UNIVERSITETET I AGDER

Self-reported nutritional competence and -practice among health care workers at nursing homes in two Norwegian municipalities: a cross-sectional study

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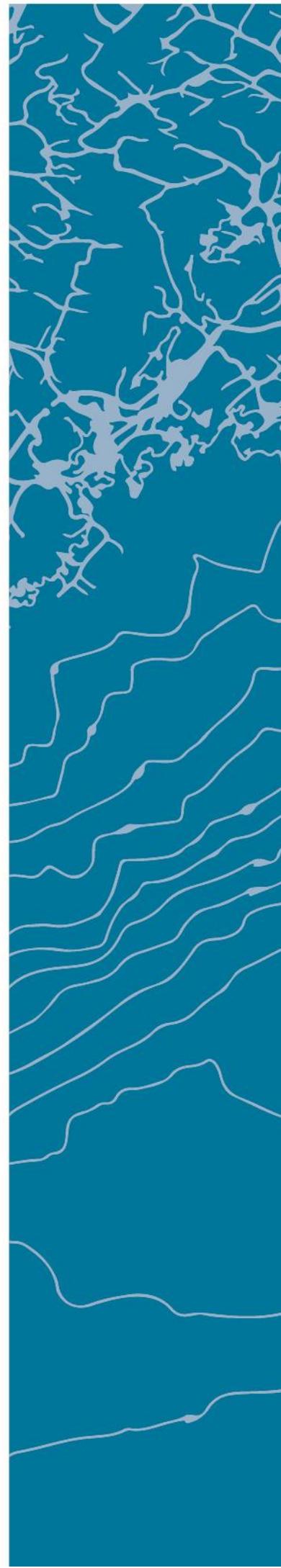
Forord

Skriving av denne masteroppgaven har uten tvil vært krevende og til tider slitsom, men også ganske ålreit. Utviklingen av prosjektet har vært spennende og læringskurven bratt. Å gjennomføre sitt eget masterprosjekt har vært skummelt, men det har også vært en artig prosess som jeg er glad for at jeg har kommet i mål med, med bidrag og støtte fra mange hold.

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Ingeborg K. Melbye
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Sammendrag

Bakgrunn: Feilernæring hos eldre er vanlig. Viktige årsaker er multimorbiditet og naturlige aldringsprosesser.

Hensikt: Hensikten med studien var å kartlegge ernæringskompetanse og ernæringspraksis hos helsepersonell ved alle sykehjem i kommunene Arendal og Grimstad.

Metode: Helsepersonell fra ti sykehjem fikk tilsendt et elektronisk spørreskjema. Skjemaet hadde 49 spørsmål om praksis for dokumentasjon, selvopplevd ernæringskompetanse og kunnskap om måling av høyde, vekt og kroppsmasseindex. I tillegg ble kunnskap om nøkkeldokumenter og retningslinjer vedrørende ernæring kartlagt. Dataene ble analysert med Frekvens, Kji-kvadrat og regresjonsanalyser.

Resultater: Av 542 inviterte svarte 185 (34 %) på spørreundersøkelsen, hvorav 37 % var sykepleiere. Et flertall rapporterte god selvopplevd ernæringskompetanse. Relativt få hadde kjennskap til relevante ernæringsdokumenter; 25 % kjente til de nasjonale kostrådene og 37 % var kjent med "kosthåndboken". Helsepersonellet rapporterte å ha god ernæringspraksis, spesielt knyttet til dokumentering av matinntak. Det var god praksis for måling av vekt og høyde både ved innleggelse og ved oppfølging, men kunnskap og praksis knyttet til vurdering av kroppsmasseindeks var utilstrekkelig. Mange ønsket økt kunnskap om ernæring, spesielt hos demente og pasienter med kroniske sykdommer.

Konklusjon: Selvopplevd ernæringskompetanse- og praksis blant helsepersonell i sykehjem var relativt god. Det er rom for forbedringer, spesielt knyttet til kjennskap til relevante dokumenter og bruk av kroppsmasseindeks. Helsepersonell ønsket økt kunnskap og kompetanse vedrørende ernæring til demente og kronisk syke.

Nøkkelord: Helsepersonell, sykehjem, ernæringskompetanse, ernæringspraksis, eldre, feilernæring

Abstract

Background: Malnutrition is common in elderly. Possible causes are multimorbidity and natural changes from ageing.

Aim: The aim of this study was to describe nutritional competence and nutritional practice among health care workers in nursing homes in two municipalities.

Method: Health care workers from ten nursing homes received an electronic questionnaire. The questionnaire included 49 items regarding practice of documentation, self-reported nutritional competence, and knowledge about anthropometric measures and body mass index. In addition, familiarity of key documents and guidelines about nutrition were assessed. The data was analyzed with frequencies, Chi-square, and regression analyses.

Results: Out of 542 invited participants, 185 (34 %) responded to the survey, of which 37 % were registered nurses. The majority reported good nutritional competence. A small proportion were familiar with relevant documents about nutrition; 25 % knew the "Norwegian dietary guidelines" and 37 % were familiar with the "Dietary handbook". The health care workers reported to have a good nutritional practice, especially of documenting food intake. The practice of measuring weight and height both on admission and regularly was good, but knowledge and practice regarding body mass index were insufficient. The staff wished for increased knowledge about nutrition, especially in dementia and patients with chronical diseases.

Conclusion: Self-perceived nutritional competence and -practice were relatively good, but there is room for improvement especially in regarding and familiarity with relevant documents and use of body mass index. The health care workers wanted more knowledge about nutrition.

Key Words: Health care worker, nursing home, nutritional competence, nutritional practice, elderly, malnutrition

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1.0 INTRODUCTION

Many elderlies are at risk of developing malnutrition [1]. Ageing itself is not a direct cause of malnutrition, but the natural physical and psychological changes from ageing can lead to malnutrition [2]. Health issues like reduced appetite, chronic illness, oral problems, cognitive impairment are common among elderly, and might influence their food intake [1, 3]. Insufficient or unbalanced nutrition might lead to poor health and reduced functional level [1]. A well composed diet and a pleasant mealtime atmosphere might affect appetite, and thereby food intake and nutritional status among elderly. The need of energy will decrease as the activity level is often reduced with increasing age, but the intake of micronutrients should be maintained or increased [1, 4]. Thus, reduced energy expenditure might lead to stricter quality requirements of food and drink that is actually consumed, to ensure adequate nutrient intake [1].

It is expected that one in three Europeans will be more than 60 years old by 2050 [5]. Today, life expectancy in Norway is 80 years for men and 84 years for women [6]. In 2015, 43 000 elderly were living in nursing homes in Norway [6]. This equals 6 % of the Norwegian population >67 years old. Up to 60 % of elderly >70 years old who live in nursing homes in Norway suffer from, or are at risk of undernutrition [7]. It is important to remember that today, only the oldest, weakest, frailest, and sickest elderly get admitted to nursing homes due to limited capacity [8].

As many elderly experience physiological and psychosocial changes that may affect nutritional status, it is important that health care workers have knowledge on how to meet these changes to ensure optimal nutritional status [8]. Health care workers in nursing homes have a complete responsibility for the patients, including nutritional measures [9]. Since undernutrition, obesity, and chronic diseases are common among elderly, sufficient nutritional competence among health care workers in primary care is important. This is important [10, 11]. Yet, the Norwegian Directorate of Health [12] states that the employers, like directors of nursing homes and community care, expect too much from the health care workers, as the health care workers often do not have adequate nutritional competence.

Aim

The overall aim of this study was to assess and describe aspects of nutritional competence and nutritional practice among health care workers at the nursing homes in the municipalities of Arendal and Grimstad.

More specifically, the assessment investigates the following aspects:

- Practice and knowledge of measuring height, weight, and body mass index (BMI) of the patients
- Practice of observing and documenting aspects regarding diet and nutrition in the patients
- Familiarity with relevant nutritional documents
- Self-reported competence in questions related to adjusting meal schedule, monitoring patients' nutritional requirement, and making individual adjustments for patients with special needs
- Self-reported need of increased competence about nutrition
- Self-reported suggestions for improvements and obstacles regarding nutrition in the patients, and existing successful improvements

Results from this assessment will provide municipalities with a broader knowledge about the nutritional competence and -practice of the employees in their nursing homes, and what challenges they face in their everyday care of the patients. The present study will assess the employees' knowledge about nutritional need in older individuals, and explore predictors of the employees' nutritional competence.

2.0 THEORY

2.1 Terms/Concepts

<u>Nursing home:</u> a type of institution that provides care 24 hours a day to patients with different diagnosis and/or a need of care that makes it impossible for them to live in their homes. Persons admitted to a nursing home might stay for a shorter or longer period of time [13].

<u>Health care worker:</u> includes in this context* registered nurses, assistant nurses, health care workers, social educators, care workers, and assistants/others.

- Registered nurses and social educators (in Norwegian: vernepleier).
- Assistant nurses, health care workers, and care workers have finished trade school (or 1-2 years of high school)
- Assistants/others do not have any formal health care training/education, or are studying to be one of the above.

*In some of the analysis and results of this study, the professions are categorized as following: registered nurses, nursing assistants (health care workers, assistant nurses, social educators, care workers), and assistants/others.

<u>Continuous professional development (CPD):</u> includes the Norwegian terms "etterutdanning" and "videreutdanning". These are types of educations beyond basic education, and aims to expand, renew and update the existing knowledge [14, 15].

<u>Primary contact and food contact:</u> there are no clear definitions of these terms, and nursing homes might define these terms differently. A primary contact seems to be a health care worker, preferably a registered nurse, who is responsible of the follow-up of certain patients and their medical records [13]. A food contact has an extra responsibility for the food and nutrition at the ward, and is expected to distribute information about food and nutritional issues to the other employees. All nursing homes are supposed to have a team that includes the director, health care workers, kitchen staff, patients, and next of kin, to ensure quality in the nutritional practice [13].

<u>Elderly:</u> the World Health Organization (WHO) defines people aged 60-74 years as "elderly" and people older than 75 years as "old" [16]. In this thesis, the term "elderly" will include both these groups.

<u>Competence:</u> knowledge, skills, abilities, and attitudes that are required to carry out an activity or task according to defined requirements and measurements [17].

Competence					
Academic competence				Personal competence	
Formal competence		Generic competence		Personal competence	
Education	Experience	Knowledge	Skills	Characteristics	Attitude

Figure 1. The term "competence"

Figure 1 shows an example of how the concept of competence can be presented. Competence can be split into academic and personal competence [18]. Academic competence can be divided into formal and generic competence, and is created through education and experience. Formal competence can be documented with e.g. a diploma [17]. Personal competence is divided into characteristics and attitude. Generic competence is also an important part of personal competence. Academic knowledge and personal skills are essentials to carry out an activity or a task [18]. Personal competence is innate or self-thought, and often less visible, but is shown through knowledge and skills [17, 18].

Nutritional competence: in this study, nutritional competence will be based on the following criteria which the Norwegian Directorate of Health [12] has concluded with in their report on nutritional competence:

- The requirements of competence and responsibilities need to be clarified at different health service levels
- Health care workers should have sufficient competence on diet and nutritional intake related to different types of diseases/conditions
- Health care workers should be aware of the Norwegian public health authority's dietary recommendations
- Health care workers should have competence to recognize problems related to nutrition and have an opportunity to refer patients to a dietitian when needed
- Health care workers should have the opportunity to contact a dietitian for advice
- Health care workers should be given sufficient training in nutrition
    - This should be provided through education, courses, and seminars with nutrition as the topic

Practice: action, realization of a purpose. In daily life, this means that a person uses his/her theoretical knowledge in practical life [19].

Nutritional practice: includes assessment, evaluation, and documentation of a patient's nutritional status, evaluation of the food intake in relation to need, initiation of measures,

follow-up and evaluation [13].

2.2 Background

Sufficient nutrition is essential for keeping elderly healthy and independent [20]. Adequate nutrition in elderly is essential as it promotes health, helps maintaining independence, and may reduce risk of diseases [20, 21]. Further, it may postpone or even avoid nursing home placement, reduce the use of expensive health care equipment, and decrease the risk of hospitalization [20]. Aspects such as a nice mealtime atmosphere, adjusted seating position, the food's consistency, the need of utensils/tools, adjusted number of meals, different food options, and enough time might all contribute to a pleasant meal experience which might promote the patients food intake [13].

Elderly patients at nursing homes are vulnerable and at risk of developing malnutrition [22, 23]. Malnutrition includes both unbalanced nutrition (lack of one or more micronutrients), undernutrition (deficiency), and overnutrition (excess), and develops from a poor diet which does not provide the right nutrients for good health [2]. A low food intake may lead to undernutrition, while consuming too much food can cause overnutrition [24]. Undernutrition can be divided into undernutrition caused by hunger or undernutrition caused by disease [25]. It is unknown what the exact prevalence of undernutrition among elderly at nursing homes in Norway is, as different studies have different design, participants, methods and definitions/cut-offs. The Norwegian Directorate of Health [7] has therefore suggested that the prevalence of undernutrition among elderly at nursing homes in Norway varies between 10 and 60 %.

2.3 Causes and consequences of malnutrition among elderly

The causes of malnutrition are multifactorial [3]. Undernutrition is recognized by a deficiency of calories or of one or more essential nutrients, including micronutrients, that can lead to changes in body composition (decreased fat free mass) and/or reduced physical and mental functioning [2]. Chronic illness is the most common cause of undernutrition in Norway [26].

There are several physical and psychological determinants of nutrient deficiency in elderly: changes in body composition, changes to the gastrointestinal tract (e g. oral health problems),

changes in sensory function (e.g. reduced sense of taste/smell), changes in fluid and electrolyte regulation, chronic diseases (e.g. cancer, stroke, dementia, depression), and side effects from medications [27]. Several psychological determinants for malnutrition are also identified (e.g. social isolation and decreased independence). All of these determinants may lead to dehydration, reduced appetite, reduced food intake, decreased energy, increased morbidity, nausea, and inability to self-feed [27]. Socioeconomic or psychological malnutrition can be defined as malnutrition developed as a consequence of poverty, poor care, mourning, social inequities, or self-neglect [2]. Landmark, Gran and Grov [8] found a significantly lower BMI among elderly with poor appetite, problems swallowing, need of help feeding, and dental issues. This indicates that there is a correlation between increasing number of feeding-related problems and decreasing BMI [8].

Depression and side effects of drugs are reported to be other common causes of weight loss and undernutrition in elderly [3]. Patients who suffer from dementia or paranoia may think that they are being poisoned from the food or the health care workers, and therefore refuse to eat [3]. The prevalence of dementia was assessed in a study, where they found that 81 % of the patients in the nursing homes had dementia [28]. This is supported by other studies and may indicate that the prevalence of dementia at Norwegian nursing homes is high [29, 30].

Further, the mealtime atmosphere may affect the food intake among elderly. Mealtime atmosphere can be defined as an interaction between the frames (management, resources), the room, the interaction (interpersonal relationships), and how the food is presented [13]. A recent qualitative Norwegian study identified several aspects that may lead to a pleasant mealtime atmosphere [31]. This included letting the patients make their own sandwich, play music, that the staff helped stimulating conversations, option for food at night, seasonal based meals and -celebrations, and a nicely set table with flowers and candles [31]. The meal itself is an important social and cultural activity, and helps creating routines in daily life, good experiences and social cohesion [32]. A nice atmosphere, tasteful food with delicate and appetizing presentation, and adjusted consistency may have great importance for both wellbeing, nutritional status, and health in elderly [26]. Independence related to eating and self-feeding is seen as an important factor for wellbeing among elderly, as this may be a vulnerable situation [33]. The Norwegian Consumer Council [31] found aspects that may lead to increased wellbeing in general among patients at nursing homes; e.g. being treated as individuals, wards with patients with similar functional level, and nice furniture. In Norway,

several nursing homes have become certified as "Livsgledesykehjem" (Joy of life nursing home) [34]. The certification was made to ensure that the cultural, spiritual, and social needs of the patients at the nursing home are well kept. There are nine different criteria, which includes that the institution facilitates a pleasant mealtime atmosphere [34].

Undernutrition can cause reduced mental health, reduced lung function, development of heart failure, muscle loss, osteopenia, increased risk of infections and of falling, slow wound healing, energy loss, reduced mobility, and confusion [35-38]. Thus, undernutrition increases the risk of both mortality and morbidity [39]. Illness may affect nutritional status and vice versa. Undernutrition may also cause more time spent in hospitals, increased costs, extended need of care, and a larger work load for the health care workers [36, 40, 41]. Further, obesity is a challenging public health issue and the incidence among elderly is increasing [42, 43]. Overnutrition is associated with increased morbidity and mortality [44]. This is often related to hypertension, cardiovascular disease, and diabetes [23, 44]. Obesity might further aggravate age-related reduced physical function and may lead to frailty [44]. However, there seems to be an association between elderly being overweight, not obese, and being somewhat protected against acute, chronical diseases and mortality, as they have extra energy stored and more muscle mass [45, 46]. Overweight and obese elderly also seem to have a decreased risk of getting osteoporosis and hip fractures, as they have increased bone mineral density [44]. The prevalence of overweight in patients at nursing homes in Norway is unknown. One longitudinal study showed that obesity in white, elderly increased the relative risk of getting admitted to nursing homes [47]. An American study reported that nearly 30 % of the patients in nursing homes were obese [48]. A significant relation between both undernutrition and obesity and impaired health related quality of life (HRQoL) has been documented [49]. The highest HRQoL-score was seen among the elderly who had a BMI of 25-27.5 kg/m^2 (moderately overweight) [49].

2.4 Assessment of nutritional status

It is important to assess the patients' nutritional status to identify those with or at risk of malnutrition [2, 7]. A nutritional assessment will provide information about diagnosis, and further measures for treatment [2]. Those identified as being at risk need to get an individual nutritional plan with measures to prevent further development of malnutrition. According to National Health Authorities, all patients are expected to have their nutritional status assessed

on admission to the nursing home, and then monthly. In some cases, e.g. if a patient is at risk of malnutrition, it will be necessary to monitor the nutritional status more closely [7]. It is recommended to use a screening tool like e.g. MUST (Malnutrition Universal Screening Tool/Mini UnderernæringsScreeningverktøy) for the assessment [7]. The European Society for Clinical Nutrition and Metabolism (ESPEN) recommends the Mini Nutritional Assessment (MNA) as a screening tool for risk of malnutrition in older people [2].
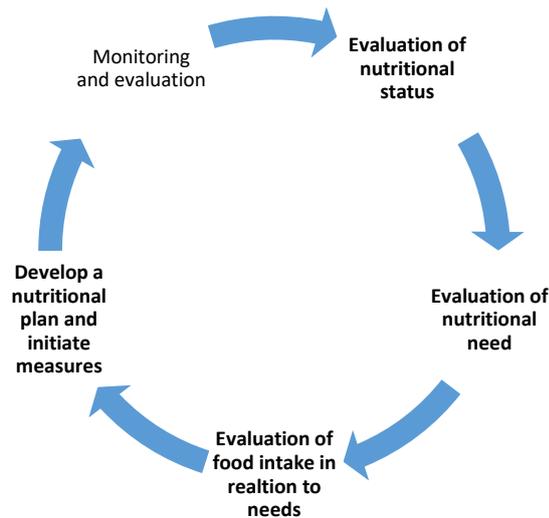
Figure 2. Nutritional practice [13]

Figure 2. pictures how the "Dietary handbook" [13] defines good nutritional practice. To evaluate nutritional status, it is important to look for changes in weight and/or BMI in patients. Laboratorial tests and other clinical tests may also provide important information, in addition to conversations with the patients and his/her relatives about diagnosis/condition, food intake, appetite, meal times, preferences, need of facilitation, oral health, problems swallowing/chewing, medications, and screening tools [13]. Nutritional needs depend on body size, muscle mass, activity level, and disease/condition. Usually the energy requirement of an adult with a low activity level is approximately 30 kcal/kg/day [13]. The Norwegian Directorate of Health suggests several adjustments to assess energy needs more closely, e.g. reduce with 10 % for people >70 years old, and add 10 % if wasted. They also provide charts for calculating protein and fluid needs. A dietary history and dietary registration may help evaluating the food intake in relation to nutritional need. A nutritional plan should include information about nutritional status and -need, food intake and measures (e.g. enrichment of the food and adjusted consistency). The plan needs to be evaluated, preferably at each weighing. If the patient is being discharged, evaluation of the measures is necessary [13].

When transferring patients from e.g. a hospital to a nursing home, the nutritional plan, in addition to all information about nutritional status and needs, should follow the patient [13, 25].

2.4.1 Body mass index (BMI) in the elderly

BMI measures the relationship between weight and height (kg/m^2), and is commonly used as a tool for assessing nutritional status [50]. BMI classifies underweight, normal weight, overweight, and obesity. There are categories denoting optimal BMI for adults and children [50], but no official recommendations for elderly [2]. In elderly, age-related changes in body composition (e.g. loss of muscle mass) or loss of height may affect the BMI value [44, 51]. This means that changes in body composition may lead to underestimated fat mass, and that loss of height may lead to overestimated fat mass [44].

There seems to be a lack of consensus on what constitutes optimal BMI in older age. Several studies suggest that an optimal BMI for people older than 70 years should be somewhat higher than for people younger than 70 years [7]. Landmark, Gran and Grov [8] and Beck and Ovesen [52] recommend that the cut-off for low BMI in elderly should be <24 kg/m^2, and that the optimal BMI for elderly is 24-29 kg/m^2. Further, they propose a BMI <22 kg/m^2 as an indicator of undernutrition [8]. Another study suggests BMI <23 kg/m^2 as a cut-off for undernutrition in elderly [53]. The "Dietary handbook" [13] defines BMI 22-27 kg/m^2 as normal weight in elderly. Several of the nursing homes in the present study use MUST to assess nutritional status. However, MUST refers to BMI ≤18.5 kg/m^2 as undernutrition, 18.5-20 kg/m^2 as at risk for undernutrition, and 20-30 kg/m^2 as normal weight [13]. The "National guidelines on preventing and treatment of malnutrition" uses the same references as MUST, but defines BMI <20 kg/m^2 as underweight, and BMI <18.5 kg/m^2 as severe underweight [7]. Another screening tool (the Nutritional Journal) confirms that there are no references for BMI for elderly >65 years old in Norway, and suggests that the definition of normal weight and at risk of underweight should be BMI 24-29 kg/m^2 and BMI <22 kg/m^2 respectively [7]. It is also recommended to pay attention to any involuntary weight loss, as this could be a better indicator of poor nutritional status and/or underweight than BMI itself [52].

2.5 Key documents regarding nutrition in elderly care

The "Norwegian dietary guidelines" [54] contains 12 recommendations about diet and physical activity, and is meant to be used for advice and inspiration for a healthy lifestyle. In summary, the guidelines recommend a varied diet that contains lots of vegetables, fruit and berries, whole grain products, and fish, and a reduced amount of red meat, processed meat, salt, and sugar. The target group for the guidelines is the general population including healthy children above one year and the elderly [54].

The "Dietary handbook" is an essential and comprehensive tool for the health services, including municipal health care institutions, to help ensure high quality nutritional practice [13]. The handbook contains information about nutritional knowledge and competence, as well as the importance of evidence-based practice for good nutritional practice. In the "Dietary handbook", the Norwegian Directorate of Health [13] suggest two standard diets for health care institutions and home care services; "nøkkelrådskost" is based on the "Norwegian dietary guidelines" and is applicable for elderly with good nutritional status and appetite, and "energy- and nutrient dense diet" is applicable for the ones who suffers from or are at risk of undernutrition.

The Norwegian Directorate of Health has developed the "National guidelines on preventing and treatment of malnutrition" [7]. The aim of the guidelines is to improve and ensure quality in nutrition among patients in health care services, and are made as a tool for leaders and personnel in secondary- and primary health care services who are responsible for patients at nutritional risk. The guidelines contain information regarding incidence, causes, and possible consequences of malnutrition and further details on how to identify and treat malnutrition [7].

The handbook "Food and meals in elderly care" (in Norwegian: mat og måltider i eldreomsorgen) is meant to be a tool with advice, tips and recipes, and emphasizes the use of preventive measures rather than medical assessment [55]. The aim of the handbook is to ensure cooperation between kitchen, wards, patients, next of kin, a pleasant mealtime atmosphere for the patients, and sufficient and right nutrition through knowledge and ethical reflections [55]. This handbook is a supplement to the other mentioned documents.

2.6 The responsibilities of the health care workers'

The Norwegian Directorate of Health [13] has suggested how responsibility and assignments should be allocated between health care workers such as registered nurses, nursing assistants, and assistants to carry out good nutritional practice. All health care workers are responsible for ensuring that the patients get sufficient food and drink adjusted to their needs and wishes. The food and drink intake should be monitored through observations and systematic documentation. The registered nurses are responsible for assessing nutritional status and make a nutritional plan, if necessary. Further, they should cooperate with other health personnel to make sure the different patients' nutritional plans are followed. All health care workers are responsible for monitoring the patients' food intake, nutritional status, and other conditions in relation to nutrition and report changes or deviations. When needed, registered nurses are responsible for seeking help from and cooperate with other qualified health personnel. If possible, the registered nurses should make sure to inform the patients about their nutritional situation and changes [13].

The report "Nutritional Competence in the Health- and Care Services" shows that the access to nutritional competence among health care workers in Norway is limited [12]. The health care workers experience that a lack of resources is a limitation to make nutrition a priority. Further, the responsibility to organize the nutritional practice is often not clearly defined [12]. The "National guidelines on preventing and treatment of malnutrition" present four measures to strengthen the nutritional practice [7]. Health care workers should be able to 1) assess nutritional risk, 2) provide targeted interventions to patients at risk of malnutrition, 3) identify nutritional status and measures in the patients' file and discharge report, and 4) redistribute and communicate documentation to other care givers [7].

The two white papers "National Health- and Hospital Plan (2016-2019)" [10] and "The Primary Health and Care Services of Tomorrow – Localized and Integrated" [56] point out that municipalities will face a major challenge in terms of having high quality, and efficient health services with enough staff, with adequate and appropriate competence, in the right place at the right time in the years ahead. Among other issues the two papers emphasize the importance of ensuring compliance between the health services' needs, students' qualification at graduation, and academic content in the education [10].

Health personnel have expressed a need of more knowledge concerning nutrition in the educational programs, as well as easier access to e.g. dietitians to ask for advice [26]. CPD within diet and nutrition may be relevant among health care workers working at nursing homes and will be an important step to increase the nutritional competence [11]. Health care workers with the right education will ideally have sufficient competence to assess nutritional status and plan for a satisfying food service (including meal times, adjust the diet if needed, create a pleasant mealtime atmosphere, offer help and advice, and provide primary preventive dietary advice) [12]. Still, relevant education about nutrition is missing in several health care education programs, and it is unclear what the actual requirements are [12].

3.0 METHODS

3.1 Design

This study has a descriptive design and takes a quantitative approach. The study is a cross-sectional study that describes the participants at a given point in time [57].

3.2 Selection

A selection is a random or specifically selected group from a population [58]. The selection in this study is the health care workers at all ten nursing homes in the municipalities Arendal and Grimstad, located in the southern part of Norway.

Representatives from the health care authorities in the two municipalities agreed to participate in this study on behalf of their municipality (appendix I). A short information letter with similar information was sent electronically together with the questionnaire to the employees (appendix II and III).

Inclusion criteria were:
- Must be a health care worker, which in this context include registered nurses, assistant nurses, health care workers, social educators, care workers, and assistants. The directors of the nursing homes were not included in the study.
- Must be employed in a permanent or non-permanent position at one of the included nursing homes.

These nursing homes employed 542 health care workers who met the inclusion criteria and were invited to participate in the study.

3.3 Procedure for conducting the study

The data was collected through an electronic questionnaire distributed to the employees by the director of the respective nursing home.

3.3.1 Background for the questionnaire

The present study was inspired by a questionnaire used in a similar thesis with permission from the author [59]. This other questionnaire was in turn based on a validated Danish questionnaire [60]. By combining these questionnaires [59, 60], using a few questions from other questionnaires [61, 62], and adding a few questions, a new questionnaire for the present study was completed with input from the supervisors.

3.3.2 Types of questions

To make sure the content in the survey and the options of the questions were relevant, a short phone interview with each nursing home director was conducted by the master's student (IKM). Extracts from the interviews are presented in chapter 4.8. The nursing home directors were contact persons at each nursing home.

The questionnaire included 49 items where the health care workers' background and their knowledge, skills, and attitudes about nutritional self- perceived competence and practice were assessed (appendix III). Most of the items were worded with multiple answering options (some with possibility of one check off only, some with the opportunity to check off more than one if wanted), dichotomous questions (nominal), Likert scale (ordinal) where the participants place themselves on a four-point scale in proportion to how much they agree with a question (little extent, some extent, fairly large extent, large extent), or open-ended questions where the participant could fill in their own answer (optional). One question concerning BMI was numerical. Some questions had "other" included as an option. By choosing this answer, it was possible for the health care workers to fill in their own answer and elaborate in a comment box. Some of these answers were subsequently categorized by the research team.

For some questions, the professions have been categorized into three categories: "registered nurses", "nursing assistants" (health care workers, assistant nurses, social educators, care workers), and "assistants/others". Further, the following categorizations were made for variables in some of the analyses. Age was categorized into "≤40 years" and ">40 years". Education was categorized into "low education" (<7 years of primary school, primary school (7-10 years), trade school or 1-2 years of high school, 3 years of secondary education) and "high education" (<4 years of high school and >4 years of high school). Workplace is divided

into "Grimstad" (Feviktun and Frivolltun) and "Arendal" (Færvik, Saltrød, Nyskogen, Røed, Solhaug, Elim, Tromøy, and Plankemyra). The response options "little extent" and "some extent" were collapsed into a combined category denoted "some extent". In the same manner, the answer options "fairly large extent" and "large extent" were collapsed into a combined category denoted "large extent".

Nutritional competence was measured by the following questions: "Are you familiar with relevant documents?", "To which extent do you feel competent to adjust the meal schedule to the patients' need?", "To which extent do you feel competent of monitoring the patients' nutritional requirement?", "To which extent do you feel competent in making individual adjustments regarding food and meals for patients with special needs/diseases/conditions?", "To which extent do you think that your workplace needs increased competence about diet and nutrition?", "To which extent do you think that you need increased competence about diet and nutrition? ", and "Are you familiar with these documents (the "Dietary handbook", "Food and meals in elderly care", the "National guidelines on preventing and treatment of malnutrition", and the "Norwegian dietary guidelines")?".

Nutritional practice was measured by the following questions: "Do new patients get their height measured when admitted?", "Do new patients get weighted when admitted?", "How often are the patients weighted when there is no reason to pay extra attention?", "Is BMI being calculated on admission?", "Do you observe the patients' food intake during meals?" and "Do you document information about diet and nutrition in the medical records?".

3.3.3   Pilot

The tool SurveyXact was used to develop an electronic questionnaire. A pilot study was conducted to identify if anything should be improved or needed to be changed. We recruited nursing students from the University in Agder who had been having practice at nursing homes as part of their education. The students voluntarily signed up in class, and later received an e-mail with the survey with the same questionnaire as the one for the health care workers, in addition to six evaluation questions. Thirteen students (35 %) out of thirty-seven volunteers responded to the pilot. The pilot led to minor changes in some of the response options.

3.3.4   Procedure for sending out the survey

An e-mail with an information letter to the participants and a link to the questionnaire was sent to the directors at each nursing home on October 31st, 2016, who distributed the e-mail to their health care workers (appendix II). The health care workers were given an eight-week deadline to respond to the survey. Two reminders were sent out through the directors by e-mail after one and three weeks, respectively. As the participants activated themselves as participants by clicking on the link, the research team had no control of who had answered the survey, only how many. Therefore, the reminders were sent out to all health care workers, even the ones who had already answered. The ones who had answered were asked to ignore the reminders.

3.3.5   Literature search

With advice from an experienced librarian a search of relevant literature was done in March, 2017 in two databases; Cinahl Plus and Medline using the following key words: nutrition* AND ("nursing home*") AND ((nurs* OR staff* OR personnel*) N7 (knowledge OR competence* OR attitud* OR perception*)). The search was limited to results from 2007-2017, and academic journals. This search in Cinahl Plus gave 32 items, while Medline gave 48 results. In both databases, the following two articles were found to be relevant: Beattie, O'Reilly, Strange, Franklin, and Isenring [63] and Zanandrea, Barreto de Souto, Cesari, Vellas, and Rolland [43].

3.4 Ethical considerations

The study was approved by the Norwegian Centre for Research Data (NSD) (appendix IV) and by the Ethical Committee of the Faculty of Health and Sports at the University of Agder.

The information collected was used as the purpose of the study described. All information from the dataset is anonymous and as the survey did not ask for name or social security number it will not be possible to trace the participants back to their answers. During the research period, only the research team had access to the dataset. The directors of the nursing homes will receive the thesis when the study is completed. When presenting the study, it will not be possible to link individual participants to the results. The data is stored on a password-protected computer and there will be a back-up. A data processing agreement between the

University of Agder (UiA) and Rambøll Management/SurveyXact in accordance with the personal data act and the personal data act regulations exists.

3.5 Statistical analysis

The data in the questionnaire was exported electronically from SurveyXact to the data-analysis software Statistical Package for Social Science (SPSS), version 24 [64]. Most of the data had already been prepared for statistical analysis by encoding of the variables in SurveyXact. Frequency analyses were done to present the demographics of the participants. These are presented with number of answers and proportions since all the variables are categorical. Several of the variables had to be dichotomized or recategorized for further analysis. Cross tabulation was used to compare groups and differences in proportions were tested with Pearson Chi-Square test. Further, associations between variables have been investigated by conducting logistic regression analyses. Microsoft Excel has been used as a tool to create tables and charts.

4.0 RESULTS

4.1 Demographics

Out of 542 invited health care workers 185 (34 %) participated in this study and 145 (27 %) out of the invited participants completed the whole questionnaire (table 1). Arendal had three times as many responders as Grimstad. The response rate within the nursing homes varied between 11-73 %. Solhaug was the nursing home with the highest response rate (73 %), whereas the response rate at Tromøy and Frivolltun were 11 and 16 %, respectively.

Table 1. The participants' workplace (n=185)

Municipality	Employees invited n	Answers n	Response rate within %	Proportion of all participants %
Grimstad	173	44	25.4	23.8
Arendal	369	141	38.2	76.2
Total	**542**	**185**	**34.1**	**100.0**
Nursing home				
Feviktun	79	29	36.7	15.7
Frivolltun	94	15	16.0	8.1
Færvik	40	24	60.0	13.0
Saltrød	45	16	35.6	8.6
Nyskogen	32	12	37.5	6.5
Røed	42	11	26.2	5.9
Solhaug	44	32	72.7	17.3
Elim	26	9	34.6	4.9
Tromøy	35	4	11.4	2.2
Plankemyra	105	33	31.4	17.8
Total	**542**	**185**	34.1	**100.0**

Demographic characteristics of the participants are presented in table 2. Most the participants (55 %) were nursing assistants, whereas 37 % were registered nurses. One in two worked <75 % of a full-time position. More than 60 % had >10 years of experience of working within elderly care.

Table 2. Demographics of the participants (n=185)

Variables	n	%	Variables	n	%
Age (years)			**Profession**		
≤30	34	18.4	Registered nurse	68	36.8
31-40	30	16.2	Assistant nurse	64	34.6
41-50	51	27.6	Health care worker	28	15.1
51-60	51	27.6	Care worker	9	4.9
>60	19	10.3	Social worker	1	0.5
Gender			Assistant	10	5.4
Male	5	2.7	Other	5	2.7
Female	180	97.3	**Employment**		
Ethnicity			Permanent position	168	90.8
Norwegian	161	87.0	Non-permanent position/Extra	17	9.2
Others	24	13.0	**Job size (% of full-time employment)**		
Highest level of completed education			<25 %	25	13.5
			25-50 %	19	10.3
<7 years of primary school	1	0.5	51-75 %	48	25.9
Primary school, 7-10 years	4	2.2	76-100 %	93	50.3
Trade school, or 1-2 years of high school	32	17.3	**Work experience within elderly care (years)**		
3 years of secondary education	67	36.2	<1	6	3.2
			1-5	35	18.9
College/University, <4 years	56	30.3	6-10	29	15.7
College/University, ≥4 years	25	13.5	11-15	22	11.9
			16-20	22	11.9
			>20	71	38.4

4.2 Nutritional competence and -practice

4.2.1 Weight, height, and BMI

Six out of ten reported that everyone got their height measured when admitted to the nursing home, while 81 % reported that all patients were weighted on admission (table 3). However, 13 % and 7 % did not know about the routines for measuring height and weight, respectively. Around 70 % reported that the patients were weighted at least monthly when there was no reason to pay extra attention (table 3).

Table 3. Practice of measuring height and weight of patients at the nursing homes

	n	%
Do new patients get their height measured when admitted? (n=172)		
Yes, everyone	102	59.3
Yes, some	26	15.1
No, no one	22	12.8

I don't know	22	12.8
Do new patients get weighted when admitted? (n=172)		
Yes, everyone	140	81.4
Yes, some	16	9.3
No, no one	4	2.3
I don't know	12	7.0
Is it a part of your responsibility to weigh the patients? (n=171)		
Yes	139	81.3
No	28	16.4
I don't know	4	2.3
How often are the patients weighted when there is no reason to pay extra attention? (n=164)		
Weekly	11	6.7
Monthly	103	62.8
Every other month	18	11.0
Every 3rd month	7	4.3
Every 6th month	4	2.4
Annually	3	1.8
Never	5	3.0
I don't know	13	7.9

Table 4 and figure 3 show the health care workers' competence and practice regarding BMI.

Table 4. Competence and practice regarding BMI* (n=167)

	n	**%**
Is BMI being calculated on admission?		
Yes, on everyone	87	52.1
Yes, on some	28	16.8
No, on no one	18	10.8
I don't know	34	20.4
Do you know below what BMI elderly are considered underweight?		
Yes	78	46.7
No	89	53.3

*BMI (body mass index)
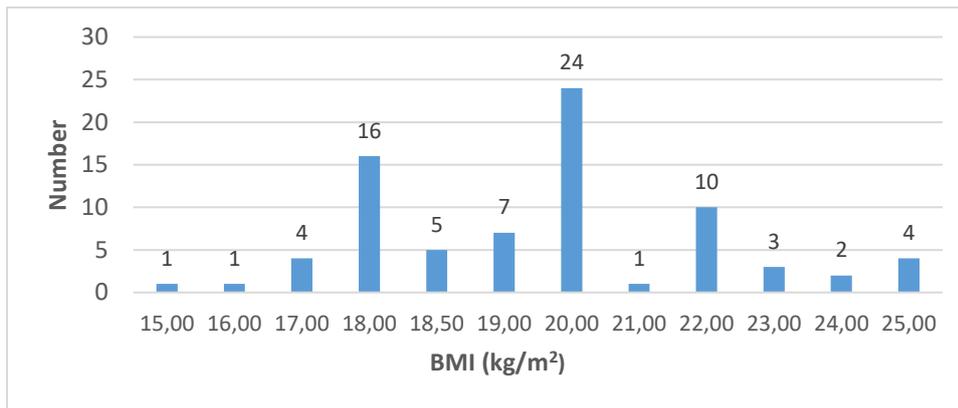
Figure 3. Responses to the question: Below what BMI are elderly considered underweight? (n=78)

More than half of the health care workers reported that all patients had their BMI calculated on admission. However, one out of five did not know if this was a procedure (table 4). Only 47 % thought they knew below what BMI elderly are concidered underweight. There seemed to be some confusion about BMI in relation to underweight as their responses ranged from BMI 15-25 kg/m^2, and BMI 20 kg/m^2 was the most frequent answer (figure 3).

4.2.2 Knowledge of documents, observation and documentation

As shown in table 5, there were variations in which of the documents the health care workers were familiar with; more than 60 % reported familiarity with "Food and meals in elderly care" while only one out of four knew about the "Norwegian dietary guidelines".

Table 5. Familiarity with relevant nutritional documents (n=176)

Are you familiar with these documents?	n	%
Dietary handbook	65	36.9
Food and meals in elderly care	109	61.9
National guidelines on preventing and treatment of malnutrition	62	35.2
The Norwegian dietary guidelines	44	25.0

Most the health care workers reported that they always observed the patients while they ate, while nearly one out of four reported that they did the observation if they had time. A total of 97 % of the employees followed procedures of documenting information about diet and nutrition in the patients' medical records (table 6).

Table 6. Observation and documentation (n=163)

	n	%
Do you observe the patients' food intake during meals?		
Yes, always	116	71.2
Yes, if I have time	39	23.9
No, not my responsibility	8	4.9
Do you document information about diet and nutrition in the medical records?		
Yes	158	96.9
No	5	3.1

4.2.3   Routines and procedures

Who the health care workers see as responsible for making individual adjustments of the food plans for the patients is presented in table 7.

Table 7. Responsibility for individual food plan (n=173)

Who is responsible for individual adjustments of the food plan for each patient?	n	%
Primary contact	80	46.2
Food contact	29	16.8
Ward manager	1	0.6
General practitioner/Nursing home doctor	2	1.2
Local kitchen	5	2.9
Main kitchen	13	7.5
Others	25	14.5
I don't know	18	10.4

Primarily, the health care workers reported that the patients' primary contact is the one responsible for individual adjustments of the food plan (43 %) (table 7). Several of the ones who reported "others" said that they have a multidisciplinary approach at their workplace and would have liked to answer more than one option. One out of ten did not know who was responsible.

Table 8. Where the dinner is prepared (n=173)

Where is the dinner for the patients prepared?	n	%
Local kitchen at work	30	17.3
Main kitchen	143	82.7

More than four out of five health care workers responded that the dinner at their workplace is prepared outside the nursing home, at a main kitchen that provides food for several of the nursing homes in the municipalities (table 8).

Table 9 describes for how long the participants would accept that a patient has a poor food intake before acting, and to what extent participants think the patients get sufficient attention in terms of diet and nutrition.

Table 9. Monitoring the patients

	n	%
For how long would you accept that a patient has a poor food intake before acting? (n=161)		
1-2 days	61	37.9
3-4 days	62	38.5
5-6 days	18	11.2
>1 week	5	3.1
I don't know	15	9.3
To which extent do you think that the patients get sufficient attention in terms of diet and nutrition? (n=160)		
Some extent	25	15.6
Large extent	135	84.4

Three out of four health care workers responded that they will act within four days if a patient has poor food intake. Most of the employees were largely satisfied with the attention the patients get regarding diet and nutrition (84 %) (table 9).

Weight, diet registration, and calculation of BMI were the most frequently used tools when suspecting poor nutritional status among patients (figure 4). Other tools that the health care workers reported to use were e.g. conversation with doctor/colleagues, observation, and the screening tool MUST.
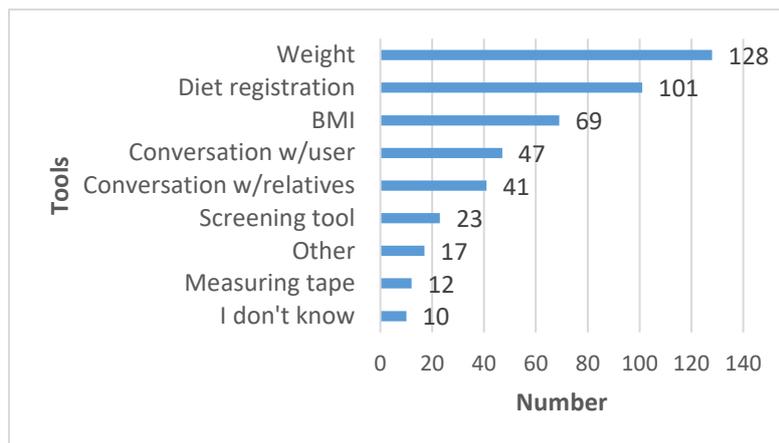
Figure 4. Which tools do you use when suspecting poor nutritional status at a patient? (multiple answering options with the opportunity to check off more than one response alternative if wanted)

Table 10 describes to what extent the participants experience challenges among their patients that may lead to malnutrition, and who the health care workers ask for advice about a patient's nutritional needs.

Table 10. Challenges among patients that may lead to malnutrition

	n	%
Many elderly have different challenges e.g. reduced appetite, motoric difficulties or problems with mouth and palate that may affect the food intake and lead to malnutrition. **To which extent do you experience these types of challenges among the patients at your workplace? (n=156)**		
Some extent	85	54.4
Large extent	71	45.5
Who do you ask for advice if a patient needs to change his/her diet because of special needs/diseases/ conditions? (n=150)		
Primary contact	29	19.3
Food contact	14	9.3
Ward manager	19	12.7
Clinical dietitian	4	2.7
General practitioner/Nursing home doctor	35	23.3
Personnel at the local kitchen	30	20.0
Personnel at main kitchen	8	5.3
Others	7	4.7
I don't know	4	2.7

Almost half of the health care workers reported that they face challenges (to a large extent) related to patients with feeding challenges e.g. reduced appetite, motoric difficulties or problems with mouth and palate that may affect the food intake and lead to malnutrition (46 %) (table 10). For advice on nutritional challenges, the health care workers reported to ask the

general practitioner/nursing home doctor (23 %), personnel at the local kitchen (20 %) and primary contact (19 %). The ones who replied "others" said they contacted more than one person, a nurse or colleagues. One person replied to use the internet: "there are a lot of great diet/nutrition pages that have information about diets for different diseases."

Table 11 presents nutritional challenges among the patients as described by the health care workers. Reduced appetite, cognitive impairment and physical difficulties were reported as the most frequent nutritional challenges.

Table 11. Nutritional challenges among patients according to the health care workers. In descending order (open-ended question, n=101)

Reduced appetite
Cognitive impairment
Physical difficulties
Dental problems
Staff-related problems (knowledge, team work, attitude, staff shortage etc.)
Lack of time (mostly due to staff shortage)
Poor food diversity, few options, no individual adjustments
Problems with swallowing
Poor physical and/or social environment
Physical illness
Overweight, increased appetite
Side effects from medications

4.2.4 Self-reported competence

Table 12 describes to what extent the participants feel competent regarding various aspects of nutrition and meals for the patients. Three out of four of the employees reported that they felt competent in adjusting the meal schedule to the patients' need, and 72 % reported that they felt competent in monitoring the patients' general nutritional need (table 12). Nearly six out of ten reported that they felt competent in making individual food/meal adjustments for patients with special needs/diseases/conditions.

Table 12. Self-reported competence

	n	%
To which extent do you feel competent to adjust the meal schedule to the patients need? (n=160)		
Some extent	39	24.4
Large extent	121	75.6
To which extent do you feel competent of monitoring the patients' nutritional needs? (n=159)		
Some extent	45	28.3
Large extent	114	71.7
To which extent do you feel competent in making individual adjustments of food and meals for patients with special needs/diseases/conditions? (n=151)		
Some extent	62	41.1
Large extent	89	58.9

4.2.5   The health care workers' experience of their workplace

The table below describes to what extent the participants experience their workplace's facilitation of monitoring the patients' nutritional needs and nice meal experiences (table 13).

Table 13. The workplace's facilitation (n=150)

	n	%
To which extent do you experience that your workplace facilitates monitoring of the patients' individual nutritional needs?		
Some extent	29	19.3
Large extent	121	80.7
To which extent do you experience that your workplace facilitates for nice meal experiences for the patients?		
Some extent	17	11.3
Large extent	133	88.7

The health care workers reported the following with how they experience their workplace's facilitation; 81 % reported that they experience that their work facilitates for monitoring the patients' individual nutritional needs (to a large extent) and nearly nine in ten reported that the workplace facilitates nice meal experiences for the patients (to a large extent) (table 13).

4.3 Need of increased nutritional competence

Table 14 shows that three quarters of the employess have sought information about nutrition for elderly in relation to work. Around one in three health care workers reported that their workplace needed increased competence about diet and nutrition, and close to 70 % reported that they needed increased competence to at least some extent.

Table 14. Nutritional competence

	n	%
Have you looked up information about nutrition for elderly in relation to work? (n=150)		
Yes	114	76.0
No	36	24.0
To which extent do you think that your workplace needs increased competence about diet and nutrition? (n=149)		
Some extent	99	66.4
Large extent	50	33.5
To which extent do you think that you need increased competence about diet and nutrition? (n=149)		
Some extent	102	68.5
Large extent	47	31.5

Figure 5 pictures areas of nutrition in which the health care workers reported to want increased competence and knowledge. "Diet for patients with dementia", "diet recommendations for elderly with poor health/diseases", and "how to calculate nutritional needs" were most frequently reported. Only two health care workers responded that they had "no need of increased knowledge". The ones who responded "others" suggested diet for overweight patients and diet for patients with severe illnesses.
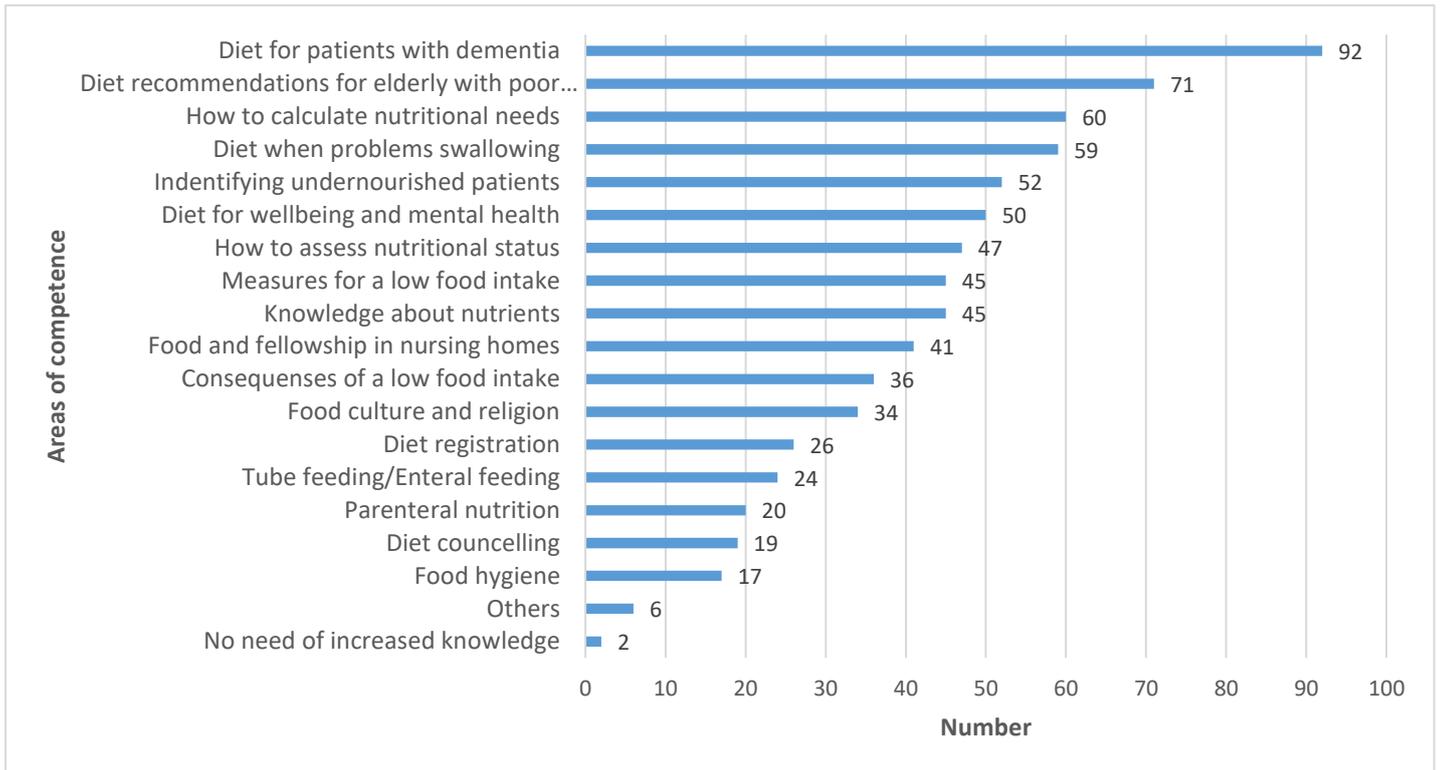
Figure 5. Within which areas do you want more knowledge? (multiple answering options with the opportunity to check off more than one option if wanted)

Table 15 shows how many of the participants that would participate in a nutritional class, and what the participants regard as the best way to acquire knowledge about nutrition.

Table 15. How to improve nutritional competence (n=148)

	n	**%**
Would you participate on a nutritional class etc. through work if offered?		
Yes	136	91.9
No	2	1.4
I don't know	10	6.8
What do you think is the best way to acquire knowledge about diet and nutrition?		
Classes at work	89	60.1
Classes external	43	29.1
Web based courses	12	8.1
Other	4	2.7

Almost all the employees were interested in participating in a nutritional class at work (92 %),

and three in five reported that classes at work would be the most effective way to acquire knowledge about diet and nutrition, while one in three preferred external classes. Interestingly, only 8 % thought web based courses were the best way to acquire new knowledge in this field (table 15).

4.4 Differences in aspects of nutritional competence

The following paragraphs investigate potential differences according to municipality, education, profession, and age, in relation to knowledge of relevant documents and self-reported nutritional competence.

4.4.1 Municipality in relation to knowledge of relevant documents and self-reported nutritional competence

There was no significant difference in employment status (permanent, non-permanent/extra) among participants from two municipalities, p=0.182 (n=185) (table not shown).

Table 16 describes familiarity with different relevant documents according to municipality. Employees at nursing homes in Arendal were significantly more familiar with the handbook "Food and meals in elderly care" than the employees at nursing homes in Grimstad (p<0.001) (table 16). Employees at the nursing homes in Grimstad were, on the other hand, significantly more familiar with the "Dietary handbook" than the employees at the nursing homes in Arendal (p=0.003).

Table 16. Municipality in relation to familiarity with relevant documents (n=176)

	Grimstad		Arendal		p-value[a]
Documents	**n**	**%**	**n**	**%**	
Dietary handbook (yes %)	24	57.1	41	30.6	0.003**
Food and meals in elderly care (yes %)	13	31.0	96	71.6	<0.001**
National guidelines on preventing and treatment of malnutrition (yes %)	19	45.2	43	32.1	0.170
The Norwegian dietary guidelines (yes %)	14	33.3	30	22.4	0.221

[a]Based on Chi-square (continuity correction)
**p=<0.01

In both municipalities about half of the employees had participated in classes/meetings about diet and nutrition at their workplace within the last year, and there was no significant difference between the municipalities p=0.145 (n=181) (data not shown).

There was no significant difference in professional distribution (registered nurses, nursing assistants, assistants/others) among the participants from the two municipalities. Further, there was no significant difference in the distribution of age (≤40 years, >40 years) (data not shown).

Table 17 describes the differences in self-reported competence between the municipalities. Staff at the nursing homes in Grimstad reported significant more often that they felt competent in making individual adjustments regarding food and meals for patients with special needs/diseases/conditions than the staff at nursing homes in Arendal (p=0.021). The staff in Grimstad also reported to have higher self-reported competence in adjusting meal schedule and monitoring nutritional needs compared to the staff in Arendal (table 17).

Table 17. Municipality in relation to self-reported competences

	Grimstad		Arendal		p-value[a]
	n	%	n	%	
To which extent do you feel competent to adjust the meal schedule to the patients' need? (n=160)					
Some extent	6	15.8	33	27.0	
Large extent	32	84.2	89	73.0	0.232
To which extent do you feel competent of monitoring the patients' nutritional requirement? (n=159)					
Some extent	6	16.2	39	32.0	
Large extent	31	83.8	83	68.0	0.098
To which extent do you feel competent in making individual adjustments regarding food and meals for patients with special needs/diseases/conditions? (n=151)					
Some extent	8	22.9	54	46.6	
Large extent	27	77.1	62	53.4	0.021*

[a]Based on Chi-square (continuity correction)
*p=<0.05

4.4.2 Education in relation to knowledge of relevant documents

Table 18 describes familiarity with relevant documents according to educational status. There was no significant difference between level of education and whether the health care workers were familiar with the different documents. Yet, there is a fairly large difference between low and high educational level and whether they know the "Dietary handbook", 30 % with low education and 45 % with high education (table 18).

Table 18. Familiarity with relevant documents in relation to educational status (n=176)

Documents	Low education		High education		p-value[a]
	n	%	n	%	
Dietary handbook (yes %)	29	30.2	36	45.0	0.062
Food and meals in elderly care (yes %)	64	66.7	45	56.3	0.207
National guidelines on preventing and treatment of malnutrition (yes %)	29	30.2	33	41.3	0.171
The Norwegian dietary guidelines (yes %)	22	22.9	22	27.5	0.600

[a]Based on Chi-square (continuity correction)

4.4.3 Profession in relation to self-reported nutritional competence

Table 19 shows how the different professions (registered nurse, nursing assistant, assistant/other) regard their own nutritional competence. There was no difference between profession and if they observed the patient's food intake. The same test showed no difference between profession and if they document information about diet and nutrition in the journal (table not shown). Registered nurses reported that they felt significantly more competent in making individual adjustments regarding food and meals for patients with special needs/diseases/conditions, compared to nursing assistants and assistants/others (table 19). Registered nurses and nursing assistants reported similar competence in adjusting the meal schedule to the patients' needs and monitoring the patients' nutritional requirements, compared to assistants/others who reported lower competence.

Table 19. Profession in relation to self-reported competence

	Registered nurse		Nursing assistant		Assistant/Other		p-value[b]
	n	%	n	%	n	%	
To which extent do you feel competent to adjust the meal schedule to the patients' need? (n=160)							
Some extent	14	22.2	19	22.6	6	46.2	0.162
Large extent	49	77.8	65	77.4	7	53.8	
To which extent do you feel competent of monitoring the patients' nutritional requirement? (n=159)							
Some extent	16	25.4	23	27.4	6	50.0	0.214
Large extent	47	74.6	61	72.6	6	50.0	
To which extent do you feel competent in making individual adjustments regarding food and meals for patients with special needs/diseases/conditions? (n=151)							
Some extent	19	31.1	35	44.9	8	66.7	0.045*
Large extent	42	68.9	43	55.1	4	33.3	

[b]Based on Pearson Chi-square
*p=<0.05

4.4.4 Age in relation to self-reported nutritional competence and need of increased nutritional competence

Table 20 presents how self-reported can be affected by age. Age in relation to self-reported competence is presented in table 21. There was no significant association between self-reported competence in relation to age ($\leq$ 40 years, >40 years) (table 21).

Table 20. Age in relation to self-reported need of increased competence

	≤40 years		>40 years		p-value
	n	**%**	**n**	**%**	
To which extent do you think that your workplace needs increased competence about diet and nutrition? (n=149)					
Some extent	32	60.4	67	69.8	0.325[a]
Large extent	21	39.6	29	30.2	
To which extent do you think that you need increased competence about diet and nutrition? (n=149)					
Some extent	30	56.6	72	75.0	0.033[a*]
Large extent	23	43.4	24	25.0	
Would you participate on a nutritional class etc. through work if offered? (n=148)					
Yes	50	94.3	86	90.5	
No	1	1.9	1	1.1	0.493[b]
I don't know	2	3.8	8	8.4	

[a]Based on Chi-square (continuity correction)
[b]Based on Pearson Chi-square
*p<0.05

Table 21. Age in relation to self-reported competence

	≤40 years		>40 years		p-value[a]
	n	**%**	**n**	**%**	
To which extent do you feel competent to adjust the meal schedule to the patients' need? (n=160)					
Some extent	16	28.1	23	22.3	0.537
Large extent	41	71.9	80	77.7	
To which extent do you feel competent of monitoring the patients' nutritional requirement? (n=159)					
Some extent	16	28.6	29	28.2	1.000
Large extent	40	71.4	74	71.8	
To which extent do you feel competent in making individual adjustments regarding food and meals for patients with special needs/diseases/conditions? (n=151)					
Some extent	20	37.0	42	43.3	0.564
Large extent	34	63.0	55	56.7	

[a]Based on Chi-square (continuity correction)

4.5 Associations between education, municipality, age, and knowledge of the "Dietary handbook"

A multivariate regression analysis was carried out to see if education, municipality, and age were independently predictive of whether the health care workers had knowledge of the "Dietary handbook" (table 22).

Table 22. Education, municipality, and age in relation to knowledge of the "Dietary handbook" (n=176)[c]

Variable		Knowledge of the "Dietary handbook" (yes)		OR	95 % CI	p-value
		n	%			
Education	High	36	45.0	1.599	0.833-3.071	0.159
	Low (ref.)	29	30.2			
Municipality	Arendal	41	30.6	0.367	0.176-0.766	0.008**
	Grimstad (ref.)	24	57.1			
Age	>40	40	34.8	0.994	0.502-1.967	0.986
	≤40 (ref.)	25	41.0			

[c]Based on a multivariable model with knowledge of the "Dietary handbook" as the dependent variable and the independent variables mutually adjusted for each other.

**p<0.01

Table 22 shows that there was no significant association between education or age, and knowing the "Dietary handbook". The health care workers working in Arendal had lower odds of knowing the "Dietary handbook" than those working in Grimstad (OR: 0.37; 95% CI: 0.18-0.77, p=0.008).

4.6 Associations between selected variables, and self-reported nutritional competence

A multivariate regression analysis was performed to see if knowledge of the "Dietary handbook", education, municipality, and age predict perceived nutritional competence in making individual adjustments for patients with special needs (table 23).

Table 23. Knowledge of the "Dietary handbook", education, municipality, and age in relation to self-reported nutritional competence in making individual adjustments regarding food and meals for patients with special needs/diseases/conditions (n=151)[c]

Variable		n	%	OR	95 % CI	p-value
Knowledge of the "Dietary handbook"	Yes	36	66.7	1.393	0.679-2.861	0.366
	No (ref.)	53	54.6			
Education	High	45	64.3	1.226	0.614-2.449	0.563
	Low (ref.)	44	54.3			
Municipality	Arendal	62	53.4	0.389	0.157-0.967	0.042*
	Grimstad (ref.)	27	77.1			
Age	>40	55	56.7	0.968	0.470-1.992	0.929
	≤40 (ref.)	34	63.0			

[c]Based on a multivariable model with self-reported nutritional competence as dependent variable and the independent variables mutually adjusted for each other.

*p<0.05

The health care workers working in Arendal had lower odds of feeling competent in making individual adjustments regarding food and meals for patients with special needs/diseases/conditions compared to those working in Grimstad (OR: 0.39; 95% CI: 0.16-0.97, p=0.042) (table 23).

4.7 Suggestion of improvements, perceived obstacles for improvements, and successful improvements

"Knowledge and competence of the nutritional practice" and "routines and procedures", in addition to "cooperation kitchen/staff" and "time and resources" were the most frequently reported suggestions among the health care workers when being asked about what they would like to improve with the nutritional practice (figure 6).

Examples of quotes from the health care workers regarding knowledge and competence of the nutritional practice

"Get more courses and make sure to (be able to) follow-up. More knowledge gives motivation."

"[...] a course would be nice. Then you get a reminder of what you learned in school, and learn what's new regarding nutrition for elderly."

"By being offered course participation related to different serious diseases. And have group meetings afterwards, reflection."
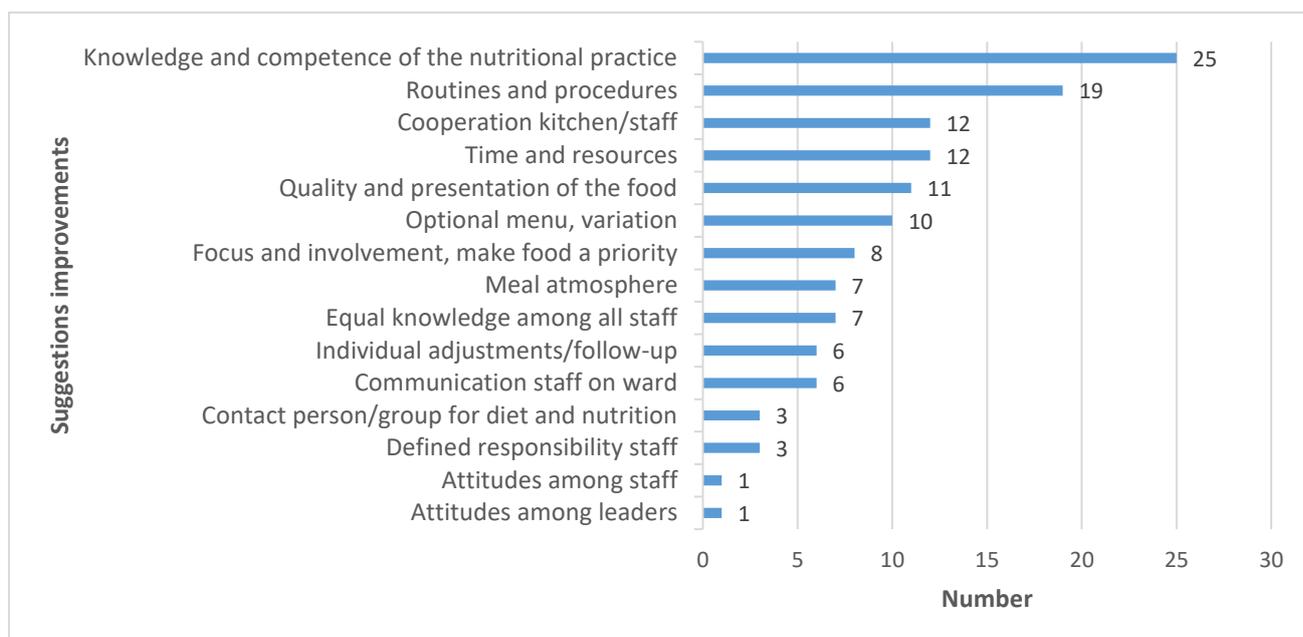
Figure 6. Suggestions for improvements of the nutritional practice at the nursing homes (open-ended question, n=83)

Examples of quotes from the health care workers regarding routines and procedures

"I don't have any decisive authority."

"Assessment, documentation and evaluation of the nutritional practice. The nurses can't do everything, more groups should participate to create enough time to do a good job and that more staff feel ownership to the nutritional practice."

"Guidelines for the staff"

"More detailed food registration"

"Better training of new staff before they start working on the ward."

"Structural follow-up of weight, BMI at the long-term ward"

"We could be better at following the care plans. They are quite detailed, but on a busy day we seldom read them, we just document. When new measures are initiated, we are dependent on oral reports several days in a row to make sure everyone get the message."

Examples of quotes from the health care workers regarding cooperation kitchen/staff

"Better cooperation between kitchen and wards."

"The kitchen staff need to listen to wishes from the health care workers."

"Better and closer cooperation with the kitchen."

"The kitchen should be more involved."

Examples of quotes from the health care workers regarding time and resources

"More time, especially in the evening. Few people at work and many patients to fed."

"Extra staff in the evening. We're only two with responsibility for thirteen patients."

"I think it's too much stress with the meals, especially in the evening when the staff start cleaning out of the dishwasher and clean the table early. I think that sitting down and eating together with the patients creates a better atmosphere [...]"

"ENOUGH TIME for the individual patient so that we get to use the knowledge that we actually have!"

Participants responses on obstacles for improvements of the nutritional practice is presented in figure 7. The biggest obstacle for improvements was "organizational obstacles (procedure/routines/physical restrictions)". Further, "time" and "knowledge/attitude" were also mentioned as obstacles (figure 7).
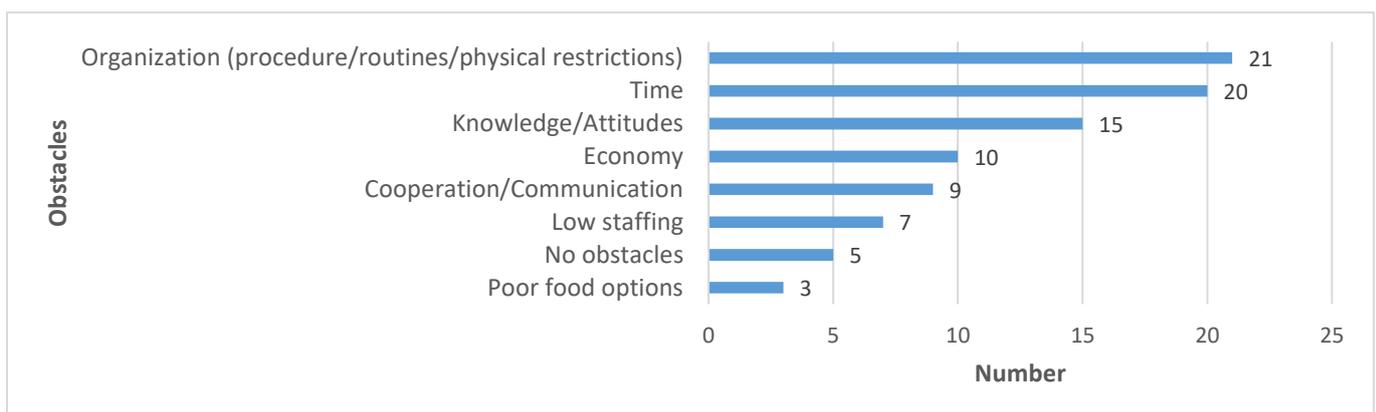
Figure 7. Obstacles for improvements of the nutritional practice at the nursing homes (open-ended question, n=72)

Examples of quotes from the health care workers regarding organization (procedure/routines/physical restrictions)

"We're many employees, and it's not always that everyone get the information."

"Poor kitchen equipment, e.g. one small waffle iron for 14 patients. It takes too long to make waffles, and we have a broken blender and so on. As a result, staff has sometimes spent their own money on utensils, because they're tired of bad equipment."

"Few nurses have responsibility for too many patients. How the building is constructed in a way which makes it difficult to have a dining room. Not enough staff to take care of comprehensive individual needs related to nutrition."

"Often new assistants/extras who don't know the ward."

"Low food budget. Difficult to distribute information and procedure to all employees."

"I think there are too many meetings, i.e. theory, and too little done in practice."

"Communication and feedback don't work optimal."

"There is no forum for the non-permanent staff to ask questions or leave messages with thoughts or ideas."

Examples of quotes from the health care workers regarding time

"We don't have time for it (good nutritional practice). Care and nursing take a lot of time."

"The diet registration is good, but it would've been better if we had more time."

"The time. A suggestion is to prepare the evening meal 30 minutes earlier than usual."

"TIME, there are always other and more acute things to prioritize. The nutritional work is not prioritized until it's a big problem.",

Examples of quotes from the health care workers regarding knowledge/attitude

"Some think it's a hassle."

"We must take it more seriously, and the staff has to understand the importance of nutrition for patients with dementia and the ones with problems eating."

"Lack of understanding and will (of directors and staff) to spend time preparing and conducting the meals. [...] Lack of knowledge about what is the right food for each patient."

"A lot of different people at work, not all are interested in the topic, poor knowledge."

"Lack of will in some employees, sigh and complaining from the kitchen staff when the health care workers suggest new ideas."

"Not adequate knowledge about undernutrition."

"General resistance to change."

"Enthusiasm. Listening. Have passion for what you do at work."

The health care workers mentioned several successful improvements that had been done at the nursing homes (figure 8). Offering "smoothies/nutritional drinks", in addition to "quality, presentation and enrichment of food", and "mealtime atmosphere" were mentioned most frequent successful improvements (figure 8).
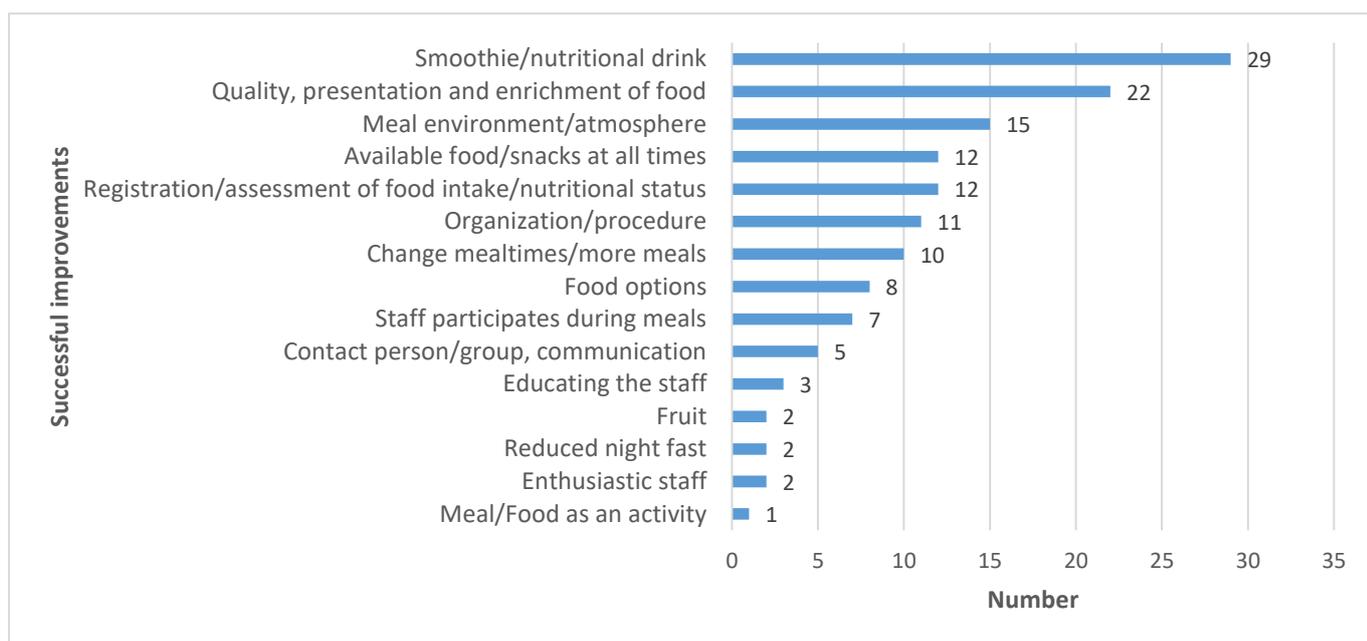
Figure 8. Successful improvements of the nutritional practice at the nursing homes (open-ended question, n=74)

Examples of quotes from the health care workers regarding smoothies/nutritional drinks

"We spend time making homemade nutritional drinks for patients who eat little."

"The patients get enriched smoothies almost every day."

"Nutritional drinks, both industrial- and homemade."

Examples of quotes from the health care workers regarding quality, presentation and enrichment of food

"We have many cases with enrichment of the food for patients with low BMI. We use whole milk, butter, eggs [...]. We experience increased appetite and weight."

"Have more nutrient dense food, increased meal frequency, nutritional drinks, more delicate presentation of food."

"Fresh bread every day that improves the patients' appetite. Increased focus on serving fruit."

"Use fat reduced spreads. Eliminate jam or sweet drinks with high sugar level. Reduce intake of cake served together with the coffee."

Examples of quotes from the health care workers regarding mealtime atmosphere

"Shield the patients with challenges like dementia."

"The staff sit down with the patients at all meals, and give advice and create a nice atmosphere."

"A nice atmosphere during the meals makes the patients eat more."

"Flexible and dynamic placement at the table."

"Nice set table, peace during the meals."

"Enough time with the meals."

4.8 The nursing home directors

Early in the process of this study, the ten directors of the different nursing homes were contacted by IKM for a short structural phone interview. An extract of the nursing home directors' input is presented.

Knowledge about relevant documents

Interestingly, more than half of the directors specifically responded that they expected their staff to have knowledge about the "Dietary handbook". Similarly, most directors expected their staff to have knowledge about the handbook "Food and meals in elderly care". However, few expected their staff to have knowledge about the "National guidelines on preventing and treatment of malnutrition" and the "Dietary guidelines", respectively.

Responsibility of the health care workers'

The nursing home directors were asked to concretize what kind of responsibility their employees have and what they expect from their staff regarding nutrition. Some topics mentioned were monitoring of food intake and dietary changes in patients, making simple food from scratch, presenting and serving the food, making sure that the right patient gets the right food, and helping with feeding when needed.

Meal times

According to the nursing home directors, the different nursing homes served four to six meals every day. Several of the directors said that they have moved lunch and dinner to a later time. Their experience was that when enhancing the time interval between meals this resulted in

better appetite and increased food intake among the patients. The directors also said that the nursing homes often offered soup/porridge around 9 pm to the patients who were hungry, to prevent a long night fast. Most directors also said that a between-meal snack always was available at the ward.

Anthropometric measurements

Regarding anthropometric measurements, the nursing home directors reported that whoever is at work are responsible for weighing the patients. Almost all the leaders said that the patients should be weighed every four to six weeks/monthly, or more frequently if needed. One answered every third month. All the nursing home directors reported that BMI should be calculated for all patients. Several mentioned that this was a relatively new procedure or that they were in a process of trying to implement it. The directors were asked if there were any clear procedures for assessing nutritional status among the patients, and most of them responded that they use either MUST or Gerica (screening tools). At several nursing homes, this procedure was new or getting implemented.

5.0 DISCUSSION

5.1 Discussion of results

Although 60-75 % of the health care workers in the present study reported their nutritional competence and -practice as fairly good, only a small proportion were familiar with relevant documents about nutrition [7, 13, 54, 55]. This may reflect the fact that many of the directors of the nursing homes had unclear expectations regarding their employee's knowledge of the documents. The health care workers reported to have a good nutritional practice, especially of documenting food intake. However, 14 % reported that it might last least five days or more before they initiate adequate measures when noticing a reduced food intake in a patient. Measuring of weight and height both on admission and regularly thereafter were good, but knowledge and practice regarding the interpretation of BMI in relation to nutritional status were insufficient. There seems to be confusion about BMI cut-off for underweight in elderly.

It seems like the health care workers had most challenges with food and nutrition for patients with special needs/diseases/conditions, especially the ones with poor appetite, cognitive dysfunction, and physical difficulties. They also reported their own competence, or lack of it, as an obstacle in working with patients with these challenges. Most of the health care workers reported that both themselves and their workplace needed increased nutritional competence (to some extent). Mostly, they wish for increased competence about nutrition for patients with dementia or other chronic diseases, how to calculate nutritional needs, how to deal with patients with oral problems, and how to identify undernutrition. The health care workers were positive to their workplace's nutritional practice, especially regarding mealtime atmosphere.

5.1.1 Measuring height, weight, and BMI

According to the "National guidelines on preventing and treating malnutrition", patients in primary health care should get their weight and height measured when admitted to a nursing home [7]. In the present study 60 % reported that all patients had their height measured when admitted. Height can be challenging to measure, especially if the patient cannot stand up straight [13]. There are alternatives for these patients: they can be measured while lying in bed or calculate it from measuring length of the forearm. Still, height might not be the most important measurement for assessing nutritional status [13]. Eight out of ten reported that all the patients were weighed. Yet, 16 % did not see it as their responsibility to weigh the

patients. Our results correspond with Aagaard and Grøndahl [62] who reported that four out of five health care workers in nursing homes responded that they weighed the patients on admission. In a study among nursing home directors, 44 % replied that they do not have procedures of weighing the patients on admission [61]. As some of the nursing home directors in the present study said that patients should be weighted more seldom than every fourth week, this might reflect the routines at the nursing homes, and the practice of the health care workers. There may be a lack of clarity of responsibility and routines regarding measurements of the patients, which can explain this number. Similar to height, weight can be difficult to measure if the patient cannot stand up straight on a scale, or if the nursing home does not have access to other types of scales for e.g. chairs or beds [13].

According to national recommendations, weight should be measured monthly in nursing homes [7]. In the present study 30 % of the health care workers did not follow the guidelines as the patients were weighed less often than monthly, or they reported not to have knowledge of how often they should weigh the patients. Our results are similar to a another Norwegian study where one in three nursing home directors said their nursing home did not have routines for regularly weighing of the patients, and 69 % responded that they weigh the patients if they are concerned about a patients food intake [61]. In a study by Munch, Pedersen, Færgeman, and Thulstrup [60] 32 % of the health care workers working in nursing homes answered that patients should be weighed monthly, but only 13 % did this in practice. Another study showed that 90 % of the health care workers in nursing homes weighed the patients if they were in a poor nutritional condition [62]. Compared with these studies, the result in the present study is good. Yet, one third did not follow the guidelines, which is difficult to explain. These health care workers may not have enough knowledge about weighing and how to use the right equipment, or a lack of access to the equipment. Lack of clarity of responsibility might also be an explanation.

As mentioned in chapter 2.4.1, there is no clear recommendation on BMI for elderly [2]. Yet, there seems to be consensus that elderly should have a somewhat higher BMI than adults for optimal health [8, 13, 52, 53]. The "Dietary handbook" recommends to use BMI as a supplement to other measures for nutritional status, including paying attention to any involuntary weight loss or weight changes, and refers to BMI 22-27 kg/m^2 as normal weight for elderly >70 years old [13]. Even though more than half of the health care workers in the present study reported that BMI was calculated on admission, less than half of these claimed

that they knew at what level of BMI elderly are considered underweight. The health care workers' answers ranged from BMI 15-25 kg/m^2. This may lead to many patients going under the radar. One Norwegian study done in 2007 [61] showed that only 4 % of the patients got their BMI calculated when admitted to the nursing home. However, the frequency had increased to just below 50 % when the study was repeated in 2014 [62], which is the same as the present study. In a Scandinavian study [60], only 15 % knew the limit for when elderly are underweight. Our results may indicate that many use BMI as a tool without competence in how to interpret the information. Reasons for this might be that using BMI was recently implemented as a procedure in several of the nursing homes. The present study clearly shows that there is a need of a more distinct definition of BMI categories for elderly. Even though BMI is meant as a supplement, one may question if using it takes away the focus from other measurements for nutritional status.

5.1.2 Documentation and observation, and knowledge of relevant documents

Documentation is important to ensure that nutritional information about patients is communicated properly between health care workers and healthcare facilities, to ensure that the nutritional work of the patients is maintained, and to initiate nutritional measures [2, 65]. According to the Health Personnel Act [9], health personnel are obligated to document relevant information about the patients, including nutritional status, nutritional need, and initiated measures in the patient's medical records. Deviations related to nutritional intake are to be documented as well. The act states that institutions like nursing homes, should have personnel who are responsible for each of the patients' medical records [9]. The "Dietary handbook" suggests that health care workers should follow-up the patients' food- and fluid intake through observation and documentation, especially the ones with dementia [13]. Seven out of ten health care workers in the present study reported that they always observe food intake, and almost one in four observe food intake if they have the time. Also, 97 % of the health care workers reported that they documented information about diet and nutrition in the medical records. Aagaard [61] found similar results for documenting food intake, but another Norwegian study found that one out of four health care workers in home care services reported nutrition as an unimportant subject for documentation [66]. A recent qualitative study showed that documented nutritional status on hospital admission and during hospital stay for elderly were inadequate [65]. Further, communication about the nutritional status of

the patients between the hospital and nursing home was limited [65]. A Norwegian study at nursing homes showed that improved use of patients' medical records could reduce prevalence of undernutrition with 10 % [67]. Our results are uplifting, also the ones concerning documentation of measurements, which means that the nursing homes have established good routines. Even though the documentation is good among the health care workers, one may question whether they use this documentation to initiate measures if needed. However, this was not assessed in the study.

Two key documents provided by the Norwegian Health Authorities regarding food and nutrition in elderly care are the "National guidelines on preventing and treatment of malnutrition" [7] and the "Dietary handbook" [13]. Yet, the health care workers in the present study were most familiar with "Food and meals in elderly care" (62 %). Surprisingly few were familiar with the "Dietary handbook", the "National guidelines on preventing and treatment of malnutrition", and the "Norwegian dietary guidelines" with respectively 37 %, 35 %, and 25 %. Other studies have reported higher familiarity: 64 % of nursing home directors [61] and 24 % of health care workers in nursing homes [62] used the "Dietary handbook", and 68 % knew the "National guidelines […]" [62]. These studies have different populations, but do not discuss the varying results of familiarity with the "Dietary handbook". However, one might think that there is a difference in what the directors know to be the practice and what is done in practice by the health care workers. In a different study [60] 68 % of the participants reported to know one or more documents about nutrition. It is difficult to explain the low knowledge among the health care workers in our study, but it is possible that they have little time and resources to use these documents actively in their workday. For some of the health care workers who have been working with elderly care for a long time, these documents may seem new, or even unfamiliar. The directors may have had an influence on their employees' knowledge about nutritional documents since there were differences in which of the documents the directors mentioned when being asked which ones their employees should know about. Yet, many directors of the nursing homes did not expect their employees to know about the documents. It is difficult to say how the directors communicate their expectations about these documents to their employees, or if it is done in the first place.

Health care workers in Grimstad had significantly higher knowledge of the "Dietary handbook" than those working in Arendal. However, four out of five working in Arendal knew about "Food and meals in elderly care", compared to one in three in Grimstad. This was

expected as Arendal has had an extra focus on improving competence related to food and nutrition in elderly care in recent years. The municipality handed out the handbook "Food and meals in elderly care" [55] to the health care workers at the nursing homes in 2013. We do not have any information about how this was done, or how many got the handbook. Why one in three health care workers in Grimstad know about this document is unknown, but is still uplifting. As this handbook is not a national document, it is meant as a supplement to the other documents mentioned. For the other documents, there seems to be a lack of knowledge.

One might argue that "Food and meals in elderly care" may have taken too much focus in Arendal at the expense of the other documents, and that the "Dietary handbook" would provide the health care workers with broader knowledge. "Food and meals in elderly care" focuses mostly on the mealtime atmosphere and recipes, while the "Dietary handbook" is more comprehensive and covers more subjects, including the ones that the health care workers experience challenges with (e.g. reduced appetite, cognitive impairment, and physical difficulties), and wish to have more knowledge about (e.g. diet for patients with dementia, diet recommendations for elderly with poor health/diseases, and how to calculate nutritional needs). The fact that the health care workers in Grimstad had more knowledge about the "Dietary handbook" may explain why they felt more competent in making individual adjustments regarding food and meals for patients with special needs/diseases/conditions than their colleagues in Arendal.

Three out of four had looked up information about nutrition for elderly at work. One might ask where they have sought this information, if it wasn't in any of the presented documents. Unfortunately, we did not ask about which sources the health care workers used when seeking more information. The media and internet provide enormous amounts of information about nutrition, with different messages from different actors, which might cause confusion [26].

5.1.3 Nutritional practice

To assess nutritional status among patients at nursing homes, it is recommended to measure weight, height, BMI, monitor weigh change, register food intake and symptoms of diseases [13]. Laboratory tests may be relevant too [13]. In the present study weight, diet records, and BMI were reported as the most frequently used tools when suspecting poor nutritional status among patients. Nearly three out of four reported that they felt competent (to a large extent) in

monitoring the patients' nutritional need. The Norwegian Board of Health Supervision showed in a report that two in three nursing homes in Norway had deviations regarding nutrition [68]. Common deviations were missing procedures for assessing nutritional status on admission, the municipalities did not hire staff with sufficient competence, the documentation was insufficient, and many municipalities had not evaluated their procedures to ensure sufficient nutrition. Such deviations can make the medical record less useful, and could affect nutritional practice [68]. Studies have shown a discrepancy between what health personnel think should be the procedures regarding nutritional assessment and what their practice is [63, 69]. Also, nutrition in elderly has had a low priority, mainly due to lack of guidelines and adequate measuring tools [69]. However, these were not identified as obstacles in the present study. We did not assess what the health care workers thought about different topics compared with their actual practice. However, there seems to be good routines regarding nutritional assessment, with room for improvements.

There seems to be no clear recommendations regarding how many days it is acceptable for a patient to have a reduced food intake before initiation of measures. The "Dietary handbook", recommends to conduct a diet record, and immediately consider measures if the energy intake is lower than 60-75 % of the patients need, even though the nutritional status is not yet affected [13]. In the present study, 62 % would accept a low food intake for three days or more, before initiating actions. This is in accordance with Munch et al. [60] study where 69 % of the health care workers would accept a low food intake for more than three days, before initiating measures. With no recommendation regarding this issue, this might demand clearer procedures from the directors of the nursing homes.

5.1.4 Nutritional competence

In general, the health care workers seemed to feel competent in most areas. In our study, 32 % of the health care workers reported that they needed increased nutritional competence. In a study conducted among directors at nursing homes in Norway, 80 % said that their employees needed improved nutritional competence, especially in terms of improved knowledge concerning dietary recommendations, calculation of nutritional need, dietary consequences in case of dementia, and what measures should be implemented for patients with a low food intake [61]. In two follow-ups of this study, the health care workers and nursing home directors wished for more knowledge concerning nutrients, assessing nutritional status,

calculating nutritional need, and how to give dietary advise [62, 66]. This is in line with the results in our study where knowledge concerning diet for patients with dementia, diet recommendations for elderly with poor health/diseases, and how to calculate nutritional needs were the most common areas the health care workers wished for increased competence. However, 41 % reported that they did not feel, or only partially felt, competent when making individual adjustments for patients with special needs/diseases/condition. Reduced appetite, cognitive impairment, and physical difficulties were the most common challenges among the patients.

We found a significant difference between the two municipalities and according to profession regarding self-reported competence in making individual adjustments regarding food and meals for patients with special needs/diseases/conditions; health care workers in Grimstad felt more competent than Arendal, and registered nurses felt more competent than nursing assistants and assistants/others. For the different professions, this should be expected and is likely to reflect their education. Still, studies have found that despite the different length in training/education, nursing assistants and assistants often perceived their role and responsibilities at work as similar to registered nurses [70, 71]. As discussed in another study [72], it is possible that nursing assistants have more direct contact with the patients and may therefore feel more competent in patient communication rather than with documentation. Further, registered nurses may have higher requirements and expectations to their own competence [72]. As mentioned in the introduction, only the oldest, weakest, frailest, and sickest elderly get admitted to nursing homes [8], which requires a higher competence from the health care workers. Health care workers aged 40 years and younger were more likely to report need of increased competence than staff that were older than 40 years. This is interesting, as those under 40 reported lower competence in adjusting meal schedule, equal competence in monitoring nutritional requirements, and higher competence in adjusting food to patients with special needs, compared to the older health care workers. Also, more staff aged 40 years and younger meant that the nursing homes needed increased competence, compared to the ones 40 years and above.

"Knowledge and competence of the nutritional practice" and "routines and procedures", in addition to "cooperation kitchen/staff" and "time and resources" were most frequently suggested as improvements related to food and nutrition by the staff. The same suggestions of improvements have been seen in other studies [62, 66]. Further, the most frequently reported

obstacles for improvements among our participants were "organization (procedure/routines/physical restrictions)", followed by "time" and "knowledge/attitude". Similar obstacles have been found in other studies [61, 63, 73]. One study showed that four out of five reported that the staff participates during the meals, and 36 % agreed and 42 % partially agreed that there were enough health care workers available during the meals to help with feeding [61]. A low priority of food and nutrition due to a lack of time and resources may affect the patients' food intake if they do not get the help they need with feeding/eating [26]. A qualitative study done on nurses at Norwegian hospitals identified five barriers for adequate nutritional practice; loneliness in nutritional practice, system failure in nutritional practice, a need for competence in nutritional practice, low flexibility in food service practices, and nutritional practice is being ignored [74]. The European Council [75] has identified five barriers for a good nutritional practice in hospitals: 1) limited training in nutrition among the health care workers, 2) limited collaboration between health care workers, 3) lack of clarity in the responsibilities of the nutritional practice, 4) limited user involvement, and 5) limited commitment from the nursing home directors [75]. There is reason to believe that most of these key points can be relevant at nursing homes as well. Further, several of these key points are in line with the report from the Norwegian Directorate of Health [12] presented earlier in this thesis.

Lastly, "offering smoothies/nutritional drinks", in addition to "quality, presentation and enrichment of food", and "mealtime atmosphere" were most frequently mentioned as successful improvements. It is worth mentioning that the quality of the food was reported both as an area that needed improvements and as a successful improvement. This may indicate that the quality of the food is good at some of the nursing homes, and has room for improvements in others. Aagaard [61] found "change of meal times", "more meals", "increased focus on food", and "organization" among others as successful improvements.

5.2 Discussion of strengths and limitations

5.2.1 Strengths

One strength of the present study is the inclusion of health care workers at all nursing homes in the two participating municipalities. Further, the nursing homes differs in e.g. size, number of patients and staff, and where the dinner is prepared and thus represents a variety of nursing homes.

Our survey is based on a validated questionnaire by Munch et al. [60], and most of the questions in the present study were validated. Even though the present study was not meant to be a qualitative study, we decided to add some open-ended questions to give the health care workers the opportunity to express their thoughts, feelings, and experiences on the topic that the other questions did not generate.

Prior to the conduction of the survey, a pilot was sent out to nursing students to reveal misunderstandings with the questions or content, spelling errors, or comments to the usability of the questionnaire. Using an electronic questionnaire to conduct the survey makes it easy to reach many participants, the data is anonymous, and it easy to process the data after the conduction.

5.2.2 Limitations

The study design had some limitations. Cross-sectional studies cannot say anything about causality, but can provide a picture of prevalence and associations at a given point in time [57]. Another limitation with this study design is that it does not explain the direction of potential associations: did the exposure cause the outcome or the outcome cause the exposure (cause-effect or reverse causality) [76]?

The relatively low response rate is an important limitation of the present study. There is no clear explanation of this weakness, but possible obstacles for the health care workers to respond could be e.g. did not wish to respond, was prevented from responding, was on sick leave, did not have enough time, had low motivation for answering, and the list goes on.

This survey did not assess what kind of wards the health care workers worked in, or what kind of patients they had. This may be reflected in the results, especially in terms of how challenged the health care workers felt with the patients, and the questions about challenges with patients with special needs etc. From the phone call with the nursing home directors and by looking at the results from the study, there is reason to believe that many of the patients have dementia.

The response rate differs between the municipalities and the nursing homes within the municipalities. The answering rate within the different nursing homes varied between 11-73 %. It seems like Arendal has done a better job at recruiting their staff to participate and thereby possibly provided a more representative sample than Grimstad. It is possible that the participants in this study were overall more interested in nutrition than the ones who did not respond, and therefore the results in this study may give a more "positive" impression rather than a realistic one. As we did not have any information about the health care workers who did not answer the questionnaire, there was no room for an attrition analysis to find characteristics of this group. This also makes it difficult to assess how representative the selection is, but it may be possible to generalize the results to similar municipalities.

Although survey is a great tool to collect data, the information collected is often superficial and does not investigate human emotions and behavior [57]. Some questions concerning feelings and behavior (practice) are including in the survey to assess this. Even though we had a pilot, it is possible that the phrasing of some of the questions was unclear, or that the operationalization was weak. Some questions may have been rather unclear or have had a risk of being misinterpreted (e.g. Whom at your work is responsible for individual adjustments of the food plan for each patient?). It is also possible that for some questions, the response options were not adequate and that the participant did not recognize themselves in any of the options, and just selected one to be able to continue with the questionnaire. Still, few participants responded "I don't know".

This questionnaire is based on self-reported evaluation, which may entail some weaknesses [57]. One cannot be sure if the participants respond according to how they feel rather than how they act. There is always a possibility that the information provided is not accurate. Also, pleasing bias is a common problem; the participant respond what they think the researcher want to hear, or they put themselves in the best light, which may create discrepancy with the truth [57]. It is possible that the health care workers found the topic of this survey important to a varying degree. Even though the content was not very sensitive, they might felt that they were being judged when answering. Also, food and nutrition at nursing homes has been a popular topic in the media lately, but often with a negative approach, which may have scared some from answering.

The type of distribution, electronical questionnaire, has some weaknesses. The questionnaire was sent with a self-creating user-link, which means that every time a participant clicked on the link, they created a new user/participant. This means that some may have responded to parts of, or the whole questionnaire several times, but there is no possibility to control this, or who answered. Theoretically, the health care workers could answer unlimited times. If the link had been sent directly to each health care worker, it would have been possible to control if anyone have answered both incomplete and complete.

Lastly, there could be some weaknesses regarding the content of the survey that have affected the results. In general, there may have been misunderstandings with some of the questions, as the participants may have understood them differently, e.g. "knowledge of relevant documents" can be understood for example as both looking through the document, and reading it thoroughly. This question is rather superficial, and does not really assess the health care workers' true knowledge.

Several of the questions could have assessed the health care workers' competence and practice more thorough. We only asked if they observed the food intake, but this was not very specific (e.g. amount of food, if the patients have any challenges chewing). Also, the questionnaire did not include any questions about how the measuring of height and weight was done, or if they have the right equipment to do the measuring on all patients.

6.0 CONCLUSION AND IMPLICATIONS

6.1 Conclusion

The health care workers reported to have a good practice for both observing and documenting food intake. Measuring weight and height both on admission and regularly were good, but knowledge and practice regarding appropriate BMI was insufficient. Knowledge about relevant documents was surprisingly low, except for "Food and meals in elderly care".

In the future, the nursing homes should focus on increasing the health care workers' knowledge about nutrition related to dementia, different diseases, how to calculate nutritional needs, how to deal with patients with oral problems, and how to identify undernutrition, and implementing the "Dietary handbook" to a greater extent. The health care workers have a great interest in participating in classes/courses related to nutrition at work. In addition to increasing knowledge, procedures and routines regarding the nutritional practice should be evaluated, especially to look for ways to increase time and resources spent on this topic.

6.2 Implications

This assessment gives the directors of the nursing homes valuable and specific information about the nutritional competence and -practice. Working with elderly is challenging, as many factors influence their health and wellbeing. Improvements in nutritional competence and -practice in nursing homes can lead to improved nutritional status, better health, and major economic benefits, as this can prevent illness on both primary, secondary and tertiary level.

The meaning of nutritional practice and -competence needs to be defined clearly, both within the workplaces, but also in the different education programs. Today, public documents often refer to "sufficient competence", but with no further elaboration. The Norwegian Council of Nutrition [25] has suggested to develop national indicators to ensure that the nutritional services and -practice are in line with the existing guidelines and acts. The following should be the minimum requirements: 1) maximum eleven hours of night fast, 2) minimum four main meals every day, 3) assessing nutritional risk is a part of the patient treatment, 4) at-risk patients need to have a nutritional plan, 5) at-risk patients need to get their energy- and protein need covered, and 6) tight use of nutritional diagnosis [25]. These may be useful to ensure a minimum standard of the nutritional practice.

The existing documents, tools and guidelines regarding food and nutrition for elderly are useful. Yet, documents such as the "National guidelines on preventing and treatment of malnutrition" and the "Dietary handbook" should be updated, considering that new research has been conducted, and because of the increasing amount of overweight elderly, which there is less information about than undernourished elderly. It could also be useful to have an assessment of the use of the "Dietary handbook" and the guidelines to get a picture of how well they are implemented in different health related workplaces, and if it is used as intended. The nursing homes and health care workers should make more use of the "Dietary handbook", as it describes the topics they wish for increased knowledge about and experience challenges with. Documents like the "Dietary handbook" should be more available, maybe as a compressed version.

Giving higher priority to nutritional competence and -practice is necessary. Bing-Jonsson, Hofoss, Kirkevold, Bjørk, and Foss [72] explained it well in their article: *"Competence is a collective activity, and the goal within a workplace should be that nursing staff are able to reciprocally strengthen each other's competence so that the amount of collective competence is larger than the sum of individual competence".*

To improve nutritional practice, it will be necessary to evaluate procedures and how the nutritional practice is organized, and make a joint assessment tool for all nursing homes as many nursing homes use different nutritional screening tools. Improved procedures may lead to better communication between the employees, both at the nursing homes, and with the kitchen staff. It is important to have a system that makes sure all employees get the same information, especially since most health care workers work shifts. Joint courses at work for all employees, is suggested as an important initiative.

Lastly, this study may generate hypotheses and new research questions for further research.

References

1.	Departementene, *Handlingsplan for et bedre kosthold i befolkningen (2007-2011) [Plan of Action for a Better Diet in the Population (2007-2011)]*. 2007.

2.	Cederholm, T., et al. *ESPEN Guidelines on Definitions and Terminology of Clinical Nutrition.* Clinical Nutrition, 2017. **36**, 49-64 DOI: http://dx.doi.org/10.1016/j.clnu.2016.09.004.

3.	Morley, J.E. and A. Silver *Nutritional Issues in Nursing Home Care.* Annals of Internal Medicine, 1995. **123**, 850-859 DOI: http://dx.doi.org/10.7326/0003-4819-123-11-199512010-00008.

4.	Blomhoff, R., G.-E.A. Bjørneboe, and C.A. Drevon, *Mat og medisin: nordisk lærebok i generell og klinisk ernæring [Food and Medicine: Nordic Textbook for General and Clinical Nutrition]*. 2007, Kristiansand: Høyskoleforlaget.

5.	United Nations, Department of Economic and Social Affairs, and Population Division., *World Population Prospects: The 2006 Revision, Highlights.* 2007.

6.	Statistisk Sentralbyrå. *Nøkkeltall for helse [Key Numbers for Health].* 2016; Available from: https://www.ssb.no/helse/nokkeltall/helse.

7.	Helsedirektoratet, *Nasjonale faglige retningslinjer for forebygging og behandling av underernæring [National Guidelines on Preventing and Treatment of Malnutrition]*. 2013.

8.	Landmark, B.T., S.V. Gran, and E.K. Grov *Ernæringsstatus blant pasienter i sykehjem og i hjemmesykepleien kartlagt ved hjelp av Ernæringsjournalen [Nutritional Status Among Patients at Nursing Homes and Home Care Services Assessed with the Nutritional Journal].* Klinisk Sygepleie, 2014. **28**, 4-14.

9.	Helsepersonelloven, *Lov om helsepersonell m.v. [The Health Personnel Act]*. 2016.

10.	Meld. St. nr. 11 (2015-2016), *Nasjonal helse- og sykehusplan (2016−2019) [National Health- and Hospital Plan (2016-2019)]*. 2015.

11.	St. meld. nr. 47 (2008-2009), *Samhandlingsreformen. Rett behandling – på rett sted – til rett tid [The Coordination Reform. Right Treatment - at the Right Place - at the Right Time].* 2009.

12.	Helsedirektoratet, *Ernæringskompetanse i helse- og omsorgstjenesten [Nutritional Competence in the Health- and Care Services]*. 2012, Helsedirektoratet: Oslo.

13. Helsedirektoratet, *Kosthåndboken - veileder i ernæringsarbeid i helse- og omsorgstjenesten [The Dietary Handbook - Guide for Nutritional Practice in the Health- and Care Services]*. 2012, Helsedirektoratet: Oslo.

14. Huseby, J.S. *Etterutdanning [Continuous Professional Development]*. Det store norske leksikon 2009; Available from: https://snl.no/etterutdanning.

15. Huseby, J.S. *Videreutdanning [Continuous Professional Development]*. Det store norske leksikon 2009; Available from: https://snl.no/videreutdanning.

16. WHO. *Definition of an Older or Elderly Person.* n.d.; Available from: http://www.who.int/healthinfo/survey/ageingdefnolder/en/.

17. Lai, L., *Strategisk kompetansestyring [Strategic competence management]*. 2004, Bergen: Fagbokforlaget.

18. Grinnhaug, A.G. *Kompetansebegrepet [The Term Competence]*. 2008; Available from: http://www.hil.no/hr_web/rekruttere/planlegge/kompetansebegrepet.

19. Praksis, *Store norske leksikon*. 2011.

20. Weddle, D.O. and N.S. Wellman, *Providing Food and Nutrition Choices for Home and Community Long Term Living.*, in *Handbook of Clinical Nutrition and Aging.*, C.W. Bales and C.S. Ritchie, Editors. 2009, Humana Press: New York. p. 539-552.

21. Huber, A.M., *Nutrition in Older Adults*, in *Pediatric and Adult Nutrition in Chronic Diseases, Developmental Disabilities, and Hereditary Metabolic Disorders*, S.W.E. Ekvall, V. K., Editor. 2017, Oxford University Press: USA. p. 391-393.

22. Hendrich, A., et al. *A 36-Hospital Time and Motion Study: How do Medical-Surgical Nurses Spend their Time?* The Permanente Journal, 2008. **12**, 25-34 DOI: http://dx.doi.org/10.7812/TPP/08-021.

23. Leslie, W. and C. Hankey *Aging, Nutritional Status and Health.* Healthcare, 2015. **3**, 648-658 DOI: http://dx.doi.org/10.3390/healthcare3030648.

24. Blössner, M. and M. de Onis, *Malnutrition: Quantifying the Health Impact at National and Local Levels.*, in *Environmental Burden of Disease Series*. 2005, WHO: Geneva.

25. Nasjonalt råd for ernæring, *Sykdomsrelatert underernæring. Utfordringer, muligheter og anbefalinger [Diseaserelated Undernutrition. Challanges, opportunities and Recommendations]*. n.d.

26. Helse- og omsorgsdepartementet, *Nasjonal handlingsplan for bedre kosthold (2017–2021) [National Plan of Action for a Better Diet (2017-2021)]*. 2017.

27. Brownie, S. *Why are Elderly Individuals at Risk of Nutritional Deficiency?* International Journal of Nuring Practice, 2006. **12**, 110-118 DOI: http://dx.doi.org/10.1111/j.1440-172X.2006.00557.x.

28. Selbaek, G., O. Kirkevold, and K. Engedal *The Prevalence of Psychiatric Symptoms and Behavioural Disturbances and the Use of Psychotropic Drugs in Norwegian Nursing Homes.* International Journal of Geriatric Psychiatry, 2007. **22**, 843-849 DOI: http://dx.doi.org/10.1002/gps.1749.

29. Helvik, A.S., et al. *Prevalence and Severity of Dementia in Nursing Home Residents.* Dementia and Geriatric Cognitive Disorders, 2015. **40**, 166-177 DOI: http://dx.doi.org/10.1159/000433525.

30. Björk, S., et al. *Exploring the Prevalence and Variance of Cognitive Impairment, Pain, Neuropsychiatric Symptoms and ADL Dependency Among Persons Living in Nursing Homes; a Cross-Sectional Study.* BMC Geriatrics, 2016. **16**, DOI: http://dx.doi.org/10.1186/s12877-016-0328-9.

31. Forbrukerrådet, *Et hjem for deg [A Home for You]?* 2016.

32. Meld. St. nr. 19 (2014-2015), *Folkehelsemeldingen. Mestring og muligheter [The Public Health Report].* 2015.

33. Nyberg, M., et al. *Eating Difficulties, Nutrition, Meal Preferences and Experiences Among Elderly: a Literature Overview from a Scandinavian Context.* Journal of Food Research, 2015. **4**, 22-37 DOI: http://dx.doi.org/10.5539/jfr.v4n1p22.

34. Livsglede for eldre. *Sykehjem. Livsgledesykehjem - en nasjonal sertifiseringsordning [Nursing Home. Joy in Life - a National Certification].* n.d.; Available from: http://livsgledeforeldre.no/vart-arbeid/sykehjem/.

35. Kenkmann, A., et al. *Health, Wellbeing and Nutritional Status of Older People Living in UK Care Homes: an Exploratory Evaluation of Changes in Food and Drink Provision.* BMC Geriatrics, 2010. **10**, 1-16 DOI: http://dx.doi.org/10.1186/1471-2318-10-28.

36. Mowe, M. *Behandling av underernæring hos eldre pasienter [Treatment of Undernutrition within Elderly Patients].* 2002. **122**, 815-818.

37. Salva, A., et al. *Nutritional Assessment of Residents in Long-Term Care Facilities (LTCFs): Recommendations of the Task Force on Nutrition and Ageing of the IAGG European Region and the IANA.* Journal of Nutrition, Health & Aging, 2009. **13**, 475-483 DOI: http://dx.doi.org/10.1007/s12603-009-0097-7.

38.   Ahmed, T. and N. Haboubi *Assessment and Management of Nutrition in Older People and its Importance to Health.* Clinical Interventions in Aging, 2010. **5**, 207-216 DOI: https://doi.org/10.2147/CIA.S9664.

39.   Margetts, B.M., et al. *Prevalence of Risk of Undernutrition is Associated with Poor Health Status in Older People in the UK.* European Journal of Clinical Nutrition, 2003. **57**, 69-74 DOI: http://dx.doi.org/10.1038/sj.ejcn.1601499.

40.   Correia, M.I. and D.L. Waitzberg *The Impact of Malnutrition on Morbidity, Mortality, Length of Hospital Stay and Costs Evaluated Through a Multivariate Model Analysis.* Clinical Nutrition, 2003. **22**, 235-239 DOI: https://doi.org/10.1016/S0261-5614(02)00215-7.

41.   Söderhamn, U. *Screening – en hjelp til å identifisere eldre i fare for underernæring [Screening - Helps Indentifying Elederly at Risk of Undernutrition].* Demens & Alderspsykiatri, 2010. **14**, 19-22.

42.   Marihart, C.L., A.R. Brunt, and A.A. Geraci *The High Price of Obesity in Nursing Homes.* Care Management Journals, 2015. **16**, 14-19 DOI: http://dx.doi.org/10.1891/1521-0987.16.1.14.

43.   Zanandrea, V., et al. *Obesity and Nursing Home: A Review and an Update.* Clinical Nutrition, 2013. **32**, 679-685 DOI: http://dx.doi.org/10.1016/j.clnu.2013.05.008.

44.   Villareal, D.T. and K. Shah, *Obesity in Older Adults – A Growing Problem*, in *Handbook of Clinical Nutrition and Aging*, C.W. Bales and C.S. Ritchie, Editors. 2009, Humana Press: New York. p. 263-277.

45.   Kvamme, J.-M., et al. *Body Mass Index and Disease Burden in Elderly Men and Women: The Tromsø Study.* European Journal of Epidemiology, 2010. **25**, 183-193 DOI: http://dx.doi.org/10.1007/s10654-009-9422-z.

46.   Flicker, L., et al. *Body Mass Index and Survival in Men and Women Aged 70 to 75.* Journal of the American Geriatric Society, 2010. **58**, 234-241 DOI: http://dx.doi.org/10.1111/j.1532-5415.2009.02677.x.

47.   Zizza, C.A., et al. *Obesity Affects Nursing-Care Facility Admission among Whites but not Blacks.* Obesity Research, 2002. **10**, 816-823 DOI: http://dx.doi.org/10.1038/oby.2002.110.

48.   Lapane, K.L. and L. Resnik *Obesity in Nursing Homes: an Escalating Problem.* Journal of the American Geriatric Society, 2005. **53**, 1386-1391 DOI: http://dx.doi.org/10.1111/j.1532-5415.2005.53420.x.

49.   Kvamme, J.-M., et al. *Risk of Malnutrition and Health-Related Quality of Life in Community-Living Elderly Men and Women: The Tromsø Study.* Quality of Life Research, 2011. **20**, 575-582 DOI: http://dx.doi.org/10.1007/s11136-010-9788-0.

50.   WHO. *Body Mass Index - BMI.* n.d.; Available from: http://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi.

51.   WHO, *Physical Status: The Use of and Interpretation of Anthropometry, Report of a WHO Expert Committee.*, in *WHO Techncal Report Series.* 1995, WHO.

52.   Beck, A.M. and L. Ovesen *At Which Body Mass Index and Degree of Weight Loss Should Hospitalized Elderly Patients Be Considered at Nutritional Risk?* Clinical Nutrition, 1998. **17**, 195-198 DOI: http://dx.doi.org/10.1016/S0261-5614(98)80058-7.

53.   Ranhoff, A.H., A.U. Gjøen, and M. Mowe *Screening for Malnutrition in Elderly Acute Medical Patients: the Usefulness of MNA-SF.* The Journal of Nutrition Health and Aging, 2005. **9**, 221-225.

54.   Helsedirektoratet. *Kostråd fra Helsedirektoratet [Dietary Guidelines from the Norwegian Directorate of Health].* 2016; Available from: https://helsedirektoratet.no/folkehelse/kosthold-og-ernering/kostrad-fra-helsedirektoratet.

55.   Arendal kommune, *Mat og måltider i eldreomsorgen [Food and Meals in Elderly Care].* 2013, Arendal Kommune: Arendal.

56.   Meld. St. nr. 26 (2014-2015), *Fremtidens primærhelsetjeneste - nærhet og helhet [The Primary Health and Care Services of Tomorrow – Localized and Integrated].* 2014.

57.   Polit, D.F. and C.T. Beck, *Essentials of nursing research: appraising evidence for nursing practice.* 2014, Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins.

58.   Hellevik, O., *Forskningsmetode i sosiologi og statsvitenskap [Research Methodology in Sociology and Political Science].* 2011, Oslo: Universitetsforlaget.

59.   Røland, K.D., *Kunnskap om ernæring i hjemmesykepleien [Knowledge About Nutrition in Home Care Services].* 2012.

60.   Munch, C., et al. *Plejepersonalets viden og holdning om ernæring til ældre plejehjemsbeboere - en spørgeskemaaundersøgelse [Care Personnels Knowledge and Attitude about Nutrition for Elderly Nursing Home Residents - a Survey].* Nordic Journal of Nursing Research, 2006. **26**, 20-24 DOI: http://dx.doi.org/10.1177/010740830602600105.

61. Aagaard, H. *Mat og måltider i sykehjem. En nasjonal kartleggingsundersøkelse [Food and Meals in Elderly Care. A National Assessment].* Sykepleien Forskning, 2010. **5**, 36-43 DOI: http://dx.doi.org/10.4220/sykepleienf.2010.0023.

62. Aagaard, H. and V.A. Grøndahl, *Mat og måltid i sykehjem 2 [Food and Meals at Nursing Homes 2].* 2015, Høgskolen i Østfold: Halden.

63. Beattie, E., et al. *How Much do Residential Aged Care Staff Members Know About the Nutritional Needs of Residents?* International Journal of Older People Nursing, 2014. **9**, 54-64 DOI: http://dx.doi.org/10.1111/opn.12016.

64. IBM. *IBM SPSS Software.* n.d. [cited 2017; Available from: https://www.ibm.com/analytics/us/en/technology/spss/#what-is-spss.

65. Halvorsen, K., et al. *Documentation and Communication of Nutritional Care for Elderly Hospitalized Patients: Perspectives of Nurses and Undergraduate Nurses in Hospitals and Nursing Homes.* BMC Nursing, 2016. **15**, 1-10 DOI: http://dx.doi.org/10.1186/s12912-016-0193-z.

66. Aagaard, H. and V.A. Grøndahl, *Mat og måltidet i hjemmesykepleien: undersøkelse utført for Helsedirektoratet [Food and Meals at Home Care Services: a Study conducted for the Norwegian Directorate of Health].* 2013, Høgskolen i Østfold: Halden.

67. Fossum, M., *Computerized Decision Support System in Nursing Homes.* 2012.

68. Statens Helsetilsyn, *Oppsummering av satsinga på tilsyn med helse- og omsorgstenester til eldre 2009–2012 [Summarizing of the Action of Supervising of Health- and Care Services for the Elderly 2009-2012].* 2014.

69. Mowe, M., et al. *Insufficient Nutritional Knowledge Among Health Care Workers?* Clinical Nutrition, 2008. **27**, 196-202 DOI: http://dx.doi.org/10.1016/j.clnu.2007.10.014.

70. Baldwin, J., et al. *The Role of the Support Worker in Nursing Homes: a Consideration of Key Issues.* Journal of Nursing Management, 2003. **11**, 410-420 DOI: http://dx.doi.org/10.1046/j.1365-2834.2003.00414.x.

71. Haukelien, H., *Omsorg og styring: kjønn, arbeid, og makt i velferdskommunen [Nursing and Management: Gender, Labour, and Power in the Welfare Municipality].* 2013.

72. Bing-Jonsson, P.C., et al. *Sufficient Competence in Community Elderly Care? Results from a Competence Measurement of Nursing Staff.* BMC Nursing, 2016. **15**, 1-11 DOI: http://dx.doi.org/10.1186/s12912-016-0124-z.

73. Mowe, M., et al. *Nutritional Routines and Attitudes Among Doctors and Nurses in Scandinavia: A Questionnaire Based Survey.* Clinical Nutrition, 2006. **25**, 524-532 DOI: http://dx.doi.org/10.1016/j.clnu.2005.11.011.

74. Eide, H.D., K. Halvorsen, and K. Almendingen *Barriers to Nutritional Care for the Undernourished Hospitalised Older People.* Journal of Clinical Nursing, 2015. **24**, 696-706 DOI: http://dx.doi.org/10.1111/jocn.12562.

75. Beck, A.M., et al. *Food and Nutritional Care in Hospitals: How to Prevent Undernutrition–Report and Guidelines from the Council of Europe.* Clinical Nutrition, 2001. **20**, 455-460 DOI: http://dx.doi.org/10.1054/clnu.2001.0494.

76. Katz, M., *Study Design and Statistical Analysis: A Practical Guide for Clinicians.* 2006, Cambridge: Cambridge University Press.

Appendix I

Information letter to Arendal and Grimstad (in Norwegian).

UNIVERSITETET I AGDER

Kartlegging av ernæringskompetanse hos ansatte på sykehjem

Bakgrunn og formål
Pleietrengende eldre er sårbare ernæringsmessig. Det har derfor vært mye fokus på kosthold og underernæring i denne gruppen. I en nasjonal studie som inkluderte over 500 sykehjem svarte 80 % av lederne at det var behov for heving av ernæringskompetansen blant pleiepersonellet. Kompetanseheving hos denne yrkesgruppen kan bidra til å forbedre beboernes ernæringsstatus. For å lykkes med dette er det imidlertid nødvendig å vite hvor skoen trykker. Hensikten med denne masteroppgaven er å kartlegge ernæringskompetansen blant ansatte på sykehjem. Kartleggingen vil inkludere alle sykehjemmene i Arendal og Grimstad. Pleiepersonell som er involvert i beboernes kosthold og ernæring vil få tilbud om å være med i studien. Den planlagte studien vil gi kommunene grunnlag for å vurdere behov for eventuelle tiltak.

Hva innebærer deltakelse i studien?
De ansatte bli spurt om å sette av ca. 10-15 minutter av sin arbeidstid for å gjennomføre en nettbasert spørreundersøkelse. Denne vil inkludere spørsmål som belyser de ansattes kunnskap, ferdigheter og holdninger knyttet til eldres kosthold og ernæring. Spørreundersøkelsen vil bli gjennomført i november 2016. Utsendelsen av spørreundersøkelsen administreres av den enkelte enhetsleder.

Hva skjer med informasjonen?
Alle personopplysninger vil bli behandlet konfidensielt. Informasjonen vil bli behandlet uten navn eller andre opplysninger som kan gjenkjennes. Deltakerne vil kobles til en kode via SurveyXact. Det vil kun være forskningsteamet som har adgang til datasettet og det vil ikke være mulig å koble den enkelte deltaker til resultatene.

Prosjektet skal etter planen avsluttes i juni 2017. Datamaterialet eies av Universitetet i Agder. Dataene vil lagres på passordbeskyttet PC underveis. Det foreligger databehandleravtale mellom UiA og Rambøll Management/SurveyXact i henhold til personopplysningsloven og personopplysningsforskriften.

Frivillig deltakelse
Det er frivillig å delta i studien, og deltakerne kan når som helst trekke sitt samtykke uten å oppgi noen grunn.

Ved spørsmål, ta kontakt med:
Prosjektleder: Ingeborg K. Melbye, tlf. 99496909, e-post: ingebm12@student.uia.no
Veiledere: Elisabet R. Hillesund, e-post: elisabet.r.hillesund@uia.no
　　　　　Marianne Skreden, e-post: marianne.skreden@uia.no

Studien er innmeldt til og godkjent av Personvernombudet for forskning, NSD - Norsk senter for forskningsdata AS.

Samtykke til deltakelse i studien

Kommunen har mottatt informasjon om studien, og er villig til å delta

----
(Signert av representant fra kommunen, dato og sted)

Studien er innmeldt til og godkjent av Personvernombudet for forskning, NSD - Norsk senter for forskningsdata AS.

Appendix II

Information letter to the directors at the nursing homes with attached information letter to the health care workers (in Norwegian).

Hei!

Viser til hyggelig telefonsamtale med hver av dere angående kartlegging av ernæringskompetanse hos ansatte i pleietjenesten.

Spørreundersøkelsen er nå klar til utsendelse. Informasjonsteksten nedenfor med link til undersøkelsen skal sendes via e-post til alt pleiepersonell, inkludert vikarer og de som jobber natt. Flott hvis dere kan distribuere informasjonsteksten til de ansatte så fort som mulig, **senest innen fredag 4. november.** Sett meg gjerne i kopi i e-posten som sendes ut.

Nedenfor finner dere informasjonen som skal sendes videre. I etterkant av utsendelsen kommer jeg til å trenge en bekreftelse om at undersøkelsen er distribuert, hvilken dato den ble sendt ut og eksakt antall for hvor mange den ble sendt til.

Jeg kommer til å sende en e-post for purring etter én og tre uker for å få inn så mange svar som mulig. Flott hvis dere oppfordrer de ansatte til å svare på spørreundersøkelsen!

Tusen takk for at dere bidrar til gjennomføringen av dette mastergradsprosjektet!

Bare ta kontakt for eventuelle spørsmål:
Prosjektleder: Ingeborg K. Melbye, tlf. 99496909, e-post: ingebm12@student.uia.no
Veiledere: Elisabet R. Hillesund, e-post: elisabet.r.hillesund@uia.no
           Marianne Skreden, e-post: marianne.skreden@uia.no

Mvh. Ingeborg K. Melbye, masterstudent i folkehelsevitenskap v/ UiA

Til deg som jobber i pleietjenesten i X

XX kommune har takket ja til å delta i et mastergradsprosjekt i folkehelsevitenskap hvor hensikten er å kartlegge ernæringskompetansen til ansatte i pleietjenesten. Alle ansatte som er involvert i beboernes kosthold og ernæring blir spurt om å delta. Studien vil gi kommunene grunnlag for å vurdere behov for eventuelle tiltak knyttet til kosthold og ernæring.

Kartleggingen er et samarbeid mellom kommunen og Universitetet i Agder. Som ansatt ønskes du velkommen til å bidra ved å svare på et elektronisk spørreskjema (se link til spørreskjema nedenfor).

Det vil ta deg ca. 10-15 minutter å besvare spørreskjemaet. Ved å svare samtykker du til å delta i studien. Det er frivillig å delta og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Dine opplysninger vil bli behandlet konfidensielt og det vil ikke være mulig å knytte deg til resultatene av studien. Det vil kun være forskerteamet som har adgang til datasettet.

Dato for forventet prosjektslutt er 30.06.17 og datamaterialet vil anonymiseres innen denne datoen.

Vi håper du har lyst til å delta!

For å svare på spørreskjemaet, klikk på linken nedenfor:
Link

Ved spørsmål, ta kontakt med Ingeborg K. Melbye, tlf. 99496909, e-post: ingebm12@student.uia.no

Appendix III

The questionnaire to the health care workers (in Norwegian).

Takk for at du vil delta i undersøkelsen.

Det vil ta deg ca. 10-15 minutter å besvare spørreskjemaet. Dine opplysninger vil bli behandlet konfidensielt, og det vil ikke være mulig å knytte deg til resultatene av studien.

Ved spørsmål, ta kontakt med:
Prosjektleder: Ingeborg K. Melbye, tlf. 99496909, e-post: ingebm12@student.uia.no

Bakgrunn

Hvor gammel er du?
Velg det alternativet som passer best

(1) ❑ ≤25

(2) ❑ 26-30

(3) ❑ 31-35

(4) ❑ 36-40

(5) ❑ 41-45

(6) ❑ 46-50

(7) ❑ 51-55

(8) ❑ 56-60

(9) ❑ >60

Kjønn
Velg det alternativet som passer best

Mann	Kvinne
(1) ❑	(2) ❑

Hva er ditt morsmål?
Velg det alternativet som passer best

(1) ❑ Norsk

(2) ❑ Annet (vennligst utdyp) _____

Skolegang (høyest fullførte utdanning)
Velg det alternativet som passer best

(1) ☐ Mindre enn 7-årig grunnskole

(2) ☐ Grunnskole, 7-10 år

(3) ☐ Yrkesskole, 1-2-årig videregående skole

(4) ☐ 3-årig videregående skole

(5) ☐ Høgskole/Universitet, mindre enn 4 år

(6) ☐ Høgskole/Universitet, 4 år eller mer

Hvilken stillingsbetegnelse er du ansatt i?
Velg det alternativet som passer best

(1) ☐ Sykepleier

(2) ☐ Hjelpepleier

(3) ☐ Helsefagarbeider

(4) ☐ Omsorgsarbeider

(5) ☐ Vernepleier

(6) ☐ Assistent

(7) ☐ Annet (vennligst utdyp) _____

Hvilket ansettelsesforhold har du?
Velg det alternativet som passer best

(1) ☐ Fast ansatt

(2) ☐ Vikar/Ekstravakt

Hvor stor stillingsprosent har du?
Velg det alternativet som passer best

(1) ☐ <25%

(2) ☐ 25-50%

(3) ☐ 51-75%

(4) ☐ >75%

Hva slags vakter har du?
Her kan du krysse av for flere alternativ

(1) ☐ Dag

(3) ☐ Kveld

(4) ☐ Natt

Hvor jobber du?

Velg det alternativet som passer best

(1) ❑ Feviktun

(2) ❑ Frivolltun

(3) ❑ Færvik bo- og omsorgssenter

(4) ❑ Saltrød bo- og omsorgssenter

(5) ❑ Nyskogen bo- og omsorgssenter

(6) ❑ Røed bo- og omsorgssenter

(7) ❑ Solhaug aldershjem

(8) ❑ Elim bokollektiv

(9) ❑ Tromøy bokollektiv

(10) ❑ Plankemyra bo- og omsorgssenter (Post 1)

(11) ❑ Plankemyra bo- og omsorgssenter (Post 2/3)

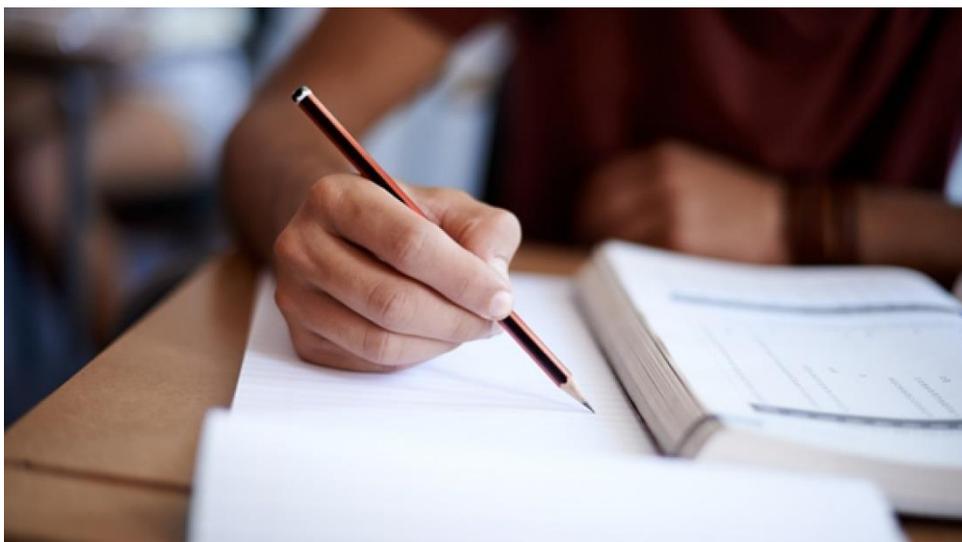**Hvor lenge har du jobbet i eldreomsorgen?**

Velg det alternativet som passer best

(1) ❑ <1 år

(2) ❑ 1-5 år

(3) ❑ 6-10 år

(4) ❑ 11-15 år

(5) ❑ 16-20 år

(6) ❑ >20 år

Har du noen form for etter- eller videreutdanning innen kosthold og ernæring?

Velg det alternativet som passer best

(1) ❑ Ja (vennligst utdyp) _____

(2) ❑ Nei

Har du deltatt på internundervisning eller møter på din arbeidsplass det siste året hvor ett av temaene har vært kosthold og ernæring?
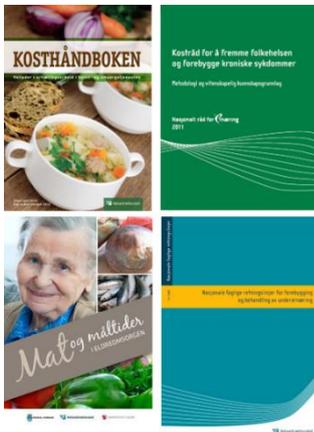
Velg det alternativet som passer best

(1) ☐ Ja

(2) ☐ Nei

Har du deltatt på eksterne foredrag, kurs eller liknende hvor ett av temaene har vært kosthold og ernæring det siste året?

Velg det alternativet som passer best

(1) ☐ Ja, i regi av jobben
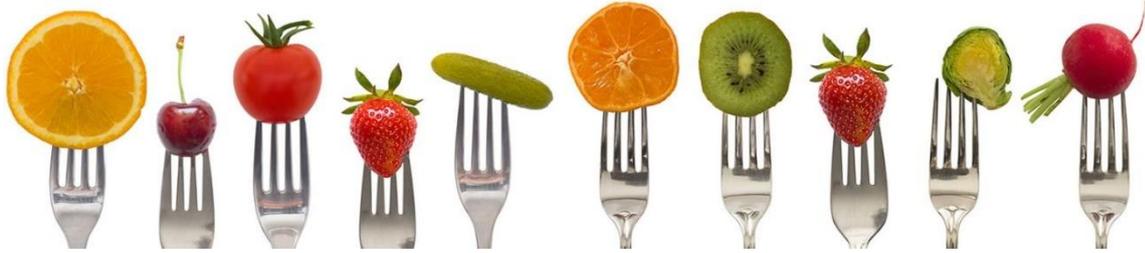
(2) ☐ Ja, men ikke i regi av jobben

(3) ☐ Nei

Har du kjennskap til disse dokumentene?

Velg det alternativet som passer best

	Ja	Nei
Kosthåndboken	(1) ☐	(2) ☐
Mat og måltider i eldreomsorgen	(1) ☐	(2) ☐
Nasjonale faglige retningslinjer for forebygging og behandling av underernæring	(1) ☐	(2) ☐
Kostråd for å fremme folkehelsen og forebygge kroniske sykdommer	(1) ☐	(2) ☐

Kosthold og ernæring

Hvem på din arbeidsplass er ansvarlig for individuell tilpasning av mattilbudet til den enkelte beboer?

Velg det alternativet som passer best

- (1) ❑ Primærkontakt
- (2) ❑ Matkontakt
- (3) ❑ Avdelingsleder
- (4) ❑ Klinisk ernæringsfysiolog
- (5) ❑ Fastlege/Sykehjemslege
- (6) ❑ Mottakskjøkken
- (7) ❑ Storkjøkken
- (8) ❑ Andre (vennligst utdyp) _____
- (99) ❑ Vet ikke

Hvor blir middagen til beboerne laget?
Velg det alternativet som passer best

- (1) ❑ Internt på arbeidsplassen
- (2) ❑ Eksternt på storkjøkken

Vekt og kroppsmasseindeks (KMI)

Blir nye beboere målt (høyde) når de blir innskrevet?
Velg det alternativet som passer best

- (1) ❑ Ja, alle
- (2) ❑ Ja, noen
- (3) ❑ Nei, ingen
- (99) ❑ Vet ikke

Blir nye beboere veid når de blir innskrevet?

Velg det alternativet som passer best

(1) ❑ Ja, alle

(2) ❑ Ja, noen

(3) ❑ Nei, ingen

(99) ❑ Vet ikke

Er det en del av ditt ansvarsområde å veie beboerne?

Velg det alternativet som passer best

(1) ❑ Ja

(2) ❑ Nei

(99) ❑ Vet ikke

KMI er et mål på en persons vektstatus basert på forholdet mellom vekt og høyde, kg/(m2). **Beregnes KMI på nye beboere når de blir innskrevet?**

Velg det alternativet som passer best

(1) ❑ Ja, på alle

(2) ❑ Ja, på noen

(3) ❑ Nei, på ingen

(99) ❑ Vet ikke

Ved hvilken KMI anser du en beboer som undervektig?

Angi det tallet du mener er riktig

(1) ❑ KMI: _____

(99) ❑ Vet ikke

Hvor ofte blir beboerne veid når det ikke er spesielle grunner til å følge ekstra godt med?

Velg det alternativet som passer best

(1) ❑ Ukentlig

(2) ❑ Månedlig

(3) ❑ Annenhver måned

(4) ❑ Hver 3. måned

(5) ❑ Hver 6. måned

(6) ❑ Årlig

(7) ❑ Aldri

(99) ❑ Vet ikke

Kartlegging av ernæringsstatus

Hvilke verktøy benytter du ved mistanke om mangelfull ernæring hos en beboer?
Her kan du krysse av for flere alternativ

(1) ❑ Vekt

(2) ❑ KMI

(3) ❑ Målebånd

(4) ❑ Screeningsverktøy

(5) ❑ Kostregistrering

(6) ❑ Samtale med bruker

(7) ❑ Samtale med pårørende

(8) ❑ Annet (vennligst utdyp) _____

(99) ❑ Vet ikke

Dokumentasjon

Observerer du beboernes matinntak ved måltidene?
Velg det alternativet som passer best

(1) ❑ Ja, alltid

(2) ❑ Ja, dersom jeg har tid

(3) ❑ Nei, det har jeg ikke tid til

(4) ❑ Nei, det er ikke mitt ansvar

Dokumenterer du forhold som omhandler kosthold og ernæring i journalen?
Velg det alternativet som passer best

(1) ❑ Ja

(2) ❑ Nei

(99) ❑ Vet ikke

Ernæringstiltak

Hvilke typer kosthold og dietter kan din arbeidsplass tilby?
Her kan du krysse av for flere alternativ

(1) ❑ Nøkkelrådskost

(2) ❑ Energi- og næringstett kost

(3) ❑ Ønskekost

(4) ❑ Laktoseredusert kost

(5) ❑ Melkeproteinfri kost

(6) ❑ Glutenfri kost

(7) ❑ Fettredusert kost

(8) ❑ Proteinrik kost

(9) ❑ Natriumredusert kost

(10) ❑ Vegetarkost

(11) ❑ Kosthold tilpasset ulike diagnoser og sykdomstilstander

(12) ❑ Kosthold tilpasset ulike religioner og kulturer

(13) ❑ Mat med tilpasset konsistens

(14) ❑ Næringsdrikker (hjemmelaget)

(15) ❑ Næringsdrikker (industrifremstilt)

(16) ❑ Intravenøs ernæring

(17) ❑ Sondeernæring

(18) ❑ Andre (vennligst utdyp) _____

(99) ❑ Vet ikke

Hvor lenge vil du akseptere at en beboer har redusert matinntak før ernæringstiltak iverksettes?
Velg det alternativet som passer best

(1) ❑ 1-2 døgn

(2) ❑ 3-4 døgn

(3) ❑ 5-6 døgn

(4) ❑ Mer enn én uke

(99) ❑ Vet ikke

I hvilken grad mener du at beboerne får tilstrekkelig oppfølging med tanke på kosthold og ernæring?

Velg det alternativet som passer best

(1) ❑ I liten grad

(2) ❑ I noen grad

(3) ❑ I nokså stor grad

(4) ❑ I stor grad

I hvilken grad føler du at du har kompetanse til å tilpasse måltidsrytme til beboernes behov?

Velg det alternativet som passer best

(1) ❑ I liten grad

(2) ❑ I noen grad

(3) ❑ I nokså stor grad

(4) ❑ I stor grad

I hvilken grad opplever du at du har kompetanse til å følge opp beboernes generelle ernæringsbehov?

Velg det alternativet som passer best

(1) ❑ I liten grad

(2) ❑ I noen grad

(3) ❑ I nokså stor grad

(4) ❑ I stor grad

Mange eldre har ulike utfordringer som for eksempel redusert appetitt, motoriske vansker eller problemer knyttet til munn og gane som kan påvirke matinntaket og igjen føre til feilernæring. I hvilken grad opplever du slike utfordringer blant beboere på din arbeidsplass?

Velg det alternativet som passer best

(1) ❑ I liten grad

(2) ❑ I noen grad

(3) ❑ I nokså stor grad

(4) ❑ I stor grad

Hvilke type utfordringer knyttet til kosthold og ernæring opplever du mest av på din arbeidsplass?

Vennligst fyll inn

_____

_____

_____

_____

_____

_____

I hvilken grad føler du at du har kompetanse til å individuelt tilpasse mat og måltider til beboere med spesielle behov/sykdommer/tilstander?

Velg det alternativet som passer best

(1) ❑ I liten grad

(2) ❑ I noen grad

(3) ❑ I nokså stor grad

(4) ❑ I stor grad

Hvem kontakter du for råd hvis en beboer får behov for å endre kostholdet på grunn av spesielle behov/sykdommer/tilstander?

Velg det alternativet som passer best

(1) ❑ Primærkontakt

(2) ❑ Matkontakt

(3) ❑ Avdelingsleder

(4) ❑ Klinisk ernæringsfysiolog

(5) ❑ Fastlege/Sykehjemslege

(6) ❑ Mottakskjøkken

(7) ❑ Storkjøkken

(8) ❑ Andre (vennligst utdyp) _____

(99) ❑ Vet ikke

I hvilken grad opplever du at din arbeidsplass legger til rette for at beboerne blir fulgt opp med tanke på sine individuelle ernæringsbehov?

Velg det alternativet som passer best

(1) ❑ I liten grad

(2) ❑ I noen grad

(3) ❑ I nokså stor grad

(4) ❑ I stor grad

I hvilken grad opplever du at din arbeidsplass legger til rette for gode måltidsopplevelser for beboerne?

Velg det alternativet som passer best

(1) ❑ I liten grad

(2) ❑ I noen grad

(3) ❑ I nokså stor grad

(4) ❑ I stor grad

Har du oppsøkt informasjon om ernæring for eldre i jobbsammenheng?

Velg det alternativet som passer best

(1) ❑ Ja

(2) ❑ Nei

I hvilken grad mener du at din arbeidsplass har behov for kompetanseheving i forhold til kosthold og ernæring?

Velg det alternativet som passer best

(1) ❑ I liten grad

(2) ❑ I noen grad

(3) ❑ I nokså stor grad

(4) ❑ I stor grad

I hvilken grad mener du at du har behov for kompetanseheving i forhold til kosthold og ernæring?

Velg det alternativet som passer best

(1) ❑ I liten grad

(2) ❑ I noen grad

(3) ❑ I nokså stor grad

(4) ❑ I stor grad

Innenfor hvilke områder knyttet til kosthold og ernæring kunne du eventuelt ønske deg økt kunnskap?

Her kan du velge flere alternativ

(1) ❑ Anbefalinger for kosthold til eldre med dårlig helse/syke/skrøpelige

(2) ❑ Mat ved demens

(3) ❑ Identifisere underernærte beboere

(4) ❑ Kunnskaper om de ulike næringsstoffene

(5) ❑ Hvordan beregne beboernes ernæringsbehov

(6) ❑ Om kostregistrering

(7) ❑ Hvordan vurdere beboernes ernæringstilstand

(8) ❑ Konsekvenser hvis beboerne spiser for lite

(9) ❑ Hvilke tiltak som bør settes inn overfor beboere som spiser lite

(10) ❑ Kost ved svelgeproblemer

(11) ❑ Sondeernæring/enteral ernæring

(12) ❑ Parenteral/intravenøs ernæring

(13) ❑ Kostholdsveiledning til beboerne

(14) ❑ Mathygiene

(15) ❑ Mat og fellesskap i sykehjem

(16) ❑ Mat, trivsel og psykisk helse

(17) ❑ Matkultur og religion/livssyn

(18) ❑ Annet (vennligst utdyp) _____

(19) ❑ Ikke behov for økt kunnskap

Ville du deltatt på ernæringskurs eller liknende i regi av arbeidsplassen hvis du fikk tilbudet?

Velg det alternativet som passer best

(1) ❑ Ja

(2) ❑ Nei

(99) ❑ Vet ikke

På hvilken måte tror du det er best å tilegne seg kunnskap om kosthold og ernæring?

Velg det alternativet som passer best

(1) ❑ Kurs internt på arbeidsplassen

(2) ❑ Kurs eksternt

(3) ❑ Nettbasert kurs

(4) ❑ Annet (vennligst utdyp) _____

Beskriv hvordan ernæringsarbeidet kan gjøres bedre på din arbeidsplass

Vennligst fyll inn

_____

_____

_____

_____

_____

_____

Beskriv de viktigste hindringene for at dine forslag til forbedring kan gjennomføres

Vennligst fyll inn

_____

_____

_____

_____

_____

_____

Beskriv eventuelle vellykkede ernæringstiltak gjennomført på din arbeidsplass

Vennligst fyll inn

_____

_____

_____

_____

_____

_____

Utdypende kommentarer

Fyll gjerne inn om du har utdypende kommentarer til noen av spørsmålene eller andre tanker om spørreundersøkelsen

_____

_____

_____

_____

_____

_____

Takk for at du deltok!

Ved spørsmål, ta kontakt med:
Prosjektleder: Ingeborg K. Melbye, tlf. 99496909, e-post: ingebm12@student.uia.no

Appendix IX

Elisabet Rudjord Hillesund
Institutt for folkehelse, idrett og ernæring Universitetet i Agder
Serviceboks 422
4604 KRISTIANSAND S

Vår dato: 11.10.2016   Vår ref: 49830 / 3 / BGH   Deres dato: Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 07.09.2016. Meldingen gjelder prosjektet:

49830	Kartlegging av ernæringskompetanse til ansatte på sykehjem
Behandlingsansvarlig	Universitetet i Agder, ved institusjonens øverste leder
Daglig ansvarlig	Elisabet Rudjord Hillesund
Student	Ingeborg Kvisgaard Melbye

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, http://www.nsd.uib.no/personvern/meldeplikt/skjema.html. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, http://pvo.nsd.no/prosjekt.

Personvernombudet vil ved prosjektets avslutning, 30.06.2017, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Katrine Utaaker Segadal

Belinda Gloppen Helle

Kontaktperson: Belinda Gloppen Helle tlf: 55 58 28 74
Vedlegg: Prosjektvurdering

Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.

Personvernombudet for forskning

Prosjektvurdering - Kommentar

NASJONAL SAMARBEIDSSTUDIE

Personvernombudet forstår det slik at prosjektet er et samarbeid mellom Universitetet i Agder og kommunen, med førstnevnte som behandlingsansvarlig institusjon. Ombudet forutsetter at ansvarsforhold, sikring og evt. eierskap av data er avklart mellom de to institusjonene, og anbefaler at forholdet formaliseres.

INFORMASJON OG SAMTYKKE

Utvalget (ansatte på sykehjem) informeres skriftlig om prosjektet og samtykker til deltakelse. Informasjonsskrivet med tittelen "Kartlegging av ernæringskompetanse hos ansatte på sykehjem" er godt formulert, men setningen om undersøkelsen vil være anonym må slettes.

Skrivene med titlene "Kjære pilotdeltaker" og "Kjære pleiepersonell" er mangelfullt utformet, og må revideres dersom disse skal brukes som informasjonsskriv. Vi ber derfor om at følgende endres/tilføyes:
- Prosjektets formål og problemstilling
- At det er frivillig å delta og at man kan trekke seg når som helst uten begrunnelse
- Hvem som skal ha tilgang til datamaterialet. Dersom dette er arbeidsgiver må dette spesifiseres.
- Dato for forventet prosjektslutt (30.06.17) og at datamaterialet skal anonymiseres innen denne datoen.

INFORMASJONSSIKKERHET

Personvernombudet legger til grunn at forsker etterfølger Universitetet i Agder sine interne rutiner for datasikkerhet. Dersom personopplysninger skal lagres på mobile enheter, bør opplysningene krypteres tilstrekkelig.

DATABEHANDLER

SurveyXact er databehandler for prosjektet. Universitetet i Agder skal inngå skriftlig avtale med SurveyXact om hvordan personopplysninger skal behandles, jf. personopplysningsloven § 15. For råd om hva databehandleravtalen bør inneholde, se Datatilsynets veileder: http://www.datatilsynet.no/Sikkerhet-internkontroll/Databehandleravtale/.

PUBLISERING

I meldeskjemaet har dere krysset av for at dere skal publisere personopplysninger i oppgaven. Dersom personopplysninger skal publiseres, må det innhentes et eksplisitt samtykke til dette. Vi kan imidlertid ikke finne informasjon om dette i informasjonsskrivet. Personvernombudet legger derfor til grunn at dette er feil, og har endret dette punktet til at dere skal publisere anonymt og at ingen informanter vil kunne gjenkjennes i publikasjonen.

PROSJEKTSLUTT OG ANONYMISERING

Forventet prosjektslutt er 30.06.2017. Ifølge prosjektmeldingen skal innsamlede opplysninger da anonymiseres.

Anonymisering innebærer å bearbeide datamaterialet slik at ingen enkeltpersoner kan gjenkjennes. Det gjøres ved å:
- slette direkte personopplysninger (som navn/koblingsnøkkel)
- slette/omskrive indirekte personopplysninger (identifiserende sammenstilling av bakgrunnsopplysninger som f.eks. bosted/arbeidssted, alder og kjønn)

Vi gjør oppmerksom på at også databehandler (SurveyXact) må slette personopplysninger tilknyttet prosjektet i sine systemer. Dette inkluderer eventuelle logger og koblinger mellom IP-/epostadresser og besvarelser.