase in people aged 80 and above (United Nations et al., 2020, s. 5).

Simultaneously, the global burden of Disability-Adjusted Life Years (DALYs) is expected to rise, along with the number of older adults surviving long enough to develop chronic disability (Lean et al., 2017). In other words, the extra life years gained tend to be additional years of poor health. Even though a preponderance of diseased older adults can lead to higher health expenditure in society (Williams et al., 2019), a healthy aging population can benefit society (Lean et al., 2017). As older adults’ independence can be prolonged if they have supportive physical and social surroundings, securing access to safe transport, walkable areas, near-by stores is crucial (WHO, 2015). Therefore, the current and upcoming aging population can benefit strongly from facilitating supportive environments for older adults and emphasizing healthy aging (WHO, 2020).

1.4. Demography of Norway

Currently, the biggest age groups of Norway are individuals aged 30-34 and 50-54, respectively (SSB, 2021). Life expectancy in Norway is 80.92 years for men and 84.35 years for women (SSB, 2021). While the life expectancy for older adults has been increasing, there has simultaneously been a steady decline in fertility the past 14 years, which currently is at an all-time low level with 1.41 children per woman (SSB, 2023a). The 50-54 age group constitutes around 7% of the population, while the youngest group (0-4 years old) makes up 5% (SSB, 2023b). Predictions suggest that to adequately provide healthcare (HC) services

for the aging population, the employment share in the public healthcare sector must double, and possibly triple, from the current 13% by 2060 (Holmøy et al., 2023). Thus, the aging population is expected to create record-high demands for employment in the healthcare sector by 2060. Simultaneously, the decline in newborns signals an inadequate supply of human resources to meet this growing demand. The development of welfare technology, such as elevators, disability aids and household appliances has been important tools for labor-saving in health care the past decades, allowing the older adults to live independently for longer (Holmøy et al., 2023). Although technology will still be prioritized in the coming years, development of welfare technology has not been enough to reduce the growth in health care employees per capita (Holmøy et al., 2023).

1.5. Food security and older adults

The generally accepted definition of food security is "when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996).

There are four main dimensions of food security, which are physical availability; economic and physical access; food utilization; and stability of the three dimensions over time (FAO, 2008). Availability is first and foremost concerned with the supply side, where food production, stock levels, import and export determine if there is food available. Economic and physical access concerns policy focus, income, expenditure, market, and pricing, all of which affect people's ability to obtain adequate food. For example, access as a concern for food security includes being able to afford food and get to the place where the food is provided. Food utilization concerns the body's use of nutrients of the food, which means that the energy and nutrients in the food require sufficient feeding practices, food preparation, and diversity in the diet that together with the body's own ability to biologically utilize the food, which impacts the nutritional status of a person. Stability over time is the final dimension of food security. Anything that changes the food intake, whether it be environmental, social, political, or economic reasons, a person will be considered food insecure if there are rapid changes in these factors.

Older adults may experience specific food security problems. Norway is self-sufficient when it comes to meat and sea food but is decreasingly self-sufficient with plant produce (Ministry of Agriculture and Food, 2015). Although it is reasonable to think that Norway could encounter issues providing sufficient availability of vegetables and grains in times of a crisis, food availability is not a problem currently, neither for older adults nor the general population. However, food access is crucial for older people living at home. Frailty and reduced mobility make older adults more vulnerable and dependent on environments that facilitate their needs, in order to independently access food. Consequently, elderly's vulnerability is connected to food security, and food access is highly relevant for older adults living at home in Norway. As older persons energy needs along with their ability to utilize nutrients diminish, the utilization dimension of food security is also highly relevant for older adults. Older adults who are homebound, socially isolated, who live in rural areas or have multiple chronic diseases are at especially

high risks for food insecurity (Tucher et al., 2021). Thus, in this thesis, the access and utilization dimensions are considered particularly relevant when discussing food security amongst older adults living at home.

1.6. Globalization, urbanization, and food insecurity

In the following, impacts of country development will be explained to highlight the consequences the changes have on older adults' food security. Country development typically includes economic changes such as urbanization, higher income, changes in food market and supply, as well as social changes such as rural to urban migration, and more sedentary lifestyles (FAO, 2005). These changes impact the diet, nutritional status, and the disease burden of the population. The migration from a rural environment may make education, health services and diverse food more accessible, but conversely the urban environment may also give exposure to foods with high amounts of fat and sugar, facilitate less physical activity, and introduce crowded living conditions (FAO, 2005).

Food insecurity can both be a cause and a consequence of migration (FAO et al., 2018). In rural areas of Low Income Countries (LICs) the nutritional status of older adults is heavily influenced by the household's ability to produce or buy food that meets their dietary needs (WHO & Tufts University, 2002). When families emigrate to urban areas, the situation of the older adults and the family structure may change. As a greater number of older adults survive, the families have more family members to support on less income earners. The older adults may also struggle to adapt to the new urban environment, but if they chose to stay or are left behind in the rural area, they have no choice but to support themselves. Without any external governmental support, the families may struggle to provide foods that are high in quality with sufficient nutrients (Tucker & Buranapin, 2001). Thus, the older adults may be at risk for both undernutrition and obesity, diabetes mellitus type 2, cancer, chronic illness, and disability (WHO & Tufts University, 2002).

There was a steady decline in hunger globally prior to the corona pandemic. However, in 2022 as much as 2.4 billion people worldwide experienced some level of food insecurity, which is about 391 million more people than pre-pandemic (FAO & IFAD, 2023). Furthermore, global hunger, which is measured by the prevalence of undernourishment, affects almost 9.2 % of the total global population, which is about 735 million people (FAO & IFAD, 2023). Food insecurity leads to malnutrition and poor health. Food insecurity is an issue in every continent, among all age groups, both genders, and every country, but especially women and residents of LMICs are at risk (FAO & IFAD, 2021).

1.7. Sustainable Development Goals and Food Insecurity

In the following the most relevant framework for food security and development of screening methods will be presented, which are The Sustainable Development Goals (SDGs). The SDGs are developed by the United Nations (UN) and consist of 17 goals, 169 targets and 232 indicators that gather the whole

world around one common plan to reduce poverty, inequality, and climate change within 2030 (WHO, 2022). Several of the SDGs remain relevant and important for food security, but the most relevant goal and targets for the present study is the following:

Goal 2: *Zero Hunger*

Target 2.1 *"By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round."*

Target 2.2 *"By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons."*

Target 2.3 *"By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment."*

Indicator 2.1.2 *Severity of food insecurity: "Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale"*

1.8. Screening for malnutrition

Screening for malnutrition can be a challenge, which is important to keep in mind when data about the burden of malnutrition is presented. One hindrance is that there are no globally accepted diagnosis criteria for malnutrition in elderly available today (Norman et al., 2021). However, the Global Leadership Initiative on Malnutrition (GLIM) criteria created by the world's four leading Clinical Nutrition Societies suggests that the diagnosis can be set with the presence of at least one phenotypic criterion of the following; Weight loss of 5% within the past 6 months or >10% beyond 6 months, low body mass index, and reduced muscle mass, as well as one of the following etiologic criterion; reduced food intake leading to <50% of energy requirements >1 week, or any reduction for >2 weeks, any chronic gastro-intestinal condition that impacts food absorption negatively, and acute disease, injury or chronic disease-related inflammation (Norman et al., 2021).

In Norway, nutritional status is normally assessed by following changes in bodyweight over time in combination with a screening tool of choice (The Norwegian Directorate of Health, 2016). Nutrition Risk Screening (NRS 2002); Mini Undernutrition Screening Tool (MUST); Mini Nutritional Assessment (MNA); Patient-Generated Subjective Global Assessment (PG-SGA); and Nutritional Form for Elderly (NUFFE) are tools that have been used to assess malnutrition in older adults (Kroc et al., 2021; Söderhamn, 2011; Xu & Vincent, 2020). From March 2022 the *Malnutritional Screening Tool* (MST) has been recommended as the common tool to screen for malnutrition for all health and care services in Norway, as it is quick, easy and effective (Helsedirektoratet, 2021).

1.9. Screening for food security

In the following the options for and challenges in measuring food security will be addressed. While there are several options available for measuring food security, none of them can successfully account for all dimensions of food security. Still, Household Food Insecurity Access Scale (HFIAS), Prevalence of Undernourishment (POU) (Sandoval et al., 2020), and The Food Insecurity Experience Scale - Survey Mode (FIES-SM) are options that have been widely in use. FIES-SM is an experienced-based metric of food security (FAO, 2022). This metric can be used to estimate prevalence of varying levels of food insecurity, in a valid, reliable, and comparable way. FIES-SM is useful when used on a household or individual level and gives a direct measure of experienced food insecurity. The metric consists of eight key questions that together can give a deeper understanding of the determinants and consequences of food insecurity, in addition to linking factors of food security across several sectors. The questions concern food-related behaviors and experiences associated with increasing difficulties in accessing food due to resource constraints.

1.10. The global burden of malnutrition among older adults

There is limited data on prevalence of malnutrition among older adults globally, especially from LICs. Most research on prevalence of malnutrition is conducted in HICs. A retrospective pooled analysis of 24 datasets from 12 countries across several continents, using the MNA screening tool, revealed that 2/3 of all older adults globally are either at risk for or are malnourished in hospitals, rehabilitation, nursing homes or community-settings (Kaiser et al., 2010). In European hospitals, residential care and community settings approximately ¼ of all older adult patients are at high risk for malnutrition, but prevalence varies in between wards and diagnoses (Leij-Halfwerk et al., 2019). While the specific prevalence number varies, findings tend to show that older adults in community settings usually have a low percentage of malnourished people, while older adults in care settings have a high percentage of malnourished older adults (Norman et al., 2021). For example, a narrative review that included a variety of countries estimated that the Protein Energy Malnutrition (PEM) prevalence in acute care settings is 16-70% among older adults, while the reported prevalence of PEM among community-dwelling older adults was estimated to be 5-30 % (Agarwal et al., 2013). The prevalence rates found in previous studies depend on screening methods, together with study setting, underlying diseases, and assessment methods (Norman et al., 2021). The total DALYs from malnutrition in the global population is estimated to be 680 DALYs per 100 000 population (Chong et al., 2023). The highest malnutrition-related DALYs were observed in African countries and low socio-demographic index countries. Malnutrition is also linked to increased risk of mortality in older adults, although little is known about the prevalence (Norman et al., 2021). One study taking place in the United States of America, found that malnutrition-related mortality increased from 10,7 per 100 000 in 1999 to 25,0 per 100 000 in 2020 (Mostafa et al., 2023). Thus, even in high income countries, mortality linked to malnutrition may be on the rise.

1.11. Norway's connection to global health

Norway aims to strengthen preparedness in response to global health issues, and the Norwegian institute of public health (NIPH) has taken part in the Global Health preparedness Program (GHPP); is taking part in the Universal Health Coverage (UHC) program which focuses on fair and equal access to health services; and founded a new program in 2021: Building Stronger Public Health Institutions and Systems (BIS), aiming to strengthen the public health institutions and systems in LMICs, particularly Ghana, Malawi, Palestine, with a plan to extend (Ministry of Foreign Affairs, 2022a; NIPH, 2022). Through BIS, Norway wishes to contribute to building competent and resilient healthy systems, share knowledge, and in return, strengthen the public health in Norway. Only about 50% of the world counties have a clear long-term care policy, plan, strategy or framework for aging (WHO, 2021b). Thus, the importance of focusing on health systems within food insecurity for older adults will not only benefit Norway, but the experiences in developing a good system may also be shared in developing health systems across the globe.

1.12. Burden of malnutrition among older adults in Norway

Most of the research done on malnutrition among older adults in Norway, takes place among older adults living in home care institutions, and only about a half of the older adults living in institutions have had their nutritional status mapped. Among these, the findings show that one third is malnourished or at risk for malnutrition (Bettina S. et al., 2017; The Norwegian Directorate of Health, 2021b). The majority of those reported at risk received a nutritional plan after assessment. Less studies have been done among older adults living at home receiving help from the home care service. The findings of the few studies that exist showed that, in a year, only about 18% of the older adults who received home care services had their nutritional risk assessed (The Norwegian Directorate of Health, 2021a). Among those, one out of four was found to be at risk for malnutrition, and only a half of them received a nutrition plan afterwards. Therefore, we can assume that there are older people that need nutritional help that does not receive it, especially among those who are not assessed.

In contradiction, a qualitative study about nutritional self-care among home-living older adults living at home in Norway found that their participants had sufficient knowledge, willingness, and ability to perform nutritional self-care (Dale & Söderhamn, 2015). While struggling with meal preparation, caused by general tiredness, or declined capacity are found to be important factors for malnutrition, these participants enjoyed preparing and cooking food, despite chronic illnesses and impaired health. This could indicate that not all the non-assessed older adults living at home have poor nutritional status. On the other hand, the study was only able to recruit a small group of people, who may not be representative of the overall older adult demographic.

1.13. Organization of food security in Norway

The first clear strategy for organizing food security in Norway was published by the government in November 2022 (Ministry of Foreign Affairs, 2022b). The topic of food security has been given attention after the corona pandemic, international conflicts such as the Ukraine war, and extreme weather which has been causing worries about Norway's food self-sufficiency. The strategy includes supporting smallholdings, bettering the infrastructure to prevent food loss from production until the food reaches the stores, utilizing aquatic foods, and reducing food waste. There are also strategies and reports from previous years that touch upon the topic. A report from the Norwegian Institute of Bioeconomy Research (NIBIO) in 2021 discusses food security and supply in a Norwegian context. This document states that food security in Norway is dependent on consistent food production, taking care of the production, and a well-functioning international market, as more than half of what we consume of food is imported (Dombu et al., 2021). In the strategy for Food Security in a climate perspective from 2012, a two-part strategy on food security was presented (Ministry of Foreign Affairs, 2012). The first part explained that Norway should promote food security in a climate perspective in different international contexts and be a driving force to strengthen global institutional architecture for food security. The second part was that Norwegian aid for agriculture, fisheries and aquaculture should be increased. Thus, the Norwegian strategies and reports on food security tend to emphasize food availability, rather than accessibility of food on a household or individual level.

1.14. Rationale

As the population of older adults is growing in Norway as well as worldwide, we should ensure that older adults are food secure, which includes making sure older persons can access food that meets their nutritional requirements, create supportive environments, and promote healthy aging (HOD, 2021).

The Project is in line with the Norwegian governments deposit report and strategies, and their goals. The goals include providing nutritional, appealing, and tasty food for older adults, and the goal of working systematically to follow up older adults' individual nutritional needs to avoid malnutrition (HOD, 2021).

Studies about nutrition and older adults in Norway have focused on the nutritional status of the older adults and older adults' knowledge about nutrition. Thus, there is a knowledge gap on older adults' food security situation.

One of the goals for the present study was to get insight into the older adults' perception of their access to food and food intake, which potentially could disclose if the participants experienced any barriers or needed help and/or services for either purchasing, storing, preparing, serving, or eating food. Additionally, home care service staff were included to gain further insight into the barriers older adults may face to be able to access food and maintain their nutritional status. Another goal was to provide information on the routines and guidelines the home care service staff adhered to in terms of older adults and food security. Lastly, the final goals were to get insight into who the older adults and home care service staff believed

were responsible to ensure adequate nutrition for older adults; the nutritional knowledge levels of the home care service staff; and home care service staff's attitudes towards nutritional work. This project can give an improved understanding of older adults' experiences and inform the public health sector facing an increasing older adult population living alone on causes for food security.

Studying the situation of older adults in Norway may further inform about the situation in similar settings, for example countries with nuclear families like Norway. In addition, experiences from Norway may prepare countries that currently are experiencing rapid development, urban transitions and increasing life expectancy on which food security challenges the older adults may face in the coming years.

2. Research Objectives

Therefore, the objectives for the present project are to:

2.1. General objectives

Explore the experiences of food security among older adults living at home Oslo, Norway.

Explore the perception of older adult's food security according to home care service staff, Oslo and Bergen, Norway.

2.2. Specific objectives

Get insight into the older adult's perception of their own diet, barriers and access to food including purchasing, affording, storing, preparing, serving, and eating food.

Get insight into the older adult's perceptions on need for help or support with food purchasing, storage, preparation, servings and eating.

Get insight into the home care service staff's experiences and challenges in supporting older adults to maintain their nutritional status.

Get insight into what the home care service staff believe are causations of food insecurity and malnutrition.

3. Methods

3.1. Context

3.1.1. The project

This thesis is part of the research project *"Food Security and Nutritional Status in Home-Dwelling Older Persons - a Multi-Center Study"*. The project consists of the project leader, who is an associate professor

at the University of Bergen with clinical competence in clinical nutrition; four cooperating institutions with their respective contact persons (The Institute of Marine Research, Oslo MET, The University of Oslo; and Center for International Health); four master students writing individual sub-projects; and their four respective supervisors. Three students, including the author, were affiliated with the University in Bergen, and one was affiliated with the University of Oslo. The four projects shared written consent forms and older adult participants. For this thesis in particular, data was also collected by conducting interviews with home care service staff. A separate consent form was used for home care service staff. The recruitment process of older adults was made possible through collective efforts, although the other sub-projects primarily collected quantitative data. The students assisted each other in preparing for data collection, including digitalizing questionnaires for the quantitative projects and interview preparations. Post-data collection the analysis and writing proceeded separately.

3.1.2. Study area and setting

The data was collected in Norway's two largest cities: Oslo and Bergen. Oslo, the capital, is also Norway's most densely populated city with approximately 712 100 habitants, situated near the border of Sweden (SSB, 2023b). The older adult participants lived in, and the home care service staff lived in the district of Nodre Aker, where 52 000 people live (Oslo municipality, 2014). Bergen, the second largest city of Norway has around 290 000 habitants and is located by the west coast, surrounded by mountains (SSB, 2023b). The home service staff of Bergen were working in Arna and Åsane with 13 800 and 42 000 habitants, respectively (Bergen municipality, 2023a). Norway has an approximate total population of 5.5 million (SSB, 2023b).

According to the Norwegian Directorate of Health, the chief municipal executive has the overall responsibility for the health and care sector (HOD, 2017). The municipalities are responsible for offering the health and care services necessary and are obliged to work preventatively (HOD, 2016). A measure recommended for the municipalities are *preventative home visits* where municipal employees visit older adults who are not yet receiving any health care services. In Bergen, older adults over 75 can request a preventative home visit, and older adults over 80 will receive an invitation. Bergen municipality focuses their conversations on the older adults everyday life, activity, social circumstances, health care services, health care aids and nutrition (Bergen municipality, 2023c). During the preventative home visits the older adults can gain knowledge of the municipalities' offers within health, culture, sports, and volunteer work. During the visits the municipality employees may also discover older adults who need health care and home care services. Bergen municipality additionally offers dinner delivery through the company Matvarehuset (AS), for persons living at home with diseases or disabilities that prevent them from shopping or preparing food. The food will be left at the door or can even be delivered inside if given a key (Bergen Kommune, 2023b).

Both Oslo and Bergen offer home care services. Oslo municipality's website specifically states that the home care service offers diet related advice (Oslo municipality, 2020). Furthermore, all home care service

departments in Norway are expected to pay attention to their patients' nutritional status. This includes weighing their patients monthly, screening the patient's nutritional status and documenting the status in the patient's journal through the IPLOS-system. When a patient is at risk for malnutrition, a nutritional plan is developed. The plan should include documentation of the patient's nutritional status, the goal of the nutrition plan, the patient's food intake, diagnoses, factors that impact their food intake, nutritional measures (such as treatment of underlying factors, facilitation of eating environment, dietary guidance, type of diet, food enrichment and food consistency needs), and the time when the plan is to be evaluated (The Norwegian Directorate of Health, 2016). The home care services also give each patient a primary contact. The goal of the arrangement is to give the patient, as well as the next to kin, a sense of safety by having a primary contact person to reach out to when they are in need of help or have questions (Meld. St. 15 (2017–2018))

3.1.3. Target population

The target population is older adults living at home. The words 'older adult' 'older people' 'older person' 'patient' and 'user' are used interchangeably in the following. Terms such as 'elderly' or 'senior' were avoided due to their potentially negative connotations. However, they were used when a definition or a name included either. The word 'patient' is used to describe a receiver of health care, particularly older adults receiving home care services. The word 'user' is used to describe older adults receiving specific services, such as food delivery.

3.2. Study design

3.2.1. Qualitative method

A qualitative study design was opted for, involving descriptive qualitative interviews. Data was gathered by conducting in-depth interviews with older adults living at home. These were private one-to-one interviews that used broad questions that allowed the participants to steer the conversation, enabling new topics to emerge (Curry et al., 2009, s. 1445). Additionally, semi-structured interviews were conducted with home care service staff, which included open-ended questions structured by topics. Separate interview guides were developed for each participant group, covering essential themes and probing alternatives. The interview guide had open-ended, non-leading questions. The interview guides were developed by the project leader, and the author was given freedom to adjust accordingly to the author's preferences and projects aim. The guide's language was slightly adjusted by the author to ensure a more natural flow during the interviews.

3.3. Sampling, recruitment, and enrolment

Participants were recruited through nonprobability convenience sampling. Municipal health care contact persons in Oslo identified potential older adult participants based on specific inclusion and exclusion criteria, an overview can be seen in Table 1.0, within the selected geographical regions: Nordre Aker in Oslo, Arna in Bergen and Åsane in Bergen. The potential participants provided oral consent to the home care service contact persons, granting permission to be contacted by the students. Around half of the final participants were suggested directly by these contact persons, while the rest were recommended by students collecting quantitative data.

Table 1.0: Inclusion and exclusion criteria for recruitment

Inclusion	**Exclusion**
Older persons, age > 65 years Men and women Community-dwelling Able to provide informed consent Able to receive a home visit for two hours by students Has connections to the municipal health care (e.g., home care services, food delivery, physiotherapists or attendance at senior center) **Additional inclusion criteria for the qualitative project:** Able and willing to engage in extended interviews	Nursing home residency Hospitalization at the time Cognitive impairment Life expectancy less than 3 months

The interviews and recruitment took place in the autumn semester of 2022. As the contact persons sought participants for the entire project, the separate process of specifically selecting candidates who were willing to and fit for interviewing became time-consuming. Thus, the students who did home visits for their quantitative projects suggested the remaining participants. Criteria for participant selection remained consistent across suggestions, focusing on older individuals who were talkative, able, and willing to engage in extended interviews. Those who agreed to join the qualitative part of the project were contacted by phone, confirming that they agreed to join the project before scheduling time for home visits.

Initially, the intention was to recruit participants from both Oslo and Bergen. The goal was to recruit participants from 12 households, six households at each site. If a household consisted of one older adult, only one person from the household would be interviewed, but if the household consisted of a couple, they would be interviewed together. The final participant number was expected to be somewhere between

12-24. However, Bergen municipality withdrew from the part of the project that involved recruitment of older adults. Consequently, six households and seven older adult participants from Oslo were included in the study.

A total of seven home care service staff participants, four from Bergen and three from Oslo, were included. They were selected by representatives in managerial positions, and men and women from all educational and occupation backgrounds were welcomed to join. Based on the contact information received, they were either contacted by phone or through e-mail to schedule a time to meet. Before commencing the interviews, the home care service staff participants signed the written consent forms. An overview of all the participants is given in Table 2.0.

Table 2.0: Participant information

Informants	**Site**	**Housing situation**	**Comment**
Older adult participant, P: Women **(W),** Men **(M),** age range			
P1: W, >85	Oslo	Terraced House	Courtship with P2
P2: M, >85	Oslo		Courtship with P1
P3: M, >85	Oslo	Apartment	
P4: W, 75-84	Oslo	House	
P5: M, 75-84	Oslo	Apartment	
P6: W, 65-74	Oslo	Residential community	
P7: W, >85	Oslo	Apartment	
P8: M, 74-84	Oslo	Apartment	
Home care service staff			
B1: W, Nutrition contact	Bergen		
B2: W, Advisor	Bergen		
B3: W, Nurse	Bergen		
B4: M, Nutrition contact	Bergen		
O1: W, Unit leader	Oslo		
O2: W, Physiotherapist	Oslo		
O3: W, Nurse	Oslo		

3.4. Data collection

The interviews with older adults were conducted in Nordre Aker, Oslo and took place in the participants' own homes. The interviews lasted approximately 33 minutes on average, despite an expected duration of one hour. However, the entire stay would often last closer to an hour. The interviews with home care service staff, conducted in Nordre Aker, Oslo; Arna, Bergen; and Åsane, Bergen, took place in the participants respective home care service department buildings. The interviews were expected to last about 20-30 minutes and ended up lasting 20 minutes on average. All interviews were conducted in Norwegian.

The interviews were structured by the interview guide. However, depending on initial responses, the interview structure was adjusted by removing, or altering the questions with probing alternatives. Positive or negative feedback to their answers were avoided. The approach included avoiding interrupting participants and taking short breaks or pauses between questions, to give the participants room to think and to facilitate for a comfortable pace.

3.5. Data storage

The interviews were audiotaped using the recorder device Olympus Linear PCM Recorder LS-P1. The recordings generated a large amount of data. Every day after interviewing, the recordings were uploaded in a separate hard drive and deleted from the device. When the audio was transcribed, the participants were pseudo-anonymized with an identification key that only was accessible for a few project members. Forms, patient data, and the data analysis were stored in a safe server solution. After completion of the study, all files will be deleted.

3.6. Analysis

All interviews were done in Norwegian and transcribed verbatim before being analyzed in an inductive manner using the NVivo 12 PLUS software. First, the transcribed interviews were uploaded to NVivo 12 PLUS and read one by one. Then, short paragraphs or sentences from the raw text were coded and categorized into different themes (called 'nodes' in NVivo) that were developed based on the content of the raw text, without interpretation of emotions. For example, a short paragraph where a participant was explaining how they planned their grocery shopping could create the theme "Securing food". Similarly, a paragraph on how a participant bought food at a senior center could be categorized in the same theme. Any overlapping nodes were gathered and refined. The next step involved closed coding, where the themes were further divided into different sub-themes (called 'sub-nodes' in NVivo), for example "Grocery shopping" and "Municipal Food services" placed under the theme "Securing food". The themes and sub-themes were rearranged several times until the final themes and sub-themes were decided on. The goal was for the final themes to reflect the research purpose. Norwegian text was translated into English for the themes and quotes, allowing flexibility for non-translatable expressions and informal language.

3.7. Ethical considerations

The project, *Food Security and Nutritional Status in Home-Dwelling Older Persons – a Multi-Center Study*, received ethical approval for the study from the Regional Ethical Committee (REC). The participants provided written informed consent (appendix III & V). Before conducting the interviews, all participants were reminded of their right to withdraw. In addition, the municipalities made sure to take their duty of confidentiality seriously during the process of selecting and informing about eligible participants. A "Good Clinical Practice" course was completed by author/interviewer before the data collection began. The data was stored on protected servers only available for a limited number of project members, and the participants were pseudo-anonymized with identification keys only accessible for selected project members.

While there was little to no risk associated with the project for the participants, it was particularly important to consider the vulnerability of older adult participants. Some older adults experience loneliness and some participants may therefore have enjoyed the company during the interview. Thus, it was crucial not to create expectations of any future visits. Another important task was to impact the results as little as possible, not making anyone feel the need to impress and thus answering inaccurately. The impact was likely limited, given that the interviewer/author was a young woman. Nonetheless, the educational background in public health with a focus on nutrition and physical activity, could potentially have impacted responses related to nutrition. For the home care service staff, it was particularly important to protect the confidentiality the participants, as they shared "the good and the bad" from their own work experiences (Giordano et al., 2007) of. Therefore, refraining from asking any further questions on topics where participants hesitated to answer was prioritized. Furthermore, attempts were made to give a balanced representation of the findings, being as accurate as possible in the presentation of opinions and experiences.

3.8. Validity, reliability & reflexivity

3.8.1. Validity

Validity in qualitative research ensures that the research is measuring what it intends to measure, and focuses on the accuracy and truthfulness of the findings (Cypress, 2017). Qualitative interviews are the preferred method for exploring perceptions, providing a comprehensive understanding and breadth rather than representativeness (Curry et al., 2009, p. 1442). The qualitative methos facilitated deeper insights into the various challenges faced by the older adults, as well as insights into the different experiences and perceptions of home care service staff.

To ensure validity, the data was carefully analyzed to accurately represent participants' opinions. The analysis tool, NVivo 12 was helpful to get an overview of which topics were brought up more, which in turn was used to weigh how much space each theme would be given in the results.

Establishing trust is important to encourage honesty from the participants. To gain trust and rapport, attempts were made to maintain a positive demeanor, mirroring the tone and body language of the participants, and considering the outfits worn and overall appearance during the interviews. As the interviews were conducted in the older adult participants' dwellings, efforts were also made to create a relaxed atmosphere by accepting any snack or drink offered, complimenting décor, and using humor. The goal was to make the participants feel at ease despite having a stranger in their home.

Respondent validation techniques, which allow participants to review initial findings, were not utilized in this research. Not using validation techniques can have weakened the validity.

3.8.2. Reliability

Reliability measures replicability, in other words, whether the research can be repeated and achieve the same results (Cypress, 2017). As qualitative findings are not measurable, the observations made cannot be quantified. In addition, individuals interviewed as well as society are constantly changing, making replicability a nearly impossible task. Thus, for qualitative research, reliability is measured based on how subjective the research process has been, and that the results are consistent and trustworthy (Dalland, 2020).

There were only eight and seven participants in each respective participant group. The older adult participants all lived in the same district in the same city, often highlighting the same things. When deciding on a number of participants in qualitative research, a goal is to get full information on all elements of what is being studied (Sargeant, 2012). In addition to having more participants, it could also have been beneficial if the participants had been more geographically spread, similarly to the home care service staff. During interviews with the home care service staff new ideas kept arising, thus, it would have been beneficial to interview more staff, as data saturation could have been greater (Sargeant, 2012). Finally, interviews were first conducted with older adults and then with staff. Going back and forth between the participant groups could have been beneficial, as conversations with staff made new questions arise that could have been interesting to bring back to the older adult participants.

Reliability will be further reinforced in the discussion section, where the findings will be discussed in the light of other studies, and similarities and contradictions to similar studies will be discussed. This technique is called data triangulation and further ensures credibility and transferability, by removing personal biases and offering a more balanced explanation for readers (Noble & Heale, 2019).

3.8.3. Reflexivity

Reflexivity covers how the researchers personal qualities impact and interferes with the data collected, such as the meaning given to and the interpretations of the data (Creswell, 2018). Reflexivity includes reflecting on how biases, values and personal background shape ones understanding of research.

Reflexivity can be divided into epistemological and personal reflexivity (Bergsland, 2021). While they will overlap with one another, epistemological reflexivity mainly involves reflection over how the research question or aim defines or limits the results generated from the data. In addition, it requires the researcher to reflect on how they understand knowledge and science, and how knowledge can be achieved. In other words, how the researcher understands theory and empiricism (Bergsland, 2021). Personal reflexivity mainly focuses on how the researcher's personal values, political views, experiences, and goals may impact the research.

Beginning with personal reflexivity, the educational background of the author is in public health with a focus on nutrition and physical activity. The author/interviewer had experience with Motivational Interviewing (MI) prior to the project. Leading questions are avoided in MI, which was beneficial for the in-depth interviews. However, a disadvantage with knowing MI was being inclined to have a more therapeutic approach rather than a completely neutral one. Prior to the data collection, the author's employment background primarily involved work with adults and children, such as work in a care home for mentally disabled adults, cooking classes for children and work as a deputy head and organizer of a summer school for children. However, post-data collection, the author began working full-time at a healthy life center that is interconnected with a senior center. Hence, the author's understanding of aging and the importance of attending a senior center may have been influenced by this during analysis. In addition, the author went from rarely to daily conversing with older people, thus a new understanding of how older adults view their own age, and their struggles was obtained.

The author believes in the epistemological view that knowledge can be descriptive, procedural, or coherent truth, depending on the question posed. This implies that the author believes that certain things are static truths, such as a mathematical calculation, where 1+1 consistently equals 2. However, the author also recognizes that knowledge is evolving, and that truthfulness will depend on the context, such as time in history, culture, and environment. Thus, there can be several truths existing simultaneously, depending on the topic and context. An example of this is the answer to "what can cause food insecurity". Food availability is not a common concern in Norway, as there is food for everyone in the stores, thus we are more concerned about access. In other countries, food insecurity can stem from food not enough food being cultivated or imported in the first place. Therefore, both availability and accessibility can be true causes for food insecurity at the same time in history, but only accessibility is relevant when discussing food insecurity with the older adult participants in this study. The author further believes that 'truth' is shaped by every individual's worldview, and that the context shapes the individuals' experiences. Therefore, the results were analyzed with an interpretive approach, which allows reality to be subjective (Scotland, 2012).

4. Results

An analysis of the findings will hereafter be presented, starting with the results from interviews with older adults living at home in Oslo and ending with results from interviews with staff from the home care service, in Bergen and Oslo. An overview of themes and subthemes including a short summary of points raised can be found in Table 3.0.

Table 3.0 Summary of results: Themes, sub-themes and main points raised.

Theme	Sub-theme	Points raised
Older adults living at home in Oslo		
Securing food	Personal finances	None expressed not being able to afford the food they wanted. Some were wealthy while others would have to make priorities. Economy impacted what food was bought and the food's quality.
	Planning meals	Some planned what to buy by writing grocery lists and/or by going on set days. Others preferred a spontaneous approach.
	Purchasing groceries	Some bought their own groceries. Some had family members buy and deliver groceries.
	Transportation	Participants who no longer could drive would rely on other transportation options to access food, such as public transport, volunteer drivers, pink buses, patient taxis and regular taxis.
	Municipal food services	Two municipal food services were identified: Subsidized dinners and food delivery from senior centers. None of the participants had food delivery.
	Restaurants and take-out	Some would occasionally opt for take-out and visit restaurants for dinner.
Preparing food	Homemade or pre-made	Just a few of the participants cooked home-made food regularly. Some would occasionally make semi-finished food or add vegetables to their pre-made meals. Most used and some entirely relied on pre-made dinner dishes.
	Receiving help	Only one participant directly received nutrition related help from the home care services. The rest received help with personal hygiene, medication or help at home. Those who did not receive any help, desired support for household chores.
Food intake	Food items chosen	A variation of groceries was commonly bought, such as bread, spreads, coffee, fruits, vegetables, fish, milk, juice, and sodas. "Fjordland", a pre-made dinner was mentioned particularly often.
	Variation	Most had trouble varying their food intake.
	"Good appetite"	Most of the participants felt that their appetite was adequate.

	Food flavor and taste		Food flavor impacted the older adults will and wish to eat food, to various degrees.
	Routine		Most participants ate at set times and would otherwise eat when they were hungry.
	The social aspect of the meal	Eating with others and appetite	One had weak hunger signals and used to rely on her late husband to remember to eat. Others felt that while eating with others was pleasant, it wasn't necessarily crucial for their appetite.
		Senior center – a social arena	The cafés at the social centers could attract older adults with tempting meals, however, the social aspect was the main reason for the older adults return to the centers.
		Being alone	Some participants spend most of their day alone. One of the participants made trips to the local grocery store to see other people.
		Eating with family	Meals were good occasions to gather the family and be social.
	Health and disease	Oral health	Oral health issues such as loose teeth and throat issues impacted how and what participants ate. Textures could be tough to chew for loose teeth and some food could be difficult to swallow.
		Appetite not affected	While many health issues were listed, such as cancer, diabetes, tiredness, and balance issues, most did not believe they impacted their appetite.
Opinions related to food security	The responsible for older adults' nutritional status		The participants believed the responsibility for older adult's nutritional status was their own, the local district and in some cases the government's.
	Why are older adults malnourished?		The participants found it challenging to describe causes for malnutrition beyond their personal experiences.
Home care service staff Oslo and Bergen			
Securing food	Buying groceries		In most cases family members bought groceries, however, some also bought their own.
	Grocery delivery services		Several stores offered food delivery that some patients used. Some seeked assistance to be able to order; others did not want help.
	Ready-made food delivery		Once a week, "Matvarehuset" in Bergen delivered ready-made dinners lasting a week. This was used by many patients in Bergen. In Oslo, the home care service staff had less knowledge about the options of home delivery tailored for older adults, but one pointed out that there were accessibility issues for those that might need such services the most.
Factors that cause malnutrition	Financial status and economy		Both the patients current and former financial status impacted how much money patients were comfortable to spend. The patient's current economy impacted how comfortable the home care service staff were to enhance their meals.
	"Always been slim"		Despite being malnourished, not all patients wished to gain weight.
	Nutrition knowledge		Nutrition knowledge and interest impacted what food they ate.

	Declining health and independence	Dementia	Forgetfulness could cause patients to forget to eat, have a repetitive diet, buy too little or too much food.
		Oral Health	The home care service staff were trained to pay attention to oral health, particularly when patients rapidly lost weight.
		Loss of independence	Reduced mobility due to a declining health could put older adults at risk for malnutrition as it could limit their food access and impact their autonomy.
	Loneliness and depression		Many older adults struggled with loneliness and depression, which impacted their nutritional status. Therefore, the home care service staff would try to motivate the patients to attend events at the senior centers.
	No will to live		Some patients had lost their will to live, and therefore stopped eating.
Nutritional work guidelines	Weighing and Mini Nutritional Assessment (MNA) screening		Weighing and MNA screening was the national guidelines recommended way to assess and monitor patients' nutritional status. When a patient had a low MNA-score, the home care service staff would develop a nutritional plan.
	Documentation		Not all home care service staff found time to document their work. They wanted to prioritize practical work but recognized the importance of documentation as evidence for their efforts. Staff sickness, patient unwillingness, no reminder system, not enough time, lack of leadership and cumbersome report systems were reasons listed causing documentation setbacks.
	New nutritional assessment: Malnutritional Screening Tool (MST)		A new screening tool was about to be implemented. The home care service staff believed it would help detect malnourished older adults.
Nutrition work in practice	Governing attitudes		Most believed their attitudes were good, with some exceptions. The staff explained that it was usually time and resources and not poor attitudes that could disrupt their work. Yet, most agreed that bringing more attention to the topic of nutrition and more ownership to their tasks could be beneficial.
	Restrictions		Home care service staff were not allowed to handle patients' money.
	Nutrition knowledge among employees		Few had formal education in nutrition, but most would seek information on their own, take e-courses and ask for help on the topic. However, some noted that resource limitation hindered good work despite improving their knowledge levels.
	Opportunities within the system	Nutrition lighthouses	Some departments had designated resource persons for nutrition, however they did not have any formal education in nutrition.
		Giving advice	Offering advice to patients were regularly done as an attempt to approve their nutritional status. However, not all patients wanted advice.
		Shopping list and shopping online	The home care service staff could assist in making a shopping list or when ordering online.
		Preparing food for patients	As the home care service staff could not cook for the patients, they did their best to

			enhance the other meals of patients with nutrition plans and make the food look appetizing.
		Food fortification products	Food fortification products were sometimes used. It was noted that the products were only meant to be used as supplements.
		Dining with patients	Dining with patients was a measure used to make the dining experience more enjoyable.
		External projects	"Spisevenn" was an external project where volunteers would dine with patients, but the staff claimed this had not been successful.
		Refrigerator notes	As a sign that employees needed to pay attention to a patient's nutritional status, some would leave notes or a symbol on the refrigerator to indicate that a patient needed extra nutritional care and to check their nutritional plan.
		Clinical nutritionists	From 2022, different departments in both Oslo and Bergen were in the process of hiring clinical nutritionists. They would help in particularly difficult patient cases, and otherwise be available to answer questions the staff would have.

4.1. Interviews with older adults living at home in Oslo

The results have been categorized into themes and subthemes, organized by the journey older adults typically must go through to secure food, including aspects of access and availability. First, there will be a summary of the issues that may occur in the process of obtaining food. Then, a description of what challenges may arise in food preparation will be given. Next comes an explanation on what impacts older adults' food intake and food choices, emphasizing what may influence their appetite. Finally, insight will be given into the older adults' own opinions on food security. Thus, the themes have been arranged in the following order: Securing food; preparing food; food intake; and opinions related to food security.

4.1.1. Securing food

The theme *securing food* will give insight into the process older adults may go through to obtain food. This chapter provides information about the challenges they face when trying to obtain food, ranging from how they physically access food to the availability of sufficiently healthy food. The following subthemes will be introduced: Personal finances; planning meals; purchasing groceries; transportation; municipal food services; and restaurants and take-out, respectively.

4.1.1.1. Personal finances

The participants were all interviewed in their own homes, which revealed that they had various housing situations. The participants lived in residential communities with shared common areas, apartments, terraced houses, or private houses with gardens. Some were renting and some owned their dwellings.

Regardless of their different living situations, none of the informants said that they were struggling financially. Correspondingly, none of the informants expressed that they could not afford to purchase the food that they wanted. Most of them would explain that they had enough money saved up, or that their pension was sufficient for a living. However, the picture was more nuanced ranging from being wealthy to having to make tougher priorities.

Some of the participants were satisfied with their current financial situation. Two informants, who found each other after their spouses had passed, explained:

"We cannot complain. Our living condition is good, and our pension 'comes flying in'. It covers most of our needs" (P2).

His partner added:

"Yes. We are doing good, but I think it's worth mentioning that when I became a widow, I did not even have 5 cents in debt. That was such a relief for me. I sold my house and invested in this [terraced house]. I would never have thought it would be this comfortable to grow old. We are very happy" (P1).

Another lady also expressed gratitude and was delighted to be able to live comfortably. She explained that as she used to work for the civil defense, her pension was good. Despite renting an expensive apartment and seeing the costs of electricity rising, she did not have problems paying her bills. Moreover, she did not feel the need to pay attention to grocery prices anymore, particularly ever since her children had been purchasing groceries for her. She concluded:

"I do not have any financial problems. And 'thank God' I don't! Because if you have bad finances, life can be complicated" (P7).

Others further expressed that they had the opportunity to share from their livelihood with family members. One emphasized that his finances were good by saying that financial issues *"do not exist"* to him. He explained that he had been making good money the past forty years before retiring, and that he found great joy in giving money to his five grandchildren. In addition to giving money, he had also shared other investments with his children and grandchildren:

"I used to have one cabin in the mountains and one by the sea – but I have entrusted those to my boys. I still own the apartment I live in though" (P3).

In contrast, not all claimed to have money in abundance. Some would spend their money wisely to this day, while others expressed that they had made sure to save money before retiring.

"My late husband and I never really went to the theater, or to the movies, or had dinners at restaurants or anything like that. We enjoyed cooking from our home, and we enjoyed doing work around the house ourselves. That saved us a lot of money" (P4).

While food was affordable and could be prioritized for most, compromises and restrictions were also observed. Strategies encountered was finding food on sale or "stocking up" on food from the neighboring country Sweden, that is known to have cheaper groceries. Some would regularly attend

daytrips to Sweden arranged by their local senior centers. One participant explained that she would typically purchase pizzas, cheese, Danish salami and pre-made dinners in bulk. In addition, she explained that a medical product she would pay 120 NOK for in Norwegian pharmacies, would only cost her 50 NOK in Sweden. The saving could yield other types of flexibility, such as one participant who allowed himself to indulge:

"You generally end up buying a little more than what you need when you go to Sweden, but it's very nice to get a little treat from there that would be very expensive here… You can take a package of bacon as an example. […] It is twice as expensive here as it is over the border in Sweden" (P2).

Some participants would pay attention to and look for sales on healthier, yet more expensive options, such as fish. Restrictions detected included buying cheaper food which could be less healthy compared to paying more for healthier food:

"...eating healthy is expensive" (P6).

In short, although most participants could afford the food they preferred, priorities and restrictions were common practices that could impact the quality of the food they bought.

4.1.1.2. Planning meals

The participants had different approaches to planning their meals. Some wrote grocery lists, either because they liked planning their meals, or out of necessity. For example, some would write them for family members as their family would be buying groceries for them. Among those that bought their own groceries, some also preferred picking out groceries based on what they found in the store, rather than planning what to buy ahead. Some would shop on set days, while others liked the freedom of going whenever they felt like it. In sum, planning meals could range from cautious decision making regarding what to buy and when, to more impulsive shopping on inconsistent days.

4.1.1.3. Purchasing groceries

Some participants bought their own groceries, and others would have family members buy groceries for them. Among those who bought their own groceries, some could drive to the store, while others had to walk. One participant was relying on her walker. She explained how the walker was convenient for grocery shopping as she could use it for support as well as keeping her groceries in the walker's bag. Another was able to walk to the grocery store next to the building he lived in. However, whenever he wanted to get something that he could not get from the local grocery store, such as strong alcoholic beverages, his brother would come pick him up by car and they would go to the mall together. About half of the participants had family members buy groceries for them. Their children would typically buy groceries that would last them a week at a time.

"...But whenever when my son is here, he'll ask me if there's anything more that I might need, and then he'll run to get it from the grocery store right down the street" (P7).

One participant explained that even though he missed going to the store, he did not consider ordering groceries online. Neither did any of the other participants. He preferred asking his children, and pointed

out that they would have to go grocery shopping for themselves anyways. While he always made them a grocery-list with all the things he needed, they would sometimes add other items. He appreciated this as what he missed the most about going to the grocery store by himself, was finding surprises:

"Those things that you cannot see unless you're there" (P3).

In summary, some were able to buy groceries by themselves, some would ask for assistance for certain purchases, and some exclusively relied on their family members to access groceries.

4.1.1.4. Transportation

Transportation options were used to access food, social arenas, and health care. To get around, the participants would walk or drive, or they would make use of public transport, senior center volunteer drivers, rosa busser (translating to 'pink buses'), patient taxies and Tilrettelagt Tranport: TT-kort (translating to 'arranged transportation-cards': TT-cards). The variety of transportation options were particularly important for those who no longer could drive. One participant explained that not having to rely on anyone gave him a sense of independence. He would occasionally use public buses or trams to get around:

"It makes me feel free. Get some air beneath my wings" (P8).

Some volunteers offered transportation specifically to and from the senior center. The service cost 50 NOK each way and would take them from their home directly to the senior center, regardless of where in the district they lived. Pink buses were another service available for older adults. The price was the same as for a standard public transport ticket, but in contrast to regular public transport, the older adult customers would get the freedom to choose where to be picked up and where they wanted to go. One downside noted by a user of this option, was that the bus started its round later in the day than he preferred. To access health care, the older adults could use patient-taxis. Unfortunately, not all had great experiences with this option. One participant explained that he had been five minutes late for his patient-taxi as he was taking longer getting down the stairs from his apartment than he expected. This led to the patient-taxi leaving him behind. Regular taxis were also used, and older adults who were unable to use public transport due to disability or illness could apply for a TT-cards from the municipality that could be used to pay for the taxi rides. TT-cards were used by several of the participants. Thus, several transportation options, although with various conditions, could be utilized by the older adults if they managed to leave their building and could afford the services.

4.1.1.5. Municipal food services

The participants were asked about their knowledge of municipal food service and identified two: Subsidized dinners from senior centers and food delivery from senior centers. The participants knowledge about such services ranged from not being aware of any, having an idea that they might exist, to knowing about specific services. However, none of the participants made use of a municipal food *delivery* service, and they expressed little to no interest in having food delivered:

"There might be such a service, but I don't know about it, nor do I intend using it" (P6).

Another was also hesitant about looking into it for himself after an observation he had made:

"A lady on the floor below me got food delivered, but it was always just left outside her door. She never brought it in or ate it" (P5).

Previously, the senior centers in Oslo had been delivering warm food once or twice a week, but according to the informants, they were no longer allowed to do so due to food safety restrictions. Several participants explained that because the warm food delivery had been stopped, not many were interested as it would not differentiate much from Fjordland. As a consequence of little knowledge about the services, unappealing observations, rumors and little interest in cold food delivery, none made use of the municipal food delivery services.

Most of the participants knew about the option of having subsidized dinner at the senior centers, and most of the participants would occasionally have their dinner there. However, two stated that they were not interested and found the dinner options boring. One of them still went regularly to the senior center to exercise with other older adults, and while he did not care to stay until dinner was served, he would stay for an hour to chat, have a cup of coffee, a sandwich and maybe a waffle. Other participants were more positive regarding the dinner options. One participant that also liked exercising at the center, would always eat dinner after a class, enjoying both the food and the company. One would never stay to eat there but would intermittently order take-out from the senior center and eat it at home after attending a workout class. He liked the food but did not feel the need to go to the senior center solitarily to eat dinner. Finally, the time-of-day the dinner was served also impacted the will some older adults had to eat there. Dinner serving ending at 14:30 felt too early for some of them, but they found a way to enjoy a warm meal there regardless:

"We just call it a warm lunch" (P1).

All things considered, municipal subsidized dinners from the senior center were not used as a main source of food for any of the participants, but it was a meal they enjoyed. They also found the social aspect important and combined the food service with other activities such as exercise.

4.1.1.6. Restaurants and take-out

A final option mentioned for obtaining dinners was eating at restaurants or getting take-out from restaurants and inns. One participant mentioned that she would have dinners at a restaurant with other older adults every Saturday. In contrast, another participant said that she will never eat out and would rather have delicious homemade meals. Others mentioned that they occasionally would enjoy a take-out meal from inns and kebab food stalls. None mentioned the use of non-municipal food delivery services or apps.

4.1.2. Preparing food

The theme preparing food, has been divided into two sub-themes: Homemade or pre-made; and receiving help. This theme will bring awareness to which extent older adults prepare their own food, what help is available, as well as what help the older adults might need for optimal food security.

4.1.2.1. Homemade or pre-made

Only a minority of the participants cooked dinners using whole foods, meaning food items with little modification, and none of the participants did so daily. However, with one exception, the rest would prepare food to some extent. Two stated that they occasionally would cook dinners from whole foods, and a few would sometimes cook using semi-finished products and incorporate vegetables:

"Usually, I get dinners that I can microwave. But I try to make food from scratch now and then. Warm up some patties or burgers. Boil some vegetables to have on the side. I try to vary." (P8).

Another explained that she cooked food at home, either using semi-finished products or from whole foods, almost daily. This was partly due to her health concerns, as she had to ensure that she would be able to swallow the food. A couple interviewed together explained that their dinner routines varied between homemade, pre-made, and occasional takeout meals in the evening, following a "warm lunch" at their senior center. The remaining participants solely relied on a selection of pre-made Fjordland or frozen food for dinner. One participant displayed a fridge fully stocked up with Fjordland products. His son, who did the participants weekly grocery shopping, was going for vacation the next couple weeks and had stocked up to ensure that his dad would be self-sufficient until he returned. For breakfast and evening snacks (known as 'kvelds'), most of the participants would have bread or eat oat porridge, which they were able to plan for and prepare by themselves. In addition, some participants would have a bowl of fruit and berries easily available so that they could take a snack at different times during the day.

In short, most participants generally avoided cooking dinners from whole foods, mainly relying on Fjordland or frozen meals, with occasional semi-finished or homemade cooking. Some would also supplement with meals from senior centers or takeout, and primarily consumed easily preparable items like bread, oat porridge, and fruits for breakfast and evening snacks.

4.1.2.2 Receiving help

More than half of the participants received help from the home care service. The help they received was mainly related to hygiene, care, being put to bed, and medication, rather than receiving help with food. One of the participants however, needed help with preparation of all meals, and depended on the home care service staff to prepare breakfast, heat up pre-made dinners, and prepare an evening snack, but would have preferred to be able to cook her own food:

"I would have been happy if I still could make food by myself" (P7).

One lived in a residential community for older adults, where they would help with grocery shopping by organizing trips to the grocery store with maxi taxis. Typically, the help the participants wanted the most

was help with household chores and gardening, but only two participants received this kind of help from the home care services. Three of the participants did not receive any help from the municipality at all. Those had agreements with their children, sons/daughters-in-law, or grandchildren for household chores, such as cleaning their house, doing laundry, or helping with gardening. Some were also relying on technology for certain chores, such as having an automatic vacuum cleaner. One lady had asked to get help from the municipality to clean her house, however she had not had any success in getting that help so far. She said both family members and neighbors had asked her to reach out if she ever needed help with anything but found that it was difficult for her to ask for help:

"They're already so busy. And I don't like asking them for help... It might be a generational thing" (P4).

In summary, one relied on the home care service for all meals, some got help from the home care services related to personal hygiene, medication or help at home, and the remaining participant did not have any help from the home care service at all. Household chores were the most desired support, with some relying on family or using technology.

4.1.3. Food intake

The following section on food intake offers insight into the predominant grocery choices made by the participants and indicates to what extent they were able to vary their food intake. This section brings awareness to how appetite is an important factor for food intake and explores how appetite is impacted by flavor and taste, routine, the social aspect of meals, health issues and disease. Food intake will be presented by the following sub-themes: Food items chosen; variation; "good appetite"; food flavor and taste; routine; the social aspect of the meal; and health and disease.

4.1.3.1. Food items chosen

Most participants purchased groceries such as bread, spreads, coffee, fruits, vegetables, fish, milk, juice, and sodas. The quantities varied depending on personal preferences. Notably, a grocery that was mentioned particularly often was Fjordland. Fjordland was favored due to its convenience. All the participants ate Fjordland, either sporadically or daily. Some of the participants, especially those who no longer could cook, relied on it. The home care services did not offer to cook dinners but could offer to microwave the packages for them. In sum, while most participants occasionally bought variations of milk, coffee, fruits, vegetables and bread, all participants regularly bought Fjordland dinners.

4.1.3.2. Variation

Most participants had trouble varying their food, especially those relying on Fjordland as there were limited options. One participant explained that her meals could get a bit monotonous and wished there were more options for ready-made dinners. Oral health also impacted the vegetable and fruit consumption for some of the participants due to the texture. Despite facing various challenges, efforts were made to vary between the different dishes and by choosing a variety of spreads and toppings for

bread. For example, some participants would supplement Fjordland dinners by making a small salad on the side with assorted vegetables.

4.1.3.3. "Good appetite"

Most of the participants expressed that they overall had a good appetite and said that they would have several meals per day. In the words of this participant:

"You might say we never let a meal pass us by" (P2).

When asked how to improve their appetite, several said that a better appetite was not needed, and some felt that their appetite was in fact "*too* good" (P5).

4.1.3.4. Food flavor and taste

Although most generally described their appetite as good, lack of flavors seemed to influence their food intake. Several participants expressed how food flavor was particularly important for their decision to eat. One expressed missing the excitement of exploring new items at the store, as this used to have an impact on his food choices. Another participant, who still was able to do his own grocery shopping, found himself getting bored of the food he ate. Regardless, he reassuringly explained that being bored of the food he bought did not stop him from eating.

Most of the participants who relied on Fjordland were satisfied with the selection, and generally enjoyed the flavors. However, one expressed that he thought some meals were *"useful"*, while others were not. Furthermore, several participants mentioned that they did not like specific elements such as the pre-cooked potatoes in the packages. Another participant was particularly happy with them:

"They're very good, there are quite a few dishes I choose from, usually fish, because I really like fish. […] And meat dishes. Taste-wise I'd say they fall high on a gourmet list. I'm very happy with them" (P3).

One of the participants lived in a residential community for the older adults, where dinner could be purchased from a common kitchen. However, the food offered was not of the quality she wished for, and thus she seldom ate there. When asked what they served, she stated:

"It could be meatballs… That are burned. Cabbage… That is not fully cooked" (P6).

The unpleasant flavors and textures led to her preferring having Fjordland and frozen ready-made meals for dinner. The exception was during the weekend when, according to her, the food served was more appetizing. Furthermore, she preferred to eat there during the weekends because she relied on those meals for vegetables. She also mentioned that her taste buds and smell were reduced from smoking cigarettes but declared that food still tasted good. She was not the only participant experiencing a decline in taste, but none of them claimed to be particularly bothered by it.

One participant that had been "in and out" of different hospitals and hospital wards explained how the food served at various institutions shifted from low cost yet delicious to poor quality and expensive. The poor-quality food had made her lose her appetite. She explained how she had lost so much weight

during her stay at one of the hospitals with poor food, that she had purchased a whole new wardrobe of clothes when returning from the hospital. However, after a few months back home, she had regained her weight and was back to her old shape. Hence, her appetite may have been affected by the institutional practice and food flavor, which in turn affected her body composition and nutritional status.

In short, participants valued food flavor and varied choices. While many were content with Fjordland meals, some were unsatisfied by specific elements. One participant living in a residential community rarely ate the food offered due to the unappealing food quality and ate Fjordland instead. Participants were generally unaffected by reduced taste and smell, but relatively affected by bad flavor and texture.

4.1.3.5. Routine

Routine also seemed to impact eating habits and appetite. Several had set dinner times, often at 16:00 or 17:00, and except for one participant they rarely skipped dinner. On the rare occasion that they did, they would make up for it later in the day. In addition, hunger signals were rarely ignored. One lady noted that she usually kept a banana at her bedside in case she got hungry during the night or in the morning before the home care service help arrived. Another said she occasionally would wake up in the middle of the night hungry. She would get up and eat a couple slices of bread with strawberry jam and butter before returning to bed. Thus, established routines were crucial, with participants rarely skipping dinner and compensating later if hungry. Thus, some kept snacks by their bedside for the nighttime or hunger in the morning.

4.1.3.6. The social aspect of the meal

Eating with others and appetite

One individual expressed that eating with others affected her appetite significantly, as she did not feel hunger alone and never had. She shared that when her husband was alive, she would remember to eat because of their shared mealtime routine, but after he passed it could get late before she realized that it was time to eat. Several participants mentioned that they enjoyed the social aspects of eating with others, for example at their local senior centers or with family members, however one of them explained that while it is more enjoyable, he did not notice any effect on his appetite. Therefore, the social aspect of the meal appeared to impact the desire and readiness to eat to varying degrees.

Senior center – a social arena

For many, attending the senior center was crucial beyond just eating meals. Although the dinners offered might have been the initial attraction to the senior centers, it was the social connections that drew many participants back:

"It's not just the food that is alluring, but it's very social too" (P2).

Moreover, individuals formed friendships with the people they met there and dined together with. Many of the attendants were widowed, and some participants expressed that it is not uncommon to suffer from loneliness. For many participants the senior centers could be regarded as their main social arena. They were all describing their respective senior centers with positive adjectives, such as "cozy". Some would

attend special events, for example “breakfasts for men only”. Furthermore, another important consequence of attending senior centers was that new friendships lead to mutual care and support:

“The older adults are very much dependent on each other, socially. You get to know each other and dine together. If people have problems, we fix them together” (P1).

In summary, the senior centers served as a social arena, creating friendships and mutual care among individuals. The social connections, alongside events, activities and good food, were vital in attracting older adults to revisit the centers.

Being alone

Some participants were alone most of the time during a day and would look for ways to socialize with others. One of the participants would regularly attend the senior center to exercise but would feel lonely the remaining days. As a result, he would go to the grocery store more often than he needed to:

“I sometimes walk to the store, it’s a bit social in a way, you know, just to meet people. […] It can be boring to just go back and forth to the store, so I usually take a little extra round in there, greeting everybody” (P8).

Thus, these unplanned trips to the grocery store were done intentionally to meet other people and to avoid being alone.

Eating with family

Apart from receiving help, the social aspects of having family around were also important for the participants. One man had been living separately from his wife for three years, ever since she got too sick and had to live in a care center full time. While they spoke on the phone daily, they would meet about once a week. Typically, they would meet to share a meal, either at his place or at one of their children’s houses:

“Just two days ago we had pizza at my place. That was great. She can stay for three hours and then they’ll pick her up” (P3).

Others also mentioned that they occasionally would get invited for dinner at children’s or grandchildren’s houses, or that their families would visit them, sometimes bringing pastries and cakes. The social aspect of family meals was significant, as participants found shared meals to be a good excuse to meet.

4.1.3.7. Health and disease

A few of the interview objects described how their health issues intertwined with their food intake. Among the health issues experienced, oral health was the one that affected their appetite the most.

Oral Health

Three mentioned that they had oral health issues, which affected how and what they ate. Two had loose

teeth, and one experienced throat problems. Loose teeth first and foremost affected what they could eat. One explained:

"I have several loose teeth, which means I cannot just eat all kinds of food. [Having] an apple would be impossible, and, for example, baguettes and such… Soups are okay though. And meat if it is tender" (P6).

Another participant expressed that she could no longer have one of her favorite snacks:

"I have a fixed bridge dental prosthesis, which I have to be very careful with. I cannot bite into anything that is chewy. So, like, apples and the likes I must break into small pieces. I also cannot eat crispbread anymore, which I was very fond of before. I've eaten a lot of crispbread! But I cannot do that anymore" (P7).

The fear of losing teeth or breaking the prosthesis affected what they would or could eat and led to restricting their diets by necessitating caution. It was this fear, rather than experiencing a dislike, decreased sense of taste, or overall lack of hunger, that affected what they ate.

Another participant gave insight into the consequences of having throat problems that affected her ability to swallow. When asked what could make her appetite better, she pointed to her throat and said: "*that this got better*" (P4). She explained that it is better for her to sit alone and eat. She preferred this to eating with others because she could take her time eating. In addition, she preferred it because she wouldn't have to go back and forth between eating and talking, which previously had caused food to get stuck in her throat. She further explained that the more she worried that food would get stuck, the more likely it was to happen. Not only would it be painful, but she also expressed that it was "nasty" when food got stuck in a social setting. The participants' issues with swallowing had eventually led her to withdraw from social events where food was central.

Appetite not affected

While many participants experienced various health issues or diseases, not all the participants felt that these affected their appetites negatively. One lady was particularly clear:

"I have come to understand that I have gotten bone marrow cancer... And the first thing I said was 'at least weight loss won't be what kills me'. Even if I must force myself, I will eat. But I haven't noticed any lack of appetite. And medication helps, I get chemotherapy in the form of capsules. It's three weeks on and one week off. The blood percentage goes up and the cancer cells go back. So" (P1).

Other participants that faced diabetes, tiredness, lack of sleep, or balance issues, similarly did not believe that these health conditions affected their appetites.

4.1.4. Opinions related to food security

4.1.4.1. The responsibility for older adults' nutrition status

The perceptions the older adult participants had regarding who they considered responsible for their nutritional status varied, but most commonly they believed that the responsibility fell on the local district services or themselves:

"That's… Well… I think it is oneself that must figure out what to eat. It's very personal" (P8).

Another shared a similar view, noting how he easily could access necessary items in grocery stores, and added that grocery stores were available everywhere. However, he explained that this perception no longer applied once someone became dependent on others. Moreover, several shared the opinion that as long as someone was living at home the responsibility was theirs, but that the picture changed once someone was hospitalized or in a nursing home, and that these institutions should make sure to offer healthy and tasty food. There was also a suggestion that the municipality or government should intervene more significantly, especially in the changing economic circumstances, to ensure affordability of food for the older adults. Furthermore, many participants emphasized the importance of their local districts:

"Responsible? That must be the district you live in. It is! And it's so nice that, like right now, I called to ask if I could get a new walker with bigger wheels. I found that it would be easier to walk outside once the snow starts to fall, and I got one right away! […] And last year, when I lost weight, they came to check on me regularly" (P4).

Being able to get a hold of a walker has relevance to food security as it could impact the older adults' ability to move around independently. Overall, the participants believed it was primarily their own responsibility to ensure they had a good nutritional status, but some believed that the local district had responsibility too, acknowledging the importance they had particularly for individuals with health issues. A few felt that governmental support could be necessary for economic reasons.

4.1.4.2. Why are older adults malnourished?

When asked about the cause of malnutrition among older adults, the participants found it challenging to look beyond their own situation and circumstances. They all needed some time to think about it or struggled responding collectively. One mentioned that being immobile would give her a hard time, as she would not be able to go to the store by herself like she did now and would have to depend on others. Another admitted that this was not something that he had given any thought before. He added that he had heard about people who never experienced hunger, but that it was hard for him to understand as he had not experienced that himself. Similar thoughts were echoed by another participant:

"What can I say… You've got to be good at eating. It cannot be much else. People must see themselves hungry. There are plenty of ways to eat" (P8).

Lastly, the impact of economic limitations and time constraints on cooking healthy food was brought up by another participant, who underlined that those with low income might end up cooking food that isn't too healthy.

While the participants found it difficult to pinpoint the causes of malnutrition among older adults, they emphasized the importance of individual mobility, experiencing hunger, having adequate financial resources, and sufficient time to maintain good nutritional status.

4.2. Interviews with staff from home care service in Bergen and Oslo

The following results have been categorized in themes and subthemes. The order of the first two themes is organized in a way that is attempting to mirror the subjects discussed by the older adults in the previous results section, and the second part will introduce how the home care service staff does nutrition work, both in theory and in practice. The themes have been organized in the following order: Securing food; factors that cause malnutrition; nutrition work guidelines; and nutritional work in practice.

4.2.1. Securing food

The home care service employees in both Oslo and Bergen identified four different ways in which older adults secured food: Buying groceries themselves; family members buying groceries; grocery delivery; and dinner delivery.

4.2.1.1. Buying groceries

According to the staff, it was common for children of the patients that receive home care services to handle grocery shopping and delivery for their parents:

"Some will go out alone and get groceries for themselves, or they will go together with family members, or maybe the family members will buy it for them. It's up to their families to decide what they can do for them" (B1).

However, some noted that there was a tendency that the food the family members bought could get repetitive. Another issue that could arise was family members buying variants of products that they would buy for themselves, such as low-calorie and low-fat products, which may not align with the nutritional needs of the older adults, such as patients at risk of becoming underweight. In contrast, an advantage observed was that the children of the older adults often knew what food their parents preferred, and thus the older adults were more likely to consume the food provided. On the other hand, the staff highlighted that not all older adults had a family, family members that live nearby, or had family members that were willing to buy groceries for them:

"There are a lot of families that don't bother… or bother might be… Well, there's probably a lot of reasons for why, but regardless, they don't follow up. They say that they will get groceries, but they don't. So, it's not always easy" (B2).

In summary, while purchasing groceries in shops was important for food access, the methods to obtain groceries varied among the older adults, with some being self-sufficient while others were relying on family support.

4.2.1.2. Grocery delivery services

An alternative approach frequently used by the older adult patients was food delivery from grocery stores. The home care service staff, in both Oslo and Bergen, were aware of several grocery stores that had websites that enabled the older customers to put groceries in a virtual basket and get it sent to their address. Although convenient, the staff acknowledged that online shopping lacked the sensory experience of selecting items in a physical store, such as smell, potentially affecting the appetite of the older adults. Sometimes family members would help their parents place an order, and other times patients would seek help from the home care service. The home care service staff explained that while they were willing to help, they were not allowed to place the order or pay. Furthermore, not all patients wanted staff to interfere while they were ordering groceries. In those cases, it was more demanding for the staff to get in a position where they could guide patients towards more nutritious choices. Overall, grocery delivery services were regularly used by patients, while some were seeking assistance, others wanted to buy their groceries on their own without having anyone interfering.

4.2.1.3. Ready-made food delivery

The staff in both Oslo and Bergen were unable to cook dinner for the patients, leading to many patients longing for homemade food. A potential solution for them could be ready-made food delivery, but the options of subsidized ready-made food delivery managed by the municipality differed between Bergen and Oslo and within Oslo's districts. In Bergen, many older adults had food delivery from *Matvarehuset* (Translates to "The Food House"):

"There's this delivery service called Matvarehuset that they can get dinners from, but it's not too different from Fjordland and all those [ready-made dinners]. They used to send pre-heated food, and many utilized this, but it stopped. Now they send the dinners cold. They'll receive seven dinners one day a week. […] In the beginning this food was pretty bad, but now it looks much more appetizing. They also received a lot of feedback saying that the food didn't taste that good, and you know, not that many 90-year-olds like food such as chicken curry. There had to be another alternative, something they were used to. Meatballs, Norwegian potato dumplings, cod… But I've heard it's better now" (B2).

Thus, after receiving feedback, Matvarehuset had improved their options. Other staff members had better experiences with the service and noted that in addition to a full dinner the patients would receive a small dessert. The older adult customers could not choose what type of food they would get for dinner, but they were offered a variety of traditional Norwegian food and side dishes. One pointed out that this wat the patients did not have to 'hoard' Fjordland dishes. The portion sizes were, according to various

staff members, also similar in size and price as Fjordland, yet more nutritious and customized for this group specifically. In Oslo, details on food delivery services were less clear, in terms of how many there were, or how often they delivered. One explained that the local senior center delivered food several times a week. The older adults had to contact the senior center directly to receive meals, making it hard for the home care service staff to pinpoint exactly how many were using the service, but their impression was that quite a few ordered from the district's senior center. An employee from another district believed that the home-delivery was not used that much:

"There are a few [users of food delivery services], but not many. It comes down to the communication between these places and the patients, or well, users. There must be built a bridge between them" (O2).

The same employee problematized the service further:

"The food is delivered at the door, but they don't have keys to get into the customers apartments or anything. Therefore, the patients that cannot open their doors anymore cannot use this service. Which means that the patients that might need these services the most, can't use them of practical reasons" (O2).

In short, there were challenges in accessing the food delivery services. Direct communication between the senior centers and the older adults was crucial, and access limitations like entry issues for those unable to open doors prevented use of the service, particularly for those that could have benefited the most from it. The food delivery services had limitations concerning food choices, delivery routines, and accessibility for the users.

4.2.2. Factors that cause malnutrition

The home care service staff had several explanations as to why older adults experienced malnutrition. These have been organized in the following order: Economy; "Always been slim"; Nutrition knowledge; Declining health and independence; Loneliness and Depression; and No will to live.

4.2.2.1. Financial status and economy

A reoccurring theme was the influence of the participants economy. Not only did the older adult's current financial status matter, but in addition, the home care service staff explained how the economy the older adults *used* to have mattered. Their past impacted what they would allow themselves to spend on and how much they would or would not buy in bulk:

"Finances matters – a lot! The generation we have in right now are not the kind of generation that spends. They are cautious with money. Nothing gets thrown away. They'll have little and use everything. They won't stock up the way we would. They're used to living with tight budgets. Maybe they grew up eating porridge. So, it's more related to their spending habits rather than having a poor economy" (B1).

Yet, some also had little to spend. An issue that could arise in circumstances where a patient had poor finances, was that the staff felt less comfortable making choices in food preparation that would benefit the user's nutritional status. When patients could not buy extra spreads or toppings, it prevented the home care service staff to freely use more of the patients' food in food preparation. Adding additional toppings, such as doubling the slices of cheese, was a common technique used among the home care service staff to help older adults who only ate small portions of food to get more energy or nutrients in their meals.

In short, the older adult patients' financial backgrounds impacted their food choices and eating habits, in addition to how much and what food they would buy. In some cases, tight budgets limited the home care service staff's ability to enhance meals, creating challenges for the staff in providing additional nutrients.

4.2.2.2. "Always been slim"

Among those experiencing malnutrition, particularly underweight, not all desired to gain weight:

"Even though being well nourished is a human right, not everyone wants to or feels the need to be. We have patients that only eat dinner every other day. There could be many different reasons as to why, but some are simply just used to eating less" (B4).

The home care service staff in both Oslo and Bergen regularly encountered patients that would be considered underweight and/or undernourished and had a low BMI-score, who would explain that they had maintained their weight over the years and always been slim:

"Some have been 30 kilos their whole lives. They've always been skinny, always been undernourished, but it's who they are. There's no way to make them gain weight when they're 90. It is not the right time to try to make it happen" (B2).

As a result, it was challenging for the home care service staff to intervene with their eating habits, particularly for older adult individuals who believed that being slim was their norm and had no intention of gaining weight.

4.2.2.3. Nutrition knowledge

Lack of nutrition knowledge was also identified as a contributing factor for malnutrition. They could be lacking knowledge altogether or have outdated views on nutrition:

"You know, we have 80-, 90-, 100-year-olds with us, and they might have a different idea on what nutritious food is. […] Many aren't used to the diet we have now and what we view as healthy and nutritious. Or maybe they haven't given it that much of a thought, it can seem like they haven't, sometimes" (B2).

Another also expressed that there is no doubt that their personal engagement and understanding of the topic had an impact on their nutritional status. Patients' outdated nutrition knowledge, dietary views or

beliefs might have contributed to malnutrition, especially among older adults who have a different perception of what nutritious food is compared to what food is recommended.

4.2.2.4. Declining health and independence

Disease and a declining health were repeatedly mentioned as causes of bad appetite which consequently could cause malnutrition. For instance, the home care service staff explained that disease, aging, and a declining health could change or reduce older adults smell and taste which in return could reduce appetite. And, if diseases themselves did not reduce their appetite, the side-effects of treatment might, such as medication causing nausea. In the following, dementia and oral health and its correlation to malnutrition will be presented, and finally how health issues, particularly loss of independence, can cause food insecurity.

Dementia

Dementia was one of the most frequently mentioned diseases that the home care service staff saw impacting the patients' nutritional status. The home care service staff explained that as patients with dementia are forgetful, they would often forget to eat, especially if their hunger signals had weakened. They could have an early dinner and forget to eat until breakfast the next day. Some patients remembered to check their refrigerator and realized that they were running out of groceries. However, they would forget about it by the time they made it to the store or forget to go grocery shopping altogether, causing them to have no food at home. Another nutrition related problem caused by dementia was the risk of having a repetitive diet, eating, and buying the same food repeatedly. Other patients would buy plenty of food as they did not recall that they already had food to eat at home:

"We have controls where we check their fridge. We check if they have food to choose from, but we also check if their food has expired. Some of them stock up quite a bit… But none of it is touched" (B3).

Another problem that occurred was when patients with dementia were oblivious to it. It made it harder for the home care service staff to help them eat nutritious. They could refuse help and would insist that they could manage on their own. On another side, one employee had discovered that sometimes dementia could also be beneficial in terms of nutrition work. He chuckled:

"Every now and then it's actually an advantage that they have dementia… They agree to things more easily. In some cases, at least" (B1).

In short, dementia could cause complex nutritional challenges caused by the different ways forgetfulness impacted their eating habits. The home care service staff could have trouble assisting with nutritional measures due to refusal or the patients' lack of awareness, but in some cases, they could also be more susceptible than others.

Oral Health

The home care service staff would pay close attention to oral health. Oral health issues were not always visible for staff but would often impact the patient's food intake:

"As their contact persons, it's our job to figure out if everything is as it should be. Oral hygiene, oral pain, maybe they have prothesis that are too big… We try to be vigilant. If someone starts to lose weight suddenly and rapidly, our first thought is always 'Do they have oral health trouble?'" (B1).

The home care service staff further explained that their patients get free dental check-ups. In short, the staff would prioritize paying close attention to oral health, emphasizing its impact on food intake and rapid weight loss.

Loss of independence

Generally, any decline in health that could lead to loss of independence, such as losing the ability to drive, carrying their bags, or walk longer distances, was highlighted as a key factor impacting the older adult's access to food and their ability to make food choices. Staff in both Bergen and Oslo stated the importance of being able to go to the store by themselves:

"I think many of them aren't sufficiently nourished because they don't have access to… Well, they're not able to get to the store by themselves and buy the food that they need" (B3).

"I believe that there are plenty of people that aren't food secure. They simply don't know how they're going to access food" (O2).

The staff mentioned that being able to see, smell, and choose for oneself could provoke hunger and increase appetite. When being forced to stay at home, other people would often make choices for them, such as the patients' children or the home care service staff. This could lead to them having little autonomy over their own lives. Several also pointed out that their appetite could decrease due to the inactivity that many older adults experience when their walking ability declines:

"It's a vicious circle honestly. It can start following some kind of malfunction, maybe a fall. They'll quickly go from an active life to a life relying on the home care service. The road to being stuck inside and not going out is short" (O2).

To summarize, according to staff, reduced mobility due to a declining health and loosing independence could put the older adults at risk for malnutrition as it could limit access to food, impacting autonomy and appetite, potentially leading to reliance on others for meals and food insecurity.

4.2.2.5. Loneliness and depression

Many older adults, often widowed or living alone, struggle with loneliness and/or depression. Several home care service staff mentioned that depression and depression tendencies were common and connected it to loneliness. These tendencies impacted their overall living conditions and food environment, such as patients who stopped picking up after themselves or stopped taking the trash out. Several home care service staff also explained that the patients rarely found it enjoyable to sit alone and dine alone. Furthermore, they explained that while having dinners was something they used to look

forward to and that additionally was important for family relations in the past, eating alone was something they dreaded:

"Sharing a meal with their families used to be the highlight of the day, but now eating is a chore. There's no happiness associated with it" (B2).

While some patients were still able to cook food, many of them simply would not because they did not find any joy in cooking just for themselves. One home care service employee explained that she had observed that whenever patients had relatives visiting, they usually ate more than they would when dining alone. Another noted that those that did not have any next to kin, had more issues, including nutrition related issues, than others. Thus, the social aspect of a meal was something some of the home care service staff were paying extra close attention to:

"We try to make them go out, attend a day center or senior center, so that they'll have someone to eat with. For example, there is this 'breakfast for men' that we encourage them to attend" (O1).

Patients were also dependent on who they met in the system. The home service staff listed many ways in how who the patient interacted with could impact the nutritional help they would receive: There were differences in how much each employee focused on nutrition, how much they tried to get to know the patient, and how important it was for them to find out what the patient liked to eat. One home care service staff further explained that whenever patients experienced rough patches, the home care service staff could be important cheerleaders:

"When they no longer see opportunities, and everything is a problem, you need instigators that can push a little bit, in a positive direction. Motivate them to start, maybe help them set a goal. For instance, when they've been hospitalized for three weeks and barely can stand, it's about telling them that 'this is just a phase in life, you can get back on your legs if you do this and that'. […] And suddenly they're active again, and they get to the store by themselves, and they buy the food they've always liked, and they come home feeling hungry, maybe thirsty, because they've been active. Then they sleep, manage to use the toilet alone… Everything is related to everything" (O2).

In short, loneliness could cause depression and impact the eating habits and well-being of older adults. Social interaction and spending time with others during meals played a vital role for their appetite. Staff could also act as motivators to aid patients during challenging times, recognizing the connection between overall well-being and nutritional status.

4.2.2.6. No will to live

Unfortunately, it was common to encounter patients who had lost their will to live. This was identified as a particularly critical factor contributing to decreased food intake among older adults. One staff participant explained that when older adults are feeling fed up with what life has to offer, they no longer see the point of eating. Another participant was particularly of the notion that "no will to live" was even more influential in causing malnutrition among their patients than access to food was:

"We already know that it's not about access, it's about their lack of desire to eat [that cause malnutrition]. The main problem isn't even that they don't have an appetite, it's that they don't see the value of eating at all" (B2).

In summary, as one participant described it, older adults' loss of appetite occurs when they are:

"In a state of existence, but they're not alive" (O2).

4.2.3. Nutrition work guidelines

The home care service staff all shared the same guidelines for nutritional work, primarily involving weighing of patients, a screening process and implementation of measures when the results of the screening required it. In the following there will be a description of the nutritional assessment methods including challenges regarding the execution, requirements for and demands for documentation, and finally thoughts about an upcoming new nutritional assessment.

4.2.3.1. Weighing and Mini Nutritional Assessment (MNA) screening

Regarding conducting nutritional assessments, national guidelines outlined monthly patient weight checks and screening for malnutrition using the Mini Nutritional Assessment (MNA) form at least twice a year. Based on the MNA screening, the patient would receive a score. This score determined the need for a nutritional plan. The home care service staff explained that the nutritional plan would include suggested measures. They would also set a date to evaluate the plan. In addition, they would monitor the patient's weight weekly if the patient was at risk for malnutrition. Initially, it was voluntary for the patients to get their weight measured and to partake in the MNA screening. Some patients therefore declined getting their weight measured. One explained that their personal boundaries impacted their decision to oppose getting weighed:

"It's quite an intimate question… Asking them about weight. Some want to keep it for themselves. So, for some patients that is simply a boundary they do not want us to cross... They think we nag a lot, repeatedly asking them 'do you have a weight scale?' […] But we must ask them, by law. If not, we will 'get our fingers smacked'. But it's not necessarily for the patients best…" (B4).

He explained that in some cases, they will still go through with weighing despite being declined. For example, they would go through with weighing if they believed a patient's life could be in danger. He further explained that their overall approach to asking about weighing mattered, stating that there was a clear difference when they asked a patient if they wanted to be weighed, and when they asked patients if they felt in control over their weight. Another participant said they went even further and would always weigh everyone:

"Regardless… We pretty much weigh everyone. Even if they initially say no, and we know that they don't want to, or despite it being difficult for wheelchair users. It's our duty to weigh them once a month" (B3).

During the semi-annual MNA screening or monthly weight checks, specific home care service staff would be assigned the task of conducting the screenings. Most of the time, but not always, the screening and weighing would be carried out by the primary contact of the patient. When the primary contact was sick, on leave or on vacation, other permanent employees or substitutes would be assigned the task. Those that were assigned the tasks were also responsible for registering the results. The primary contact's duty included overseeing the results and checking that the tasks were marked as completed.

"If it is registered as completed, but it's not actually done, time will pass, and it won't be done until the next MNA screening is assigned" (O3).

Hence, the responsible for the assigned task would usually register the task as completed. However, complications arose when inadequately trained staff failed to comprehend unusual weight changes, potentially leading to unidentified malnutrition:

"They may register the weight, but no one will see that something is wrong unless you add a comment, or if someone else is actively checking. So, if the one who registers the weight doesn't understand that something must be done, say, if their weight has changed by 10 kilos in six months, this won't necessarily be discovered" (B2).

In summary, the routines for nutritional screening involved weighing, MNA screenings, and formulating nutritional plans if malnutrition was detected. However, the completion of these screenings faced various challenges, potentially affecting their efficacy.

4.2.3.2. Documentation

In addition to executing the task, insufficient documentation was a recurring issue in MNA screening. Several staff expressed that documentation was time consuming but held importance as evidence for their efforts:

"We do so many good things out there, but the documentation eats up our time. 'The top' expects us to document so they can keep track on how we are doing. We had good numbers from June though, if not 100% it surely wasn't far from it" (B1).

The home care service staff reports the MNA screenings twice a year, typically once during the summer semester and once during the winter, aiming for a 60% patient agreement. Furthermore, the home care service groups would be assessed based on the number of patients that would agree to the MNA screening. Depending on their documentation, supervisors could question their efforts to follow up the patient's nutritional status:

"They may ask 'why haven't you done anything?' but we have! It just isn't written anywhere […]. So, we have to document. If they're malnourished and we struggle to make them eat, we need to write down what we have done, why they don't want to, what we have tried, if we tried again… And if everything is noted down, it is 'OK', kind of. But if it is not documented, it's seen as a huge deviation. Doesn't matter what we say" (B2).

Due to various reasons like staff sickness, patient unwillingness, the lack of a reminder system, not enough time, lack of leadership or cumbersome report systems, documentation faced setbacks or was not completed altogether. After the tasks were distributed, there was no system to remind the home care service staff. Thus, everyone would have to do their part in each link. If the primary contact was sick, the task may not be redistributed and could be forgotten all together. Another common delay in documentation was caused by the patient not feeling well. In those cases, the staff would have to find and ask for enough time to complete the task another day. In some cases, the staff were not able to document certain patients at all, as some patients, as mentioned previously, were opposed to getting weighed. In those cases, the home care service staff may instead have to document why the weighing was not completed. Leaders were also particularly important in their role to make sure that the staff did the screenings. Tasks were often forgotten when the leader was absent. Therefore, one nutrition contacts regularly checked to see if the employees had done their part:

"It's a whole job to move the assignment. […] Sometimes you move the assignment two to five times before it gets done. I've spent so much time and resources on it, that I wish could be used for other things" (S4).

Lastly, one mentioned it could be difficult to document using the documentation tool. Despite many challenges, some home staff explained that their respective departments were doing a good job at reporting. Others had more trouble:

"Unfortunately, it is not always done. Some days we have too much to do, too many on sick leave... And when it's not done straight away, it usually isn't done later either […] Weight is easier to keep track of. And we're better at it. But you know, it's supposed to be done once a month, but I often see it taking two, three, four or maybe even five months" (O3).

In sum, many different challenges were faced in each home care service department that could affect the completion of documentation. Good leadership and routines in the home care service departments were important factors to screen as many patients as possible.

4.2.3.3. New nutritional assessment: Malnutritional Screening Tool (MST)

The current nutritional assessment tool, MNA, was in the process of getting replaced by a new assessment tool, the Malnutrition Screening Tool (MST). The home care service staff explained that the main difference was the new tools monthly completion, fewer questions, and immediate action required after screening:

"It's another way to screen, there's just two or three questions to ask. If you get a 'no', there's a little bit more work with it. You're supposed to screen once a month. I don't remember the questions, but they're about weight and food intake. So, with this routine it will be much easier when nothing is wrong, but also easier to follow up when the answer is no. […] With the new system, if you get a no, it takes more than just reporting it" (B2).

It would also be easier to detect if someone didn't do their part, as it would be easier to document. Another employee was cautiously optimistic about the new method:

"I'm excited to see how it will work. Time will tell, but I have my thoughts. I choose to be positive, and hope that everyone does their assignment as they are supposed to, but.. Most likely they won't. There are some strengths with this tool though, like it being done every month. It's not as dangerous if someone forgets if it will be done again already next month. It's a huge advantage if it's done every month instead of twice a year" (B4).

Overall, the staff held different levels of optimism for the new screening method but agreed it would likely improve the detection of malnourished older adults.

4.2.4. Nutrition work in practice

The practical implementation of nutrition plans showcased various challenges. In the following, the governing attitudes among the staff will be presented. Then, restrictions in what the staff is allowed to do and have knowledge to do will be explained, before moving on to listing the various ways that may be available to improve the elderlies' nutritional status. Thus, the subthemes have been organized in the following order: Governing attitudes; restrictions; nutritional knowledge among the employees; and Opportunities within the system (nutritional lighthouses; clinical nutritionists; giving advice; shopping lists and online shopping; preparing food for patients; food fortification products; dining with patients; refrigerator notes; and external projects).

4.2.4.1. Governing attitudes

When asked about the governing attitudes on nutrition and older adults, including both attitudes among home care service staff and within the government, several agreed that the attitudes within their teams were good. Yet, meeting guidelines and finding time to do all tasks was challenging. One employee in Bergen blamed priorities of money rather than the staff's attitudes:

"Especially now that things are getting more expensive. Warm food delivery is taken away, and a lot of people are missing it. So maybe money controls more than attitudes do" (B2).

She further elaborated that regardless of the economic situation, the staff at her department did their best to make sure the patients were well-nourished. They understood the importance of nutrition in relation to quality of life and saw how the nutritional status of the patient impacted the patients' energy levels and how quick their bruises would grow. However, she noted that it was important to have realistic goals for what the staff could achieve. Setting overly ambitious goals compared to what was realistic was discouraging and led to feelings of accomplishing nothing. Others felt that more could be done:

"I think everyone agrees that it is important, but nevertheless, I do not feel like there is that much of a focus on it. […] I think that if we focused more on it, we could argue that we need more time for it, and then maybe there would be another culture for it. Maybe" (O3).

Another employee carefully expressed:

"It's a topic that deserves attention. […] But when you try, as an employee, to speak up, you're very quickly asked to… Well, you're not encouraged to talk about it" (O2).

Others pointed out that there were differences in attitudes among the staff. Ownership was mentioned by several staff, stating that some felt more of an ownership of their job than others. There was a difference between those that saw tasks as checklists and those that were genuinely committed to check in with their patients. The level of ownership and attitude towards the job also influenced how much effort primary contacts invested in the care of their patients:

"It can actually go months in between every time I as a primary contact see my patient. That's why it's so important that I take an active role in checking in with my patients. And, that we help our colleagues. If I see that a patient who I'm not the primary contact for is losing weight, I can tell their primary contact. You know. Throw the ball to primary" (B4).

In conclusion, while most believed their departments maintained a positive attitude toward ensuring a good nutritional status among the older adults, attitudes could vary. It was crucial that the staff felt ownership to their task and made an active effort to follow up their patients.

4.2.4.2. Restrictions

The home care service staff faced certain restrictions in nutrition work, particularly they mentioned not being allowed to handle any money for the patients. This led to, along with not having enough time, not being able to do grocery shopping for any of the older adults, neither in Oslo nor Bergen. One explained:

"Before we could, you could say… A task was going to the store and shop together with the patient. They got quality time, physical activity, and they could pick out the food themselves. Now we can only support them when ordering digitally. So, the trip we would take and the time we have to go to the store to show them… Maybe they'd want to buy gingerbread cookies in December, or a Christmas soda, but they lose that. We often sit and help them order through a form. Some Fjordland, some flour, some coffee. But everything that has to do with quality of life and enjoyment of food is deprioritized. I understand that the older adults quickly just… accept it. Accept that it's only going to be Fjordland, even though they might have been able to make food themselves if they had the opportunity to get groceries or learn over again… to join the store instead of sitting in a chair ordering digitally from an iPad" (O2).

In sum, what the home care service staff could offer had shifted from being able to accompany the older adults for grocery shopping, to not being allowed to help handling their money, impacting the ways they could help.

4.2.4.3. Nutrition knowledge among employees

The participants from the home care service presented varying educational backgrounds and roles within their departments. None had formal education in nutrition, however, some had been seeking information on their own. The extent of nutritional knowledge among staff members varied:

"I don't know, it's a bit miscellaneous to be honest. We don't really focus on it a lot" (O3).

One employee acknowledged that their department lacked formal education on nutrition but emphasized the importance of the mandatory e-learning course they had for skill development. She explained that because they had trouble hiring skilled workers, educating existing employees was crucial. Thus, they were working to improve their training plan. She believed that by improving the e-learning course, employees would pay more attention to nutrition, particularly to the food they served. Another employee from a different department shared similar sentiments about the mandatory e-learning course but pointed out that this course alone might not be sufficient for them. Similarly, they had an e-learning course in Oslo, however, this one was not mandatory:

"We have some e-learning courses, but it's not like you ***have*** *to do them."* (O1).

While admitting that they did not know as much as they would like, many employees had questions about nutrition. As a result, one employee who served as a nutrition contact had created a comprehensive "nutrition folder", including nutrition information from their intranet. He explained that whenever employees asked him questions, he would make them read the information from the folder. This had been helpful for the other employees. However, many home care service employees pointed out that the lack of time and other resources made it challenging to apply the nutrition work practically:

"It doesn't really matter what competence we have on how things should be if we can't do it in practice. It's a challenge" (O2).

One explained that they already had a list of nutrition related work they were supposed to get done, such as eating with their patients, but lack of resources prevented them from doing it. She explained that it was necessary to hire more employees and nutritionists to be able to perform all the tasks that were expected of them.

To summarize, the participants were aware that knowledge level among the staff was limited. Thus, they were making efforts to raise the knowledge level. However, time and resource limitations hindered the translation of knowledge into practical implementation.

4.1.4.4. Opportunities within the system

Nutrition lighthouses

One employee in Oslo mentioned the presence of "lighthouses", designated resource persons within certain areas of expertise, such as for dementia, fall prevention and nutrition. This included having one employee per team that had a specific task to influence the work in their area. This system has been in

place for several years. Specifically addressing the nutrition lighthouse, its main role was to act as the primary contact person when dealing with cases of malnourished patients:

"It sounds really good that we have a resource person for it, but how much of an impact it actually has, like, how much it actually benefits each user...? I can't help but question it" (O2).

In short, certain home care service departments had designated resource persons for nutrition. However, since they lacked formal education in the field, some questioned the usefulness and voiced skepticism regarding the effectiveness of this solution.

Giving advice

Offering advice was another way the home care service staff worked to improve nutrition status among older adults. As mentioned previously, many patients did not want the home care service staff to help with their eating habits, and it was also rare that the patients asked for advice, especially about nutrition. Patients at risk for malnutrition who were recommended to have a nutritional plan made, would often decline the offer. Regardless, some employees tried to suggest ways in which the older adults could better their nutritional status, such as suggesting that they have a snack, recommend foods the patient could benefit from eat more of, and suggest food for their grocery lists. Others would try to offer information about services for older adults, bringing information brochures with them when going on home visits. One also mentioned that in addition to offering advice to the patients, they would try to involve and give advice to their family members. The home care service staff tried to keep a good dialogue and communicate regularly with next to kin, and offered advice on what food the family members could consider purchasing for their parents.

Offering advice to patients, such as recommending ways to improve nutritional status, was commonly attempted by the home care service staff, although not all were receptive to said advice. Some also attempted to involve family members.

Shopping list and shopping online

Assisting writing shopping lists as well as helping with online orders, was a common way for the home care service staff to support the patients to make good nutritional choices:

"When they let us help, we have more control to help. Of course, they get the final word, but we can choose the most nutritious option if we're allowed to. Choose whole milk instead of skimmed milk for example. If they don't like whole milk, it's of course better choosing skimmed milk than nothing at all. We talk to them, suggest and plan" (B2).

They emphasized the importance of being able to guide patients, enabling the patients to eat nutritious by the selections made while writing shopping lists or ordering online.

Preparing food for patients

The home care service staff were not allowed to cook full dinners for the patients, but could assist with lighter meal preparation, such as making breakfast sandwiches. In addition, they also warmed and served pre-made dinners and prepared sandwiches for those patients that no longer could manage meal preparation themselves. One employee stated that many patients are concerned about nutrition, and she also believed that it was important to offer healthy and nutritious food. She was disheartened that she could not provide better meals for their patients. Another added:

"No time or resources are available for us to be able to make any food. […] We receive a lot of feedback from the patient that the food they eat is too repetitive…" (O3).

While their options were limited, the home care service staff were aware of any chance they had where they might be able to enhance the patient's food intake. One employee emphasized her efforts to present the food nicely. They would also try to make the food appear more appetizing by adding extra vegetables on their sandwiches, which also made the food more nutritious:

"…We might add some bell peppers and tomatoes on their bread slices. As long as they like it" (B1).

In sum, while the staff couldn't prepare full dinners due to resource limitations, they strived to make other meals, like breakfast, as appealing and nutritious as possible.

Food fortification products

Whenever facing challenges in providing adequate nutritional intake for patients, the home care service staff would practice food fortification. They would prioritize using food first to enhance nutritional content, for example, they would try to increase energy by adding heavy crème. When regular food was not sufficient, food fortification products, such as powders that could be mixed with oils or nutritional drinks were used. One emphasized that food fortification products should be complementing rather than replacing meals. When patients had a low score on their MNA screening, experienced weight loss or other forms of malnutrition, their general practitioner would be notified, leading to appointments with the doctor:

"The doctors will often give nutritional drinks or other means by prescription. It's better that they use fortification products than nothing at all. So, that's the solution in many cases. It's of course a 'simple solution', and real food is most likely better, but at least they get some energy" (B2).

In short, food fortification products were used to supplement meals to prevent malnutrition, despite some perceiving it as an "easy way out".

Dining with patients

Despite lacking the resources to cook for the patients, a frequent nutritional measure was for the staff to join the patients during their meals, as an attempt to make the dining experience more enjoyable:

"We have one patient that lost ten kilos in a very short time, who we immediately started to eat together with. Just to make the meal more pleasant, as well as making sure the patient eats" (O1).

However, as this was a time-consuming measure, the staff did not always find time to do it.

External projects

Some also mentioned utilizing external projects and help, with varying levels of success. For example, one mentioned a project called *Spisevenn* (translating to "Dining friend"). Where, volunteers would dine with lonely older adults. Bergen municipality was funding the dinners, but the project had limited success, according to the home care service staff.

Refrigerator notes

Several employees spread across different shifts, manage the care for individual patients, resulting in occasional oversights regarding the presence of a nutritional plan. Because most home care service staff have a busy schedule, they may not check their nutritional folder every single day. Thus, two different employees at different locations in Bergen mentioned similar practices of leaving notes on the patient's refrigerator:

"I might not know all of the patients, so it is very helpful when someone has added a note on the refrigerator telling me what the patient likes, how they like their food prepared, which fortification or supplements we should use. […] Then, I don't have to ask the patient. Because they're asked, 'what do you like?' every single day, and they get tired of it. Especially those with no appetite - they get tired of us bugging them with questions. So, it is very practical that I can just put their breakfast on the table without having to ask them anything" (B2).

Another department used the refrigerator in a similar way. This approach involved using a symbol to signify that this patient needed nutritional attention and to check their nutrition folder:

"We use a picture of a flower and a watering can. The idea is, I guess it varies how much it is actually used, but the idea is that the patient will have this picture on their fridge. Because then, each and every one that works there, so be permanent workers or substitute workers, knows that there's an extra focus on nutrition here. They will know that they need to check the nutritional plan and be extra cautious. Because it's not like people just run in and check the folder to see if there happens to be a nutritional plan laying around" (B4).

In short, the "refrigerator note"-strategies brought attention to the nutrition plan or nutritional needs of patients. By doing so, anyone entering the residence would know that they needed to pay attention to the patient's nutritional needs.

4.1.4.5. Clinical nutritionists

Several different locations of the home care services in both Bergen and Oslo, in the same year the interviews took place (2022), had newly been able to or was about to hire clinical nutritionists. All home care service staff in Bergen expressed eagerness for the new nutritionists, who they described as engaged and talented. They explained that their tasks included going home to patients in some special cases, but mostly they helped educating and guiding the home care service staff. In addition, the home

care service staff believed that having clinical nutritionists available would give nutrition a new focus. One employee Bergen expressed that having the nutritionists around was helpful, as they had not always known what to do when patients suffered from malnutrition:

"It is so helpful for us because we finally have someone we can ask for advice […] We've used her plenty the few times she's been here now. I think she's had a lot to do. So, it is very helpful. It's usually quite hard to know how we should proceed and where to begin [with nutrition work]" (B3).

At the point of the interviews the staff in Oslo had not yet gotten a nutritionist but were in the process of getting them. They were also optimistic about this change:

"It will help, for sure. It will raise the competence of the employees here" (O1).

In short, the home care service departments that recently had acquired clinical nutritionists had great experiences from being able to ask questions and get help with difficult scenarios. They were confident that this solution would raise the competence among the staff.

5. Discussion

The discussion part will be divided in three main sections: Discussion of the results; discussion of the methods; and strengths and limitations.

5.1. Discussion of results

Experienced barriers and possibilities

In the following section, barriers to food security together with possibilities to improve food access and older adults' nutritional status will be discussed. The topics chosen were primarily based on the insights given and perspectives shared by the older adults, occasionally supported, or challenged by viewpoints from the home care service staff. However, additional important points made by the home care service staff are also incorporated into the discussion. The discussion will be contextualized within the literature of food security and compared to similar studies, and various explanations for the results will be discussed.

5.1.1. Financial barriers and food prices

In terms of access, personal finances played a vital role in food security. Although all the participants expressed that they could afford the food they wanted, their financial status still influenced what they ate. Several participants acknowledged that healthy food was more expensive than unhealthier options. While some participants were unconcerned about their food expenses, others consciously prioritized healthy food, by buying healthier food items on sale or by cutting expenses on luxuries such as eating out. However, it was unclear if deciding to cut expenses was done of necessity or not, as the home care service staff pointed out that the older adults past financial status also impacted their spending habits.

This might have been the case for some of the older adult participants, as they did not express any concern for their overall financial situation. However, as uncertainty in past and future finances and availability of food contributes to the stability dimension of food security (World Bank, 2023), one could argue that past experiences that instilled fear regarding hardships in a future financial situation may also affect the current nutritional status of older adults. Regardless, finances impacted what participants bought, which could be seen in the participant who regularly opted for frozen pizza, which she found to be both cheaper and more convenient than healthier alternatives. Thus, personal finances and price were significant barriers to accessing healthy food. To address financial issues, there needs to be solutions that give older adults access to affordable and nutritious, possibly even pre-made, food. Pricing healthier options among pre-made food more competitively in stores might make healthier options the obvious choice.

5.1.2. Planning and purchasing

Barriers to accessing food were also seen in the older adult participants' approach to the planning and experiences of purchasing groceries. One study from 2015 in rural southern Norway aimed to explore older adults' nutritional self-care (forward referred to as the 'NSC study'), through qualitative interviews together with NUFFE-NO screening amongst five older home-dwelling older adults (Dale & Söderhamn, 2015). The NSC study found that all the participants would plan their meals using weekly plans. Moreover, all participants were able to obtain their own groceries, and one participant even cultivated their own produce that was a part of their diet (Dale & Söderhamn, 2015). In comparison, none of the participants from the present study cultivated their own produce, and several participants additionally relied on family members to buy groceries for them.

Family members, especially the children of older adults, would often advocate for their parents' needs according to the home care service staff. Furthermore, the older adult participants would often receive help with household chores and have groceries delivered from their children. However, not everyone had family support, either because they did not have children and other close family members or because their family members were unable or unwilling to help, according to the home care service staff. The exact reasons as to why they could or would not help were not specified, but one possible explanation could be the geographical distances hindering the children from helping in day-to-day life. Conflicts, in some circumstances, could possibly also lead to stained or distant relationships where children withdraw from their parents' lives. However, children's inability to help could also stem from the challenges they face when balancing taking care of their older parents with their own work obligations and care for younger children. One survey conducted amongst children of care needing parents in Norway from 2007, revealed that more than half of the participants (N=944) had been in situations where they had trouble balancing job obligations with taking care of their older parents (Gautun & Hagen, 2010). Common consequences were arriving at work late or leaving work early, rescheduling the workday, not attending meetings and trainings, and experiencing concentration problems at work (Gautun & Hagen, 2010). Moreover, the survey showed that the age of the older

adults' children was also a factor, where less support was provided the younger the older adults' children were. One possible explanation for this could be that the youngest adults had young children of their own, making it challenging to take care of the needs of their children and parents while managing work obligations. Nevertheless, as much as 7 of 10 children with care-needing parents were willing to adjust their work schedule in order to help their parents (Gautun & Hagen, 2010). This aligns with the older adult participants from the present study who readily relied on their children for help, shopping, and assistance. In short, the studies indicate that most children would go far to prioritize taking care of their parents' needs, which puts those who do not have close family ties at disadvantage and possibly greater risk for food insecurity than their peers.

Regardless of the reason for why some older adults cannot rely on family members, it is crucial to have alternative options that do not require family involvement for older adults who are unable to access food independently. The home care service staff participants highlighted that plenty of older adult patients made use of municipal food delivery services, although none of the older adult participants interviewed did so. There were differences in the delivery options of Bergen and Oslo. A home care service participant from Oslo pointed out that those who were most in need of a home delivery service would often face accessibility issues, such as being unable to open or close doors independently, which limited their access to the food left at their doorstep. In contrast, food delivery in Bergen offered the option of keeping the customers door keys (Bergen municipality, 2023d), potentially providing better access to the pre-made food. The older adult participants in Oslo also had negative perceptions of the municipal food delivery services, and showed little enthusiasm as the food was served cold. The home care service participants explained that the patients could not choose what food they would receive, possibly taking away their feeling of autonomy. Thus, no participants made use of any non-governmental food delivery services. In short, municipal food delivery services may be important alternatives to food access for older adults, including those who cannot rely on family. However, the current solutions may not be sufficient to meet the needs and preferences of the older adults.

Exploring the possibility of updating the food delivery services may prove to be advantageous for older adults' food security. The older adult demographic will shift in a few years. The youngest older adults, particularly those approaching 65 years, may not have the same financial restrictions as the oldest older adults, and may be more accustomed to ordering food delivery and catering for various occasions. Moreover, the current trend of frequent use of apps for food delivery services among today's young adults may extend to the older adults in a few years' time and might become popular amongst the older adults as this food comes served warm and can be tailored to their preferences. Considering the popularity of these solutions, the current municipal food delivery services could consider drawing inspiration from the non-governmental food delivery apps, by giving the older adults the option of choosing between a variety of warm dishes with flexible delivery times. Alternatively, older adults could receive state-funded discounts for existing non-municipal food delivery apps. A final suggestion is for senior center cafés to collaborate with non-municipal food delivery service apps, making tailored offers for older adults, but still maintaining the accessibility to warm and customized options. This kind

of solution would also in line with the Norwegian government goal of including more technology for older adults' food access (Holmøy et al., 2023). However, implementing any of these solutions would require training of the oldest older adults to be able to use these platforms, as older adults become more dependent on assistance when needing to use digital technology (Gautun & Bratt, 2023). In short, if the older adults are trained to use them, delivery apps providing food tailored for older adults might be the right direction of future municipal food services, possibly contributing to older adult's food security.

5.1.3. Transportation and distances

Some older adults may no longer dare to drive or might even have their driving privileges taken away, leading to limitations in one's access to food, social arenas, and health (Chihuri et al., 2016). The extent of the consequences might depend on the older adult's ability to walk and how far they live from the closest grocery store. As previously stated, the environment can prolong older adults' independence (WHO, 2020b). Therefore, the availability of transportation may be critical in order to maintain an age-friendly environment for older adults. One participant shared that he got "air beneath his wings" from taking the bus independently, implying it made him feel free and illustrating the importance of self-reliance for older adults. Being able to walk to a bus stop to get to one's destination may additionally be important in maintaining older adults' physical capacity. For those who are unable to walk long distances and who are unable to drive, any break from sitting still and moving around can be important for their health and functionality (Forster et al., 2023). To recap, access to transportation that allow older adults who can be physical active thanks to transportation options, although limited, might slow down decline in muscle mass in comparison to older adults who are housebound, directly, and indirectly prolonging the older adults' independence.

While the older adult participants listed plenty of transportation options, barriers may be present, preventing access to the services. Limited knowledge about the available options may be a barrier. It is also likely that finances limit the access for some, although most services were intentionally affordable. Additionally, insufficient knowledge or unfamiliarity with digital payment methods and booking of tickets or taxis might be another barrier. A longitudinal qualitative study on older adults and frailty in older adults in Tromsø, Norway (forward referred to as the 'Tromsø Frailty study'), found that payment via apps contributed to the frailty of the participants due to difficulties in using them correctly (Bjerkmo et al., 2021). Finally, conversations with the older adult participants revealed that not being able to leave their dwellings independently, restricted access to the transportation at any preferred time.

There is a chance that Oslo, which is Norway's most populated city, offers a greater variety of transportation options than smaller cities, towns, and rural areas. The city's high population density and accessibility to grocery stores makes food readily available for those that can walk shorter distances. It is likely that older adults that live in smaller towns and rural areas of Norway have less access to near-by stores, giving additional challenges in accessing food (Tucher et al., 2021). In the Tromsø Frailty study, older adults living in rural areas were encouraged to relocate closer to the municipal center, as the home care service staff struggled assist all the older adults scattered across rural areas (Bjerkmo et al.,

2021). It is reasonable to think that similar issues may arise for transportation options in these areas, where living far from the municipal centers may result in limited access to public transportation. In addition, smaller towns may not have enough demand for specialized transportation, unlike Oslo that can offer the pink buses due to its large population and demand.

In summary, while transportation services play a crucial role in supporting healthy aging and independence, certain barriers may limit accessibility and utilization. Moreover, older adults living in smaller towns and rural areas may face additional or different challenges.

5.1.4. Homemade food

Although only one older adult participant faced complete inability to cook due to her disabilities, several participants regularly ate Fjordland, frozen dinners and semi-prefabricated foods rather than preparing homemade dinners from scratch. In contrast, participants in the NSD study would avoid prefabricated food altogether (Dale & Söderhamn, 2015). Amongst the older adult participants occasionally preparing homemade food, one did so due to specific dietary requirements. The disparity in cooking habits of the older adults interviewed and the older adult participants of the NCD study may possibly stem from the NSC study's selection process. NCD was a follow-up study, and it is possible that only the most interested and knowledgeable older adults returned to the study (Dale & Söderhamn, 2015). Another explanation could be due to the social dynamics of the participant groups. Both in this thesis and in the NCD study, the couples attending generally displayed greater interest in cooking homemade meals compared to older adults without partners. While eating with others is known to stimulate dietary intake (Volkert et al., 2019), one should consider if co-eating could also encourage adults to prepare homemade food.

5.1.5. Appetite and weight control

Weight management was common among the participants. The older adult participants had good appetites and did not express any concern about developing a low appetite. If anything, they were more worried about managing their weight. Similar concerns were observed among the participants from the NSC study, who aimed to maintain a weight that was neither excessively high nor too low (Dale & Söderhamn, 2015). A qualitative study from New Zealand (referred to as the 'New Zealand' study) aimed to explore older adults' perspectives and experiences of food and nutrition intake, and gain insights to factors that influenced the vulnerability to malnutrition risk (Chatindiara et al., 2020). The participants expressed that it was appropriate to reduce their food intake due to their reduced physical activity levels (Chatindiara et al., 2020). Obesity is linked to several non-communicable chronic diseases such as diabetes, cancer, heart, and vascular diseases. Moreover, obese people may suffer from malnutrition and yet lack essential nutrients (Zhang et al., 2023). As an example, this can happen if someone regularly consumes fast-food, which often is high in energy while lacking micronutrients. As

aging often leads to a decline in muscle mass and reduced nutrient utilization, the importance of consuming sufficient micronutrients and protein increases (Kassis et al., 2023).

The home care service staff also recognized that there were underweight and undernourished patients that had no desire to gain weight. Studies show that both having a BMI <25 kg/m^2, and being obese with a BMI >35 kg/m^2 put older adults at high risk for decrease in muscle mass, malnutrition and functional capacity (Kıskaç et al., 2022). This means that the ideal body weight for older adults differ from the one of younger and middle-aged adults (Kıskaç et al., 2022). Although obesity is associated with higher risk of mortality in adults, being slightly overweight is associated with lower mortality risk in older adults (Thorpe & Ferraro, 2004). The optimal BMI values for overall health were found to be 31-32 kg/m^2 and 27-28kg/m^2 for women and men, respectively (Kıskaç et al., 2022). In other words: Being slightly overweight is beneficial for older adults and excessive weight control can potentially increase nutritional status risks, frailty, and food insecurity. However, it might still be important to consider the autonomy of the older adults, allowing them to decide whether they wish to be thin or thick. Furthermore, as one home care service staff participant noted, it can be complicated to help malnourished older adults regain weight (de van der Schueren et al., 2016; Trevisan et al., 2019). Therefore, instead of focusing solely on older adults' weight, it may be more important to pay attention to the quality of the diets and encourage that they meet micronutrient and protein needs rather than fixating on a weight goal.

5.1.6. Impact of food flavor

Home care service participants explained how aging could impact older adults' sense of taste and smell, potentially reducing their appetite, which could contribute to malnutrition and food insecurity. The home service staff also highlighted other important aspects of having sufficient smell and taste, such as for example, how being able to smell food in the stores, rather than ordering food online, could benefit the older adults' appetite. In a Dutch cross-sectional cohort study that aimed to assess associations of taste and smell with nutrition-related outcomes in community-dwelling older adults, it was found that self-reported poor taste had consequences for appetite, food intake and diet quality, and was associated with undernutrition (Fluitman et al., 2021). The process where older adults' loose appetite and/or have a decreased food intake is often referred to as anorexia of aging (AOA), and those affected typically have insufficient intake of fats, proteins and micronutrients (Pitchumoni & Chaudhari, 2021, s. 4). Surprisingly, while a few of the older adult participants of the present study had noticed changes in their ability to smell, they were not particularly bothered by it. Perhaps declining taste and smell matter less for older adults without AOA or weak hunger signals. However, the participants were bothered by unpleasant tastes and dislike of food. Unlike younger adults who might eat food they dislike if they are hungry enough (Rogers et al., 2021), older adults with weak hunger signals might avoid food they dislike. For instance, one participant preferred pre-made refrigerated or frozen food over meals prepared by chefs in a residential kitchen due to her taste preferences. Another participant also noted that she had lost weight when staying in a hospital serving what she considered poor-quality food. Of course, her overall appetite may have been reduced from the treatment and her reduced activity levels, but it's worth

noting that she did not have the same experience in all the hospitals and wards she stayed in over a period of several months. This suggests a complex interplay between taste, smell, and food intake, where both food flavor and reduction in smell and taste should be considered in association with a declining appetite and food intake.

5.1.7. Physical health: Disease and loss of independence

Disease can both stem from and cause food insecurity. Observations made by the home service staff indicated that disease could reduce appetite, either directly or as a side effect of medication. Any decline in older adult's health that impacted their independence such as losing the ability to drive, not being able to carry their own bags, or walk longer distances, significantly affected the older adults access to food and their ability to make food choices. A systematic review including 24 studies taking place in various continents, assessing malnutrition and physical frailty, indicated a strong correlation between the malnutrition and physical frailty (Borg et al., 2015). Although not interchangeable, 68% of all malnourished older adults were frail, while only 8.4% of frail older adults were malnourished (Borg et al., 2015). Consequently, diseases leading to frailty and loss of independence can put older adults at risk for malnutrition and food insecurity.

A disease that had a strong impact on malnutrition and food security, which furthermore had challenged the home care service staff in their nutrition related work, was dementia. Patients with dementia usually had repetitive diets or forgot to eat, and frequently forgot what food they had or needed when going grocery shopping. A systematic review and meta-analysis on prevalence of malnutrition in older adults with dementia in long-term care, which included 24 studies from Europe and Asia, found that the prevalence of malnutrition ranged from 6.8 to 75.6%, with a pooled prevalence of 26.98% (Perry et al., 2023). The risk of malnutrition ranged from 36.5%-90.4%, and pooled prevalence was 57.43% (Perry et al., 2023). By combining the pooled prevalences, it could indicate that about 80% of all older adults with dementia are at risk for or have malnutrition, compared to 69% among the general older adult population (Kaiser et al., 2010). Moreover, a cross-sectional study in Catalonia, Spain, amongst community-dwelling older adults with dementia, identified that depending on help for food preparation was a moderate risk factor for malnutrition, while depending on feeding was a strongly related risk factor for malnutrition (Roque et al., 2013). Indicating that patients with dementia who additionally depended on others in meal situation, were at a greater risk for malnutrition.

Although most of the older adult participants to some extent were struggling with health decline or disease, only those with oral health issues noticed a direct impact on their food intake. A meta-analysis that aimed to evaluate the association of oral health and malnutrition in older adults, which included 33 studies from several continents, found that a lack of autonomy for oral care, being toothless with no or only one denture, and no access to dentists were significantly associated with a high risk of malnutrition (Hussein et al., 2022). Having trouble chewing was also associated with risk of malnutrition (Hussein et al., 2022). The home care service staff prioritized oral health, and whenever they detected rapid weight loss in a patient their first reaction would be to get the patient a check-up with a dentist. Most of the

participants from the NCD study had chronic diseases and medication that caused unpleasant symptoms (Dale & Söderhamn, 2015). This had not stopped them from eating, and all had found ways to cope with the side effects, by avoiding food items that would cause issues and include food that was helpful for their condition (Dale & Söderhamn, 2015). Similar to the NSD study, the older adult participants from the present study who experienced issues with their oral health had identified what food and which food settings caused issues. By doing so they were able to eat without facing too many obstacles. However, the limitations impacted their food choices and social interactions, with some avoiding fresh fruits and vegetables, and one avoiding social settings centered around eating. In short, while most health challenges did not directly affect the older adult participants' appetite, certain conditions such as a declining taste and smell, oral health concerns and dementia notably impacted food intake. Consequently, older adults with these conditions may face challenges in accessing a diverse diet, potentially leading to food insecurity and malnutrition, more so than older adults with different health concerns.

5.1.8. Mental health: Loneliness and depression

Being alone may have implications for older adults' food security. A focus group study with home care service staff in Northern Norway on frailty in older adults in a home care context (referred to as the 'Northern Norway Frailty' study), found that physical function and engagement were related to each other, as reduced mobility would make it difficult for older adults to do everyday tasks and be social (Voie et al., 2023). Furthermore, they found that physical weakness, boredom, and loneliness together could lead to poor motivation and inability to improve their situation (Voie et al., 2023). The home service staff of the present study also shared this understanding of social interactions' impact on patient motivation, linking loneliness to depression. One home care service participant explained that depressed patients tended to only perceive problems and lose sight of opportunities.

One of the most obvious differences between the interviews with older adults and home care service staff was the perception of eating alone. While the older adult participants did not seem concerned about eating alone, the home care service participants described a significant connection between eating alone, being alone and malnutrition. Only one participant, who no longer experienced much hunger, mentioned that eating with others, especially her late husband, was crucial for food intake as it reminded her to eat. In contrast, another participant *preferred* dining alone, but interacted with others at a senior center a few times a week to exercise, returning home when it was time to have his dinner. A similar pattern was seen in an informant from the NSC study who also attended a senior center twice a week yet chose to dine at home because she preferred to prepare her own food as well as eating alone (Dale & Söderhamn, 2015). While no participants explicitly claimed that eating with others was important, some expressed the value of spending time with others, possibly explaining why most of the participants regularly attended a senior center. Eating alone could also be a matter of habit rather than a preference. In the Tromsø Frailty study, some older adult participants that felt lonely, had accepted their new life situation after a while and did not feel the same need for company anymore (Bjerkmo et al., 2021). However,

some still missed the little things, such as having someone to ask what day it was (Bjerkmo et al., 2021). According to the home care service staff participants of the present study, some older adults who used to look forward to meals started seeing eating as a chore when it was done without company. The home care service staff from the Northern Norway Frailty study made similar observations, and furthermore saw that those who were depressed, living alone and not eating, would improve once they started living in institutions (Voie et al., 2023). In summary, the older adults may have adapted to their new situations, potentially downplaying or not perceiving how eating alone impacted their food intake.

Some home care service staff participants argued that rather than limited food access, the primary factor contributing to malnutrition in older adults was their lack of desire to eat. The home care service staff regularly identified depressed patients who no longer had any will to live, who expressed little interest in eating. Similar to what the home care service participants had observed, the New Zealand study participants no longer felt like eating (Chatindiara et al., 2020). While they did not explicitly state that they had lost their will to live, they only ate to "keep going" despite having lost interest in food (Chatindiara et al., 2020). Most struggled to identify what caused their lack of appetite, but recognized that it could impact their health, such as one participant reporting constant fatigue (Chatindiara et al., 2020). Supporting the home care service participant observations, various studies demonstrated the importance of being social, preventing loneliness and depression for food security. Spending time with others has a protective function for nutritional intake and maintaining physical function of older adults, demonstrating the importance of strong social networks to achieve healthy aging and food security (Asamane et al., 2020). A cross-sectional study in Japan examining the association between social networks and dietary variation among home-dwelling older adults, found that social networks were associated with dietary variety, while social isolation correlated with poor dietary variety (Yokoro et al., 2023). A survey conducted amongst 236 older adults in the United States using The Household Food Security Survey Module, revealed a higher likeliness of being food insecure amongst those who experienced loneliness and had low social support. The risk increased for those who were divorced (Burris et al., 2021). Hence, establishing close social bonds may be important to sustain the older adults' will to live and secure their nutritional status. While not everyone felt the need or desire to eat with others, the scenario might be for those who are struggling to eat in the first place, as all the participants of the present study ate enough according to themselves. It might therefore be worth considering prioritizing co-eating as a food measurement. However, it might be important to contemplate whether a part of autonomy should include allowing older adults to decide if they want to eat with others or not. Furthermore, depression is a complex issue, and depression related malnutrition might not be resolved solely from eating with others.

5.1.9. Opinions related to food security

The older adult participants believed that ensuring food access was a shared responsibility amongst themselves, their family members, and the municipality. They explained that if they were healthy, grocery stores met their needs. Underlining that availability is generally not perceived as a problem in

Norway. However, some recognized that once their mobility declined, the situation changed. The responsibility was no longer only theirs, but for example shared with their family. It seemed that the participants did not fully comprehend the breadth of food security. Generally, they associated the municipality's role to be in secondary care, such as in hospitalization, rather than connecting food security to age-friendly living measures. For example, they did not recognize the vast transportation options as measures that gave them food security. However, one acknowledged the municipality's role explaining how she reached out to them in order to get a new walker that could help her manage going grocery shopping independently during the winter.

5.1.10. Opportunities within the home care service

Once a patient was identified as being at risk for malnutrition, the home care service had several options enhancing their food intake through their nutrition plan, such as offering advice, preparing their meals, focusing on food presentation, incorporating food fortification products, dining with patients, and using refrigerator notes.

However, when patients were offered nutritional advice, many declined the help. As one home care service participant highlighted in relation to weighing of patients, the approach may have mattered. Thus, a suggestion to effectively guide older adults is using the motivational interview (MI) approach. The MI technique is used to help people change lifestyle related habits, without laying guidelines for what those changes should be and what they should look like (The Norwegian Directorate of Health, 2017). If the older adults themselves could recognize and address their nutrition-related issues and suggest what they would like to do with them, it could possibly increase the chance of behavioral change. Various studies have looked at the effect of MI in older adults, finding evidence that MI can be a helpful tool for this group (Cummings et al., 2009; Martins & McNeil, 2009). The effect is better when the interventionist is trained well and the sessions are long, ideally lasting from 30 to 40 minutes (Schneider et al., 2017). In summary, training the home care staff in MI might be beneficial to promote healthy eating behavior in older adults.

While some home care service participants argued that more attention brought to nutrition could improve the nutrition work outcomes, others felt that limited resources, staff, time, and money hindered them from doing more than what they already did. If resources are limited, the focus should be on efficient and cheap nutrition work solutions. Suggestions like MI might not be practical for those facing time constraints. Thus, the clinical nutritionists hired by several home care service departments, might be crucial in the process of developing tailored solutions that work for the respective home care service staff groups.

Despite time constraints, some home care service staff would engage in co-eating with patients as a nutritional measure. This approach might have been even more beneficial if the staff additionally was responsible for cooking the food, with the potential for an increased impact on appetite if the older adults were involved in the cooking process. External projects, such as the "Spisevenn" (dining friend)

initiative, a project where home-dwelling older adults had someone to share a meal and conversations with, could be the solution. The dining friend either receives a meal for free provided by Bergen municipality when bought from Matvarehuset, or was paid by the older adult when other solutions were used, such as cooking at home (Bergen municipality, 2023b). Although no experience with this project has been published, the home service staff believed the project had limited success. Thus, it is important to understand how to make this, or similar projects, successful. Furthermore, it should be considered if cooking together with the older adult could make the interaction even more meaningful, as the older adult could share their cooking knowledge with the younger dining friend, and vice versa. The solution where the older adult had to pay for the dining friends' food unless provided by Matvarehuset might have served as a barrier for cooking together. Other potential external projects could include partnerships between senior centers and kindergarten or schools, fostering meaningful interactions for both the older adults and the children. In summary, external projects may be a part of the solution to provide co-eating for older adults when the home care service staff face time constraints.

5.2. Discussion of methods

In the following section, it will be discussed whether the methods accurately could provide answer to the study objectives, including reflections around the study design and study sample.

5.2.1. Study design

The main research objective was to explore the experiences of food security among older adults living at home in Oslo, Norway; and in addition, explore the perception of older adult's food security according to home service staff in Oslo and Bergen, Norway. Through this paper, different experiences of older adults living at home in Oslo, Norway, have been described, with further insight given by the home care service staff. The chosen method provided a solid foundation to achieve results that aligned with the objectives. However, while the participants were aware that the interviews were related to nutrition, they did not quite seem to grasp what the intention of the interviews were. More concise information on perceived barriers and solutions for food security could possibly have been achieved by giving the participants a clearer introduction to the topic of the interviews. Although wide and open questions are beneficial for in-depth interviews as they allow new topics to emerge (Curry et al., 2009, s. 1445), the participants could possibly have gained a better understanding of the purpose of the study if the interview guide started with specific questions regarding food security and food intake, such as: "What do you think food security is?", "Do you think that you are food secure?", "Have you ever experienced food insecurity", "What do you consider to be healthy food", and "Do you have the opportunity to eat the food that you consider healthy?". The interviews with home care service staff, gave additional information on the challenges older adults encounter to access food and causes for malnutrition. However, most of the interviews with home care service staff was spent discussing the screening and documentation process, which did not necessarily give further insight into the perceptions of food

security among older adults. It did, however, result in interesting information on the challenges faced in nutrition work to prevent or reverse malnutrition, which could be connected to food security issues.

5.2.2. Study sample and recruitment

The study sample was picked out using convenience sampling, meaning that participants were selected based on availability (Tenny et al., 2022). This group, selected by municipal contact persons, may have been more socially connected than average older adults. Furthermore, they were picked out based on certain inclusion criteria, which can result in them being more independent and healthier than their peers. A possible benefit to the study sample was that there was a range of ages and an even distribution of genders, which might have broadened the perspectives given. However, the group was rather homogeneous, where all were ethnical Norwegians. It is likely that the results, challenges, and solutions might be different for older adult immigrants, maybe particularly for those who have not learned the language. Furthermore, immigrants accounted for as much as 33,8% of Oslo's general population in 2022 (Statistikkbanken Oslo kommune, 2023). So, to accurately explore the older adults' experiences in Oslo, Norway, immigrant voices should have been included. Among home care service staff, interviews were done in both Oslo and Bergen, which gave insight to some differences between the cities, for example in the food delivery practices. Thus, it is likely that the older adults in Oslo and Bergen also have different experiences. For both older adults as well as home service staff, saturation was not reached and it would be beneficial to interview more participants, however, the recruitment process proved to make this difficult.

5.3. Strengths and limitations

The strengths and limitations that may have impacted the project will be presented. First the strengths will be described, including use of triangulation and thick description, and secondly weaknesses will be listed, including the lack of audit trails; possible biases; the impact of having little previous experience with qualitative interviewing; and no use of peer examination.

A strength with this study was the use of data source triangulation, where multiple qualitative data collection methods were used to study one phenomenon (Tenny et al., 2022). Two different approaches with two different groups were used: In-depth interviews with older adult participants and semi-structured interviews with home care service participants. Using multiple methods of data collection increases the reliability of the results (Tenny et al., 2022). Other methods that could have further elevated the triangulation could have been including focus group interviews.

Attempts were made to give a thick description that included how the study was carried out, relevant information on the study setting, and plenty of participant quotes (Tenny et al., 2022). This may have elevated the transferability and replicability of the study.

However, a weakness to the study is that no audit trail is provided for the data collection (Tenny et al., 2022). Several people were involved in the process of selecting participants, and although the author was the one doing the interviews, no records were made available of how the participation selection process took place.

Furthermore, theory triangulation was not used. The data has been compared with various existing research; however, no theory was introduced. Theory triangulation is beneficial in the process of analyzing and interpreting data (Noble & Heale, 2019; Tenny et al., 2022). Therefore, introducing theories or models, such as the Conceptual Model of Physical Resilience (Whitson et al., 2016) or The Food Insecurity among Older Adults: Social Ecological Model (Goldberg & Mawn, 2015) could have given new perspectives and broader understanding of the data during analyzation and the discussion.

The observer-expectancy effect is the name of the observation bias where a participant changes behavior or responses to satisfy the researchers desired effect (Tenny et al., 2022). There might have been some topics, such as questions about nutritional intake and food security, where the participants possibly can have responded in a way, they believed was desired. For example, it is possible they would say that they ate a varied diet although their real opinion might have been different. However, most participants believed the topic of nutrition and older adults was important to highlight, which may have helped to reduce the impact of this bias. The observer-expectancy bias can also have impacted the interviews with home care service staff, making them more prone to "embellish" the truth. Nevertheless, the general impression was that the participants spoke openly about positive and negative sides of their work.

The author had no prior experience with qualitative research interviews prior to the present study, neither much experience communicating with older adults. An important part of qualitative research is to be able to use probes and follow-up questions to improve responses (Curry et al., 2009). That was done most of the time, however, worries about making the participants uncomfortable led to hesitation from the interviewer. For example, the interview guide included two questions about personal finance, which were difficult to ask as finances can be a sensitive topic. Not wanting to come across as impolite, there was no genuine attempt by the author to dig any deeper into finances once the participants explained that they had no financial problems. On the other hand, other approaches were made to attempt to draw out honest responses, such as making sure to listen closely and not interrupt, as well as using a non-judgmental approach when asking questions. For example, when asking about personal finances, the questions would often start with variations of "I've had to be more cautious with my spendings lately when going to the grocery store with all these new food and electricity prices, what are your experiences with…".

A final weakness of the study is that peer examination has not been used. Peer examination allows participants or other representatives of the group to review the findings and data is consistent.

6. Conclusion and future perspectives

The study revealed various experiences that older adults living in Oslo, including barriers and solutions, have related to food security, with added insight from home care service staffs' perspectives.

Some older adults can walk far, drive, have good economy and can cook food, making them independent which creates a solid foundation for food security. However, as they age, most older adults experience barriers to food security in one way or another. Personal finances impacted the food choices, where healthy food was prioritized more among those with a good economy. Furthermore, past financial status also impacted spending habits and food choices. Being able to do grocery shopping independently depended on the older adults' ability to get to the store. The older adults readily found solutions to get around even after they became more fragile, whether that be by using public transportation, taxis or utilizing walkers that allowed them to walk safely. Once getting around independently proved to be difficult, many older adults relied on family for support and access to food, as they could help with various food related tasks, like purchasing groceries. Older adults who could not rely on their family were likely at a bigger risk for food insecurity. For frail older adults who could not rely on family, grocery delivery and food delivery services may have been particularly crucial to secure food. Older adults' appetite played a central role for food intake, nutritional status, and thus, for food security. The older adults' experiences highlighted the importance of providing food they liked, as dislike of food could cause a decrease in the older adults' appetite or cause them to choose food that may not have been able to provide the nutrients they needed. Some health issues, such as oral health and dementia could affect food intake and be a threat for food security. However far from all diseases and health issues would cause a decrease in appetite and food intake. Finally, mental health might be one of the biggest concerns for food security revealed, although none of the older admitted experiencing depression, the home care service staff often saw older adults who had no will to live and refused to eat. It is unlikely that all experiences older adults in Oslo face were revealed, and thus, further research on the topic to highlight other barriers is highly encouraged. In addition, one study is not enough to conclude that these are the most present experiences for food security.

The present study aimed to explore food security among older adults living at home in Oslo, Norway. As the participants included were connected to the municipal health care services, the participants may have shared some experiences and perceptions different than to older adults with no connection to the municipal health care services. With that in mind, recommendations for future research are to include older adults outside of the municipal health care system, to potentially highlight other barriers to food security. Furthermore, a goal should be to include first and second-generation immigrants, as different backgrounds may shape the older adults' understandings and experiences of health, responsibilities, needs, and challenges faced. To achieve a deeper understanding of food security experiences in Norway, future research could also benefit from including participants from different cities and towns. In this thesis, for example, even if the participants accurately represented the average older adults of Oslo, the results would most likely not cover the multiple different experiences and challenges of food security faced amongst other older adults in other parts of the country. Smaller districts may poise different

challenges, barriers, options, and solutions within food security. Further research may also benefit from looking at internal challenges (e.g. bodily changes, health and frailty) and external challenges (e.g. access to transport and availability of stores) to food security as separate challenges, and look deeper into how the two intertwine. Finally, as the prevalence and severity of food security in Norway is unknown, a quantitative study screening for food security could improve the knowledge base and necessary actions taken to better the food security situation of older adults in Norway.

7. References

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Interview guide for older adults

Hvordan går du frem for å planlegge hva du skal spise den kommende uken?

Hvilke erfaringer har du rundt det å handle inn, oppbevare og tilberede mat?

Handler du selv eller handler noen for deg? – Oppfølging: Hvem handler for deg?

Hva slags mat handler du?

Dersom de lager sin egen mat: Hva slags mat lager du?

Hva slags hjelp får du? – Oppfølging: Synes du selv at du får nok hjelp?

Synes du selv du spiser nok og variert mat? – Oppfølging: Hvorfor ikke?

Hva kunne bidratt til mer variert kosthold for deg?

Hva mener du kunne bidratt til økt matlyst for deg?

Har du problemer med å betale for maten? / Hva er dine erfaringer med å betale for mat?

Har du problemer med å betale for hjelpen? / Hva er dine erfaringer med å betale for hjelp?

Hva vet du om kommunens mattilbud?

Hvilke erfaringer har du vedrørende kommunens mattilbud?

Hvilke faktorer tenker du kan bidra til mangelfullt matinntak blant eldre?

Hvem tenker har ansvaret for at eldre får tilstrekkelig god og sunn mat?

Interview guide for home care service staff

Tilgang til sunn og næringsrik mat er en menneskerettighet. Samtidig har vi en debatt i Norge om hvorvidt eldre er tilstrekkelig ernært. Hvilke tanker gjør du deg om dette?

Hvordan ivaretas matinntak og ernæringsstatus hos eldre i praksis i denne kommunen?

Hvilke rutiner/retningslinjer ligger til grunn for ernæringsarbeidet i kommunen?

Har du tanker om kunnskapsnivå vedr. ernæring hos eldre blant de ansatte?

Hvilke holdninger tenker du er styrende for arbeidet med å ivareta eldre sin ernæringsstatus i kommunen, eventuelt nasjonalt?

Hvilke faktorer tenker du kan bidra til mangelfullt matinntak blant eldre?

Hvem har ansvaret for at eldre har god ernæringsstatus?

Versjonsnummer 1.0

Vil du delta i forskningsprosjektet Matsikkerhet og ernæringsstatus i hjemmeboende eldre – en multisenterstudie?

Formålet med prosjektet og hvorfor du blir spurt

Dette er et spørsmål til deg om å delta i et forskningsprosjekt som har som formål å evaluere kvalitet i kostholdet, tilgjengelighet av matvarer og matsikkerhet blant hjemmeboende i Olso/Viken og Bergen kommune. Du blir spurt om å delta fordi du er i målgruppen hjemmeboende eldre.

Hva innebærer PROSJEKTET for deg?

Deltakelse i studien innebærer at du får besøk av masterstudent(er) som gjøre et grundig intervju av deg ang kommunens mattilbud og din tilgang på mat. Intervjuet vil bli tatt opp og lagret inntil intervjuet har blitt transkribert.

Mulige fordeler og ulemper

Fordelen med å delta i prosjektet er muligheten til å bidra til viktig kunnskapen om matsikkerhet blant hjemmeboende eldre. Deltakelse i prosjektet er ikke forventet å innebære risiko eller ulemper for deg som deltaker.

Frivillig deltakelse og mulighet for å trekke ditt samtykke

Det er frivillig å delta i prosjektet. Dersom du ønsker å delta, undertegner du samtykkeerklæringen på siste side. Du kan når som helst og uten å oppgi noen grunn trekke ditt samtykke. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg. Dersom du trekker tilbake samtykket, vil det ikke forskes videre på dine opplysninger. Du kan kreve innsyn i opplysningene som er lagret om deg, og disse vil da utleveres innen 30 dager. Du kan også kreve at dine opplysninger i prosjektet slettes.
Adgangen til å kreve destruksjon, sletting eller utlevering gjelder ikke dersom materialet eller opplysningene er anonymisert eller publisert. Denne adgangen kan også begrenses dersom opplysningene er inngått i utførte analyser.

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

Hva skjer med OPPLYSNINGENE om deg?

Opplysningene som registreres om deg skal kun brukes slik som beskrevet under formålet med prosjektet, og planlegges brukt til 2027. Eventuelle utvidelser i bruk og oppbevaringstid kan kun skje etter godkjenning fra REK og andre relevante myndigheter. Du har rett til innsyn i hvilke opplysninger som er registrert om deg og rett til å få korrigert eventuelle feil i de opplysningene som er registrert. Du har også rett til å få innsyn i sikkerhetstiltakene ved behandling av opplysningene. Du kan klage på behandlingen av dine opplysninger til Datatilsynet og institusjonen sitt personvernombud.

Alle opplysningene vil bli behandlet uten navn og fødselsnummer eller andre direkte gjenkjennende opplysninger (=kodede opplysninger). En kode knytter deg til dine opplysninger gjennom en navneliste. Det er kun prosjektleder Hanne Rosendahl-Riise som har tilgang til denne listen.

Etter at forskningsprosjektet er ferdig, vil opplysningene om deg bli oppbevart i fem år av kontrollhensyn.

Godkjenninger

Regional komité for medisinsk og helsefaglig forskningsetikk har gjort en forskningsetisk vurdering og godkjent prosjektet. [Sett inn saksnr. hos REK]

Universitetet i Bergen og prosjektleder Hanne Rosendahl-Riise er ansvarlig for personvernet i prosjektet.

Vi behandler opplysningene basert på basert på informert samtykke.

KONTAKTOPPLYSNINGER

Dersom du har spørsmål til prosjektet eller ønsker å trekke deg fra deltakelse, kan du kontakte Hanne Rosendahl-Riise, e-post: hanne.rosendahl-riise@uib.no, tlf: 90158487

Dersom du har spørsmål om personvernet i prosjektet, kan du kontakte personvernombudet ved institusjonen: janecke.veim@uib.no

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

Sted og dato	Deltakers signatur
	Deltakers navn med trykte bokstaver

Jeg bekrefter å ha gitt informasjon om prosjektet

Sted og dato	Signatur
	Rolle i prosjektet

Versjonsnummer 1.0

Vil du delta i forskningsprosjektet Matsikkerhet og ernæringsstatus i hjemmeboende eldre – en multisenterstudie?

Formålet med prosjektet og hvorfor du blir spurt

Dette er et spørsmål til deg om å delta i et forskningsprosjekt som har som formål å evaluere kvalitet i kostholdet, tilgjengelighet av matvarer og matsikkerhet, blant eldre hjemmeboende i Oslo/Viken og Bergen kommune. Du blir spurt om å delta fordi du er ansatt i hjemmetjenesten.

Hva innebærer PROSJEKTET for deg?

Deltakelse i studien innebærer at du får besøk av masterstudent(er) som vil intervjue deg ang hvordan matsikkerhet og ernæringsstatus blir ivaretatt i hjemmetjenesten. Intervjuet vil bli tatt opp og lagret inntil intervjuet har blitt transkribert.

Mulige fordeler og ulemper

Fordelen med å delta i prosjektet er muligheten til å bidra til viktig kunnskapen om matsikkerhet blant hjemmeboende eldre. Deltakelse i prosjektet er ikke forventet å innebære risiko eller ulemper for deg som deltaker.

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Etter at forskningsprosjektet er ferdig, vil opplysningene om deg bli oppbevart i fem år av kontrollhensyn.

Godkjenninger

Regional komité for medisinsk og helsefaglig forskningsetikk har gjort en forskningsetisk vurdering og godkjent prosjektet. [Sett inn saksnr. hos REK]

Universitetet i Bergen og prosjektleder Hanne Rosendahl-Riise er ansvarlig for personvernet i prosjektet.

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KONTAKTOPPLYSNINGER

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Sted og dato	Deltakers signatur
	Deltakers navn med trykte bokstaver

Jeg bekrefter å ha gitt informasjon om prosjektet

Sted og dato	Signatur
	Rolle i prosjektet

Region:	Saksbehandler:	Telefon:	Vår dato:	Vår referanse:
REK vest	Ingvild Haaland		29.06.2022	412682

Hanne Rosendahl-Riise

Prosjektsøknad: Matsikkerhet og ernæringsstatus i hjemmeboende eldre - en multisenterstudie
Søknadsnummer: 412682
Forskningsansvarlig institusjon: Universitetet i Bergen
Samarbeidende forskningsansvarlige institusjoner: OsloMet - storbyuniversitetet, Havforskningsinstituttet, Universitetet i Oslo

Prosjektsøknad godkjennes med vilkår

Søkers beskrivelse

Vi vet at det er store forskjeller i matsikkerheten verden over, men matsikkerheten er lite studert i norske eldre hjemmeboende. Med matsikkerhet menes tilgang til mat, det være seg økonomisk mulighet til innkjøp av mat, mulighet til å handle mat, mulighet til å lage mat og lyst til å spise maten. Matsikkerheten vil påvirke ernæringsstatus og dermed helsesituasjonen til den eldre. Det er få studier som har sett på ernæringsstatus inkludert jodstatus hos eldre som bor hjemme i Norge. Hovedformålet med studien er derfor å få bedre kunnskap om matsikkerheten i denne store gruppen i befolkningen, og dermed muligheten til å i større grad kunne iverksette målrettede tiltak og utarbeide retningslinjer. I samarbeid med Viken og Bergen kommune sine hjemmetjenester, skal vi rekruttere hjemmeboende eldre over 65 år, og kartlegge deres matsikkerhet, ernæringsstatus og jodstatus. Vi skal også gjøre kvalitative intervjuer av personer som jobber i hjemmetjenesten for å kartlegge ernæringsarbeidet i tjenesten. Rekruttering og datainnsamlingen i studien vil foregå høsten 2022. Målet er å rekruttere 100 eldre hjemmeboende og 2-4 nøkkelansatte i hjemmetjenesten.

Vi viser til søknad om forhåndsgodkjenning av ovennevnte forskningsprosjekt. Søknaden ble behandlet av Regional komité for medisinsk og helsefaglig forskningsetikk (REK vest) i møtet 08.06.2022. Vurderingen er gjort med hjemmel i helseforskningsloven § 10.

Ingen av komiteens medlemmer var inhabile og saken ble behandlet i full komité.

REKs vurdering

Forskningsansvarlige institusjoner

REK vest

Besøksadresse: Armauer Hansens Hus, nordre fløy, 2. etasje, Haukelandsveien 28, Bergen

| **E-post**: rek-vest@uib.no
Web: https://rekportalen.no

Universitetet i Bergen er koordinerende forskningsansvarlig institusjon. OsloMet – storbyuniversitetet, Havforskningsinstituttet, Universitetet i Oslo er inkludert som forskningsansvarlige institusjoner.

REK vest bemerker at rekruttering skal skje gjennom kommunene (Oslo/Viken og Bergen), og vurderer at disse må inkluderes som forskningsansvarlige institusjoner.

Om prosjektet

Søkers vurdering av forsvarlighet: «Deltagerne usettes ikke for ulemper og risiko utover tidsbruk ved å delta i studien, samtidig som bidraget for å tette kunnskapshull om matsikkerhet og ernæringsstatus i gruppen er av stor betydning. Det ansees derfor at dette er et forsvarlig prosjekt, med god nytteverdi for denne store gruppen av eldre hjemmeboende.»

Data/materiale

Kvalitative analysemetoder, Kvantitative analysemetoder.

Annen helseforskning (Dybdeintervjuer av ansatte i hjemmetjenesten), Observasjonsstudie.

Det skal samles inn nye data i prosjektet:

Spørreskjema (Matsikkerhet (HIES) og screeningskjema for risikovurdering av underernæring, bakgrunnsinformasjon, sykdomshistorikk), Intervjuer uten opptak (Kostholdsintervju (24 hr recall)), Kliniske undersøkelser (Urineprøve, høydemåling, vekt, bioelektrisk impedanse, håndgripestyrke), Intervjuer med opptak (lyd/video) (Dybdeintervju av ansatte i hjemmetjenesten og et utvalg av de eldre hjemmeboende).

Det skal forskes på nytt humant biologisk materiale:

Urin.

Materialet skal destrueres senest to måneder etter prøvetaking.

Begrunnelsen for valg av data og metode:

«Med økt antall eldre i Norge og globalt, er dette en viktig gruppe å forske på fordi den er en befolkningsgruppe man ønsker samfunnsøkonomisk skal bo lengst mulig hjemme og fordi man ønsker god livskvalitet og helse for denne gruppen. I denne sammenhengen er matsikkerhet og optimal ernæringsstatus viktig. Hjemmeboende eldres matsikkerhet og ernæringsstatus har vært lite undersøkt tidligere. Derfor har vi i valgt en observasjonsstudie som design for å kartlegge status i denne gruppen. Siden hjemmetjenesten ofte er helsetjenestens kontaktpunkt mot de eldre, har vi også valgt å gjøre dybdeintervjuer av ansatte her for å kunne få kunnskap om kunnskapsnivå og ernæringsfokus i tjenesten.»

Komiteen bemerker at det er lagt ved intervjuguide til kostholdsintervju, men ikke intervjuguide til dybdeintervjuene som skal gjøres av ansatte og hjemmeboende eldre. Alle intervjuguider bes sendes REK vest.

Deltakere

Andre personer enn pasienter (Hjemmeboende eldre over 65 år, Ansatte i hjemmetjenesten i Bergen og Oslo/Viken).

Hjemmeboende eldre >65 år, samtykkekompetent, kan motta hjemmebesøk av studiepersonell i inntil 2 timer, mottar hjemmehjelp/sykepleie eller matlevering fra kommunen.

Ansatte i hjemmetjenesten.

123 deltakere totalt.

Begrunnelse antall:

«Kvantitativ del: Utvalgsstørrelsen er basert på prevalensen av underernæring blant hjemmeboende eldre. Ved å anta en frekvens av underernæring på 25% basert på rapport fra Oslo, en feilmargin på 5% og konfidensnivå på 80%, må vi ha 123 deltagere.
Kvalitativ del: vi vil rekruttere 12 av de hjemmeboende eldre fra det kvantitative utvalget (6 på hvert studiested) for dybdeintervju. I tillegg 2 nøkkelinformanter ansatt i hjemmetjenesten.»

Rekruttering

Søker skriver: «Kvantitativ del: Deltagerne vil bli rekruttert via hjemmetjenesten i Bergen og Oslo/Viken. Kontaktpersoner i kommunene vil gi oss en liste med potensielle deltagere til masterstudentene basert på studiens inklusjons- og eksklusjonskriterier.
Masterstudentene vil deretter kontakte mulige deltagere pr telefon, og gi muntlig informasjon om studien. Hvis personene er interessert i deltagelse, vil personene få skriftlig informasjon om studien. Personen må skrive under samtykke for å kunne delta i studien.
Kvalitativ del: deltagere blir rekruttert fra den kvantitative delen av studien, og eget samtykke må signeres for å kunne delta i denne. Nøkkelinformanter vil bli etterspurt fra hjemmetjenesten, og også disse må informeres og skrive under et samtykke for å delta.»

REK vest bemerker at det er greit å ringe til deltakerne for å spørre om man kan sende dem informasjonsskriv om studien, men ikke for at de skal bestemme seg om de vil være med i studien. Alle deltakere må deretter få tilsendt informasjonsskriv og samtykkeskjema i posten, slik at de får tid til å tenke over om de ønsker å være med i studien.

Forespørsel/informasjon/samtykkeerklæring

Det skal innhentes samtykke fra alle deltakere i studien.

Hjemmeboende eldre over 65 år som skal delta i studien, og for ansatte i hjemmetjenesten.

Samtykke for: Kvantitativ del: Kostholdsintervju, antropometriske målinger, håndgripestyrke, bioelektrisk impedansmåling, spørreskjema. Kvalitativ del: dybdeintervju. For humant biologisk materiale: urinprøver.

REK vest har følgende kommentarer til informasjonsskriv og samtykkeskjema:

Det er tre forskjellige informasjonsskriv og samtykkeskjema; ett for dybdeintervju av ansatte, ett for de hjemmeboende (hovedprosjektet) og ett for dybdeintervju av hjemmeboende.

Det er skrivefeil i informasjons/samtykkeerklæringsskjemaet som er merket «Samtykke eldre hjemmeboende.pdf». I første avsnitt står det: «du blir spurt fordi du er ansatt i hjemmetjenesten».

Videre er det ikke så stor forskjell på de to skrivene for hjemmeboende. Man burde slå sammen skrivene til hjemmeboende, og heller beskrive at for noen deltakere vil det utføres dybdeintervju. Det er kun intervjuene som er beskrevet i informasjonsskrivene, og ikke kliniske undersøkelser eller prøver som skal tas. Spørreskjema, kliniske undersøkelser og prøver (inkludert hvilke analyser som skal utføres på prøvene) må beskrives i informasjonsskrivet til de eldre hjemmeboende.

Logo for Universitetet i Oslo og for kommunene må inkluderes i informasjonsskrivet.

REK vest bemerker at deltakerne også må samtykke til at forskerne kan gi beskjed til fastlege og hjemmesykepleien dersom de oppdager alvorlig underernæring.

Reviderte informasjonsskriv og samtykkeskjema etter ovennevnte merknader bes sendes REK vest.

Oppbevaring av data

Data og humant biologisk materiale behandles indirekte identifiserbare ved bruk av koblingsnøkkel:

Koblingsnøkkelen vil bli oppbevart i separat filmappe i SAFE som kun prosjektleder på hvert studiesenter har tilgang til.

REK vest bemerker at både koblingsnøkkel og andre data må oppbevares på institusjonens forskningsserver (koblingsnøkkel adskilt fra andre data).

Prosjektslutt er 22.06.2027.

Når et forskningsprosjekt er avsluttet (senest ved godkjent sluttdato) skal en eventuell koblingsnøkkel oppbevares i fem år (15 år ved legemiddelstudier), men kun for kontrollhensyn. Deretter skal en eventuell kodenøkkel slettes og data makuleres eller anonymiseres.

REK vest godkjenner prosjektet med følgende vilkår:

Kommunene som deltakerne skal rekrutteres fra må inkluderes som forskningsansvarlige institusjoner.

Deltakerne må få tilsendt informasjonsskriv via post, slik at de får betenkningstid på om de ønsker å være med i studien.

Alle intervjuguider må sendes REK vest.

Reviderte informasjonsskriv og samtykkeskjema etter ovennevnte merknader bes sendes REK vest.

Koblingsnøkkel og andre data må oppbevares på institusjonens forskningsserver (koblingsnøkkel adskilt fra andre data).

Svar på vilkår sendes inn gjennom en endringsmelding på prosjektet.

Vedtak
REK vest har gjort en helhetlig forskningsetisk vurdering av alle prosjektets sider. Prosjektet godkjennes med hjemmel i helseforskningsloven § 10 på betingelse av at nevnte vilkår tas til følge.

Sluttmelding
Prosjektleder skal sende sluttmelding til REK på eget skjema via REK-portalen senest 6 måneder etter sluttdato 22.06.2027, jf. helseforskningsloven § 12. Dersom prosjektet ikke starter opp eller gjennomføres meldes dette også via skjemaet for sluttmelding.

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

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

Med vennlig hilsen

Nina Langeland

Prof., Dr.med

Komitéleder

Ingvild Haaland

Seniorrådgiver

Kopi til:

Universitetet i Bergen
OsloMet - storbyuniversitetet, Havforskningsinstituttet, Universitetet i Oslo