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Implementation strategies for nutritional guidelines in nursing homes

Effects on care staff and residents

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Abstract

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Introduction: The number of older adults (≥ 65 years) is increasing in Sweden. At the same time, the elderly care system is being restructured with an increased care burden in nursing homes (NHs). Several studies report a high prevalence of malnutrition among older adults. In recent years public awareness about malnutrition has increased and collective initiatives have been undertaken. However, we lack knowledge regarding *how* to implement these initiatives to achieve real improvements in practice.

Aims: The overall aims of the thesis are to update our knowledge of the nutritional situation in municipal elderly care and to evaluate different implementation strategies (external facilitation and educational outreach visits) for implementing nutritional guidelines in the NH setting.

Methods: Residents and staff of altogether eight NH units participated in the studies. The two implementation strategies were external facilitation (EF) and educational outreach visits (EOV). The EF strategy was a one-year, multifaceted intervention that included support, guidance, practice audits and feedback in four NH units. The EOV strategy comprised one three-hour lecture about the nutritional guidelines in four other NH units. Both strategies were targeted to selected NH teams, which consisted of a unit manager, a nurse and 5-10 care staff.

Results: In **paper I**, the prevalence of malnutrition in the NH setting remained high, i.e., 30% were malnourished and 63% at risk of malnutrition, and malnutrition was associated with deterioration in function and cognition and one-year mortality. However, possible improvements in nutritional status among NH residents over time (from 1996 to 2010) were observed. In **paper II**, the EF strategy improved mealtime ambience compared to the EOV strategy with respect to arranging the table, offering a choice of beverage and more to drink, serving the meal, increasing social interactions between staff and residents, decreasing social interactions among staff and reducing noise from the kitchen. In **paper III**, the EF strategy may have been related to a delay in cognitive deterioration in a sub-sample of communicative NH residents. In **paper IV**, the EF strategy improved, on average, the ability and willingness of the staff to implement the guidelines, i.e., the staff experienced a clearer assignment of responsibilities regarding nutritional procedures and that they had more time, tools and support from leadership. Moreover, the staff felt that they experienced less resistance from work colleagues, that their knowledge and experience were valued, that the guidelines worked in practice and that the implementation of guidelines was not labourious.

Conclusions: Malnutrition is prevalent in Swedish nursing homes. Implementation of nutritional guidelines by an external facilitator, as compared to traditional methods, may be more effective on mealtime ambience, provide better preconditions for change among the staff, and may have positive effects on cognition among residents.

Keywords: implementation, clinical guidelines, malnutrition, nursing home

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*”Ei se kannatte,
mutta jos met freistaama, pruuata,
kyllä se häätyy kannattaa”*

Torvald Pääjärvi

List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.

- I Törmä, J., Winblad, U., Cederholm, T., Saletti, A. (2013) Does undernutrition still prevail among nursing home residents? *Clinical Nutrition*, 32(4):562-568.
- II Törmä, J., Winblad, U., Saletti, A., Cederholm, T. The effects of nutritional guideline implementation on nursing home staff performance: a controlled trial. *Submitted*.
- III Törmä, J., Winblad, U., Saletti, A., Cederholm, T. (2015) Strategies to implement community guidelines on nutrition and their long-term clinical effects in nursing home residents. *Journal of Nutrition, Health & Aging*, 19(1):70-76.
- IV Törmä, J., Pingel R., Cederholm, T., Saletti, A., Winblad, U. Is it possible to influence ability, willingness and understanding among nursing home care staff to implement nutritional guidelines? *Manuscript*.

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Abbreviations

ADL BI	Activities of Daily Living Barthel Index
BMI	Body Mass Index
CCI	Charlson Comorbidity Index
CDSS	Computerized Decision Support System
CFA	Confirmatory Factor Analysis
CONSORT	Consolidated Standards of Reporting Trials
COPD	Chronic Obstructive Pulmonary Disease
CRP	C-reactive protein
CRT	Cluster Randomized Trial
DRM	Disease-related Malnutrition
EF	External Facilitation
EOV	Educational Outreach Visit
EPOC	Effective Practice and Organisation of Care
ESPEN	The European Society for Clinical Nutrition and Metabolism
FAMM	Five Aspects Meal Model
FFMI	Fat Free Mass Index
GSEM	Generalized Structural Equation Model
ICC	Intracluster Correlation Coefficient
IGF-1	Insulin-like Growth Factor 1
MNA	Mini Nutritional Assessment
MNA-SF	Mini Nutritional Assessment-Short Form
NBHW	National Board of Health and Welfare
NH	Nursing Home
NPM	New Public Management
PDSA	Plan-Do-Study-Act
PEM	Protein-Energy Malnutrition
RD	Registered Dietitian
SALAR	Swedish Association of Local Authorities and Regions
SEM	Structural Equation Model
SPMSQ	Short Portable Mental Status Questionnaire
VAS	Vertical Analogue Scale

Introduction

Demographic trends

Life expectancy continues to increase steadily worldwide, mainly due to improved living conditions and lifestyle and advances in health care. Sweden is among the countries with the highest life expectancies in the world. In 2015, the mean life expectancy at birth was 80 years for men and 84 for women (1). In Japan, Spain and Switzerland, the mean life expectancies also exceed 80 years for both men and women (2). Increasing life expectancy and declining fertility rates result in demographic shifts, in which the number of older adults increases and constitutes a large proportion of the population in many countries. In 1996, approximately 17% of the Swedish population was 65 years of age or older. In 2015, about one in five (19.8%) persons was 65 years or older, and in 2060, every fourth person is expected to be ≥ 65 years. The oldest part of the population is also growing fast, and in 2060, approximately 9% of the Swedish population is expected to be 80 years or older (3). Japan and Germany also have a high proportion of older adults (21% and 23%, respectively, who are ≥ 65 years) and a rapidly growing older population (2). With an ageing population, the number of persons needing long-term care increases.

Developments in the Swedish elderly care system

In Sweden, as in many other countries, the public sector is largely responsible for the care of dependent older adults and is thus primarily financed by taxation. Each of the 290 municipalities in Sweden (the smallest unit of local government) has an elected council that is responsible for municipal matters, such as elderly care (4). Persons over 65 years old have right to claim public services and care, e.g., home help services or placement in nursing home (NH) (nursing home is the term that will be used in this thesis, referring to institutional care for older persons who no longer manage by themselves). Through a needs assessment, mainly based on degree of dependency or cognitive impairment, it is decided which services the older adult is entitled to. The public sector both provides and finances the elderly care system, but in the last two decades, using private actors as contractors to provide social services has become more common. That is, the services are provided by

private entrepreneurs but are still funded by taxes. The municipalities still have the overall responsibility for the funding, regulation, allocation of home help, placement in NHs and monitoring of the quality of services. The proportion of care services provided by private entrepreneurs increased from 1% in 1990 to 16% in 2010 (5) and has increased every year until 2014. In 2014, almost 21% of NH units were run by private actors, whereas this proportion decreased to approximately 19% in 2015 (6). Privately provided elderly care increased rapidly when municipalities searched for new forms of organization due to the economic recession in the 1990s. This period was also influenced by the New Public Management (NPM) ideas, which are market-oriented practices characterized by competition and cost reduction as well as privatization of social services to produce cost-efficient services (5, 7). Private organizations are often criticized for being controversial and prioritizing cost savings over quality (5). A recent systematic review of Danish and Swedish experiences with the privatization of social services concluded that in some cases, privatization has led to cost savings in nursing homes, whereas no improvement in quality has been observed. However, the authors also concluded that there were too few studies to observe any substantial impact of privatization (8).

In the early 1990s, Swedish elderly care was also characterized by the introduction of the Municipality Care Reform (*Ädelreformen*). The main responsibility of the care of the elderly was transferred from the county councils to the municipalities through this reform. Furthermore, the reform and the economic recession resulted in a reduction in hospital beds and hospital stays, transfer of beds from geriatric hospital care to municipal care and transfer of advanced nursing to the municipalities. Shorter hospital stays meant that the municipalities were given the responsibility of caring for persons with extensive care needs. This shift in care resulted in those who previously stayed at the hospital being transferred to municipal NHs and those in NHs staying at home with home-based care (4).

In addition, a strong ambition of the Swedish elderly care system is to encourage and enable, by home help services, older adults to continue to live in their homes as long as possible. Consequently, long-term care at home has increased, and this trend is apparent when comparing numbers from two decades ago. In 1996, approximately 127,000 persons were living in NHs and 129,000 received home help. The corresponding numbers in 2015 were 87,900 and 223,200, respectively, resulting in a decrease of approximately 39,000 persons in NHs and an increase of 94,000 persons receiving home-based care (6, 9). This development means that those who currently live in NHs are of advanced age, have multiple illnesses, display functional and cognitive impairments, i.e. are more frail and dependent. They are also dependent on others for the provision of their food.

In NHs with “around the clock care”, the NHs provide all meals and snacks to the residents throughout the day. The meals are usually served in a dining room at specific times. The residents can eat in the dining room or in their own rooms. The food is usually delivered in bulk from the NH kitchen or a caterer. The NH units have the main responsibility for providing NH residents’ food and drinks. Thus, older adults in NHs usually have very little opportunity to influence their choice of food and drinks, although in some NHs, kitchen facilities are available in the residents’ rooms. All meals and snacks, and usually oral nutritional supplements as well, are included in the total cost. The organization of food provision can also affect the nutritional status of older adults (10).

Malnutrition and nutrition-related problems

Malnutrition can be defined as “A state resulting from lack of intake and uptake of nutrition that leads to altered body composition (decreased fat free mass) and body cell mass leading to diminished physical and mental function and impaired clinical outcome from disease” (11), according to the European Society of Clinical Nutrition and Metabolism (ESPEN). Malnutrition and undernutrition are often used synonymously. ESPEN tried to reach a consensus regarding which term to use, but no recommendations could be made, as there was a split between those who preferred the term malnutrition and those who favoured undernutrition (12). The term malnutrition will be used in this thesis.

Old age and disease are strong predictors of malnutrition (13, 14). Several studies over the years have shown that malnutrition is common among older adults, particularly institutionalized older persons. A recent review and meta-analysis including almost 114,000 subjects in different health care settings demonstrated that malnutrition increases when the dependency and care needs of older persons increase. The prevalence of malnutrition according to the MNA was 3% in the community, 6% in outpatients, 9% in home-care services, 22% in hospitals, 18% in NHs, 29% in long-term care and 19% in rehabilitation/sub-acute care (15). A recent review including 24 studies of MNA-assessed malnutrition among nursing home residents reported prevalence rates of 0-71%. However, the majority of the studies reported that approximately a third (20-39%) were malnourished and about two thirds (47-62%) were at risk of malnutrition (16). The wide variation in prevalence rates makes it difficult to compare studies and settings. In addition, the lack of a common terminology and definition of malnutrition contribute to this confusion. Two recent papers published by ESPEN aim to bring clarity in this matter, i.e. guidelines on definition and terminology of nutritional con-

cepts and a consensus statement on diagnostic criteria for malnutrition (12, 17).

Diagnostic procedures should always be preceded by screening to identify persons who are at risk of malnutrition. There is a plethora of screening instruments available (18), but most tools include the same four variables: 1) weight loss, 2) Body Mass Index (BMI), 3) eating difficulties in terms of loss of appetite or reduced food intake, and 4) possible effects of the disease process on nutritional status (12, 19). The Mini Nutritional Assessment (MNA) is frequently used in research on older adults and is also recommended as the most appropriate for the older population by ESPEN (19). The MNA tool will be described in more detail in the methods section. Those individuals identified as at risk for malnutrition need further assessment, which possibly result in a malnutrition diagnosis. The recently published criteria for diagnosing malnutrition are either a BMI $<18.5 \text{ kg/m}^2$ or a combination of unintentional weight loss of $>10\%$ regardless of time or $>5\%$ in the last three months together with a BMI $<20 \text{ kg/m}^2$ if <70 years old or $<22 \text{ kg/m}^2$ if ≥ 70 years old or a Fat-Free Mass Index (FFMI) $<15 \text{ kg/m}^2$ for women and $<17 \text{ kg/m}^2$ for men (12). However, who (i.e. which profession/-s) is responsible for carrying out the assessment and diagnostic procedures is not stated in the consensus paper.

In ESPEN guidelines on the definitions and terminology of nutrition-related concepts (17) different risk factors of malnutrition are discussed, based on its aetiology. Briefly, malnutrition is classified as disease-related malnutrition with or without inflammation and malnutrition without disease. Disease-related malnutrition (DRM) with inflammation is caused by an underlying disease. Several chronic diseases causing catabolic inflammatory processes are common among older adults, such as cancer, chronic obstructive pulmonary disease (COPD), congestive heart failure, chronic kidney disease and other end-stage organ diseases. DRM without inflammation is caused by an underlying disease with an absence of inflammatory activity. These disorders are also common among the elderly, for instance, dysphagia, stroke, Parkinson's disease, dementia/cognitive impairment and depression. Another condition that can cause malnutrition is "Anorexia of ageing", a condition in older adults with loss of appetite and reduced food intake caused by imbalances in hormones and neurotransmitters that regulate hunger and satiety, further resulting in unintentional weight loss. Malnutrition without disease can be caused by socioeconomic or psychological factors, e.g., poor care, poor dentition, mourning, anxiety, and social isolation (17). Moreover, sociocultural factors, such as cultural and ethnicity-related preferences, and inadequate mealtime ambience can limit food intake and negatively impact nutritional status among the institutionalized older adults (10, 20).

The negative consequences of malnutrition have been well-documented over the years. Malnutrition is associated with an increased risk of wounds and pressure ulcers (21), deteriorations in functional status related to sarcopenia (muscle wasting) (17, 22, 23), lower cognitive function (21, 22), mortality (23, 24), hospitalization (25), morbidity, and finally increased health care costs (26-28).

Thus, malnutrition is a complex condition with a multifactorial background in which the risk factors are related to each other and associated with adverse clinical outcomes. However, malnutrition is a treatable condition. Malnutrition is too often not treated properly and several studies report suboptimal nutritional care in nursing homes (29-32). Good nutritional practices have positive impacts on the prevalence of malnutrition. For instance, efforts like nutritional screening, registering nutritional intake in residents' care files and a weight measurement policy have been shown to reduce the prevalence of malnutrition (33, 34). In recent years, international and national authorities and regulatory agencies also have acknowledged the gravity and importance of the nutritional situation among older adults.

Initiatives to promote nutritional care among the elderly

In 2003, the Council of Europe adopted the Resolution on Food and Nutritional Care in Hospitals. Eighteen European countries, including Sweden, signed the resolution. The resolution contains over 100 recommendations addressing, e.g., screening for malnutrition, care plans to identify nutritional care needs, policies for food services and nutritional care, eating environment, regular training on nutritional care for staff, and support for a multidisciplinary approach to nutritional care (35). The annual nutritionDay, a worldwide initiative by ESPEN, aims to promote the implementation of the resolution in practice (36). In 2007, nutritionDay was extended to nursing homes, reflecting an increased awareness of the problem at the municipal care level (37). Today, nutritionDay is implemented in 57 countries and involves over 169,000 individuals in 5300 care units. Unfortunately, no Swedish nursing homes are participating in the nutritionDay project, only hospital wards.

In Sweden, the nutritional situation of older adults has been acknowledged both nationally and locally. From 2007-2012, the Government has allocated >500 million EURO to county councils and municipalities to support them in their efforts to improve the quality of elderly care. Nutritional care was one of the priority areas for quality improvement. Nine percent (9%) of the total amount of allocated national incentive grants, i.e., approximately 42 million

EURO, were used for quality improvement in nutrition, involving 16 county councils (out of 21) and 246 municipalities (out of 290). Examples of activities undertaken to improve nutritional care include improved mealtime ambience, identification and treatment of malnutrition, decreased overnight fast, development of guidelines and availability of dietitians for consultation (38).

The national quality register, Senior Alert, is another national quality improvement initiative. It was introduced in 2008 and aims to document risk assessment and actions taken to prevent falls, pressure ulcers, malnutrition, poor oral health and incontinence in caretakers ≥ 65 years of age. In 2010, a pay-for-performance system was introduced, which increased participation in the register. In 2014, impressively, 287 municipalities (out of 290) and 20 county councils (out of 21) were connected to the register. The Swedish Association of Local Authorities and Regions (SALAR), commissioned by the Government, is responsible for disbursing compensation based on the results achieved (39).

Moreover, in 2007, the Government commissioned the National Board of Health and Welfare (NBHW) to develop a system for regional and local comparisons of quality. The aim of these open comparisons was to compare the quality of the services provided to older adults and for the results to be used as a basis for political decisions, for quality improvement efforts and for the older adult's choice of care provider. Data are presented at different levels, e.g., at the municipality or the home care unit/NH unit level. The data are collected from different sources, e.g., from surveys of older adults who receive home help or are living in NHs, to home care units and NH units themselves, and to municipalities. In the latest report on open comparisons published by the NBHW and SALAR, there are three indicators of nutrition: measures against malnutrition, taste of the food and experience of the mealtime ambience (40).

The binding regulation (SOSFS 2014:10) is a recent initiative on the prevention and treatment of malnutrition adopted by the NBHW in 2014. The regulation states that the care provider must have established routines for when and how nutritional status should be assessed and how malnutrition should be prevented and treated (41).

The issue has also been recognized at a local level. For example, the municipality of Uppsala (a medium-sized town in mid-eastern Sweden) has strong ambitions to improve the nutritional care of the elderly. In 2000, the municipality adopted nutritional guidelines for elderly care as a way to improve nutritional practice. In 2006, the guidelines were revised, and the Senior Citizens Board decided to actively implement them within all elderly care

facilities administered by the municipality. To conduct and evaluate the implementation process, they collaborated with Uppsala University. In this thesis, we aimed to study the implementation of these local nutritional guidelines.

The complexity of implementation

Several studies report a low usage of guidelines in the nursing home setting (31, 32, 42). For example, a survey was conducted prior to this thesis about the knowledge and usage of the above-mentioned nutritional guidelines in Uppsala municipality. Altogether, 340 staff members (69%), including managers, nurses, chief nurses and care staff, answered the questionnaire. Approximately half of the respondents (52%) knew about the guidelines, and less than half (45%) answered that they used the guidelines (43). Thus, the existence of guidelines does not guarantee their usage. They have to be actively disseminated and implemented. However, the process of implementing guidelines in practice or changing practice is complex and challenging. First, there is a lack of knowledge regarding which implementation strategy is the most efficient in different settings and situations. Second, individual staff factors (e.g., their knowledge, attitudes, values and beliefs) and the organizational context surrounding the implementation setting can influence the implementation process and thus the occurrence of change.

The implementation strategy

Implementation strategies are the actions of changing practice. There are many implementation strategies available, and the Effective Practice and Organisation of Care (EPOC) group, a review group of the Cochrane Collaboration, has developed a taxonomy of the different strategies. The widely used EPOC taxonomy include four main types of implementation strategies: *professional interventions* (e.g., educational materials, local consensus process, educational outreach visits, audit and feedback, reminders), *financial interventions* (e.g., allowances, financial incentives or penalties at the institution, provider or patient level), *organizational interventions* (e.g., change in professional roles, skills or services, change in setting, physical facilities or equipment, ownership or staff organization), and *regulatory interventions* (e.g., change in medical liability, licensure) (44). Recently Mazza et al. drafted a taxonomy of guideline implementation strategies, based on the EPOC taxonomy, in which they define a guideline implementation strategy as “a purposeful procedure to achieve practice compliance with a guideline recommendation” (45).

In 2004, Grimshaw et al. performed an extensive systematic review, including 235 studies, of the effectiveness of different guideline implementation strategies. The majority of the strategies had modest to moderate effects (5-20%). For example, the effect (median absolute improvement in performance) of audit and feedback was 7%, 14% for reminders, 8% for educational material and 6% for multifaceted interventions involving educational outreach visits. However, the review concluded that evidence is lacking regarding what implementation strategy is efficient in which situation (46). More than a decade later, this review is still frequently cited and evidence on this issue remains insufficient.

The most common strategies used in implementing clinical guidelines are educational strategies, printed material and audit and feedback (47, 48). Several Cochrane reviews have evaluated the effect of those strategies. The effect of educational meetings, defined as participation of healthcare providers in conferences, lectures, workshop or traineeships, was small (absolute median improvement of 6%) compared to no intervention. Education meetings, when used alone, did not seem to be effective in changing complex behaviours. Larger effects were more likely to be achieved with a combination of interactive and didactic formats (49). Printed materials, usually monographs, journal publications or guidelines, appeared to have small effects on practice outcomes compared to no intervention when used alone (50). Audit and feedback on clinical practice, a common strategy used either alone or as a component of multifaceted strategies, generated only small improvements in clinical practice. Larger effects are expected if baseline performance is low, if the feedback is provided in both verbal and written format and more than once, and if an action plan is included (51).

The above-mentioned reviews included different healthcare settings, which might complicate the comparisons of strategies since the circumstances surrounding the implementation site probably vary in different healthcare settings. A review evaluated several interventions (e.g., educational materials, training, audit and feedback, champions, team meetings, policies/procedures, organizational restructuring) to change staff practice in the nursing home setting (52). They did not either manage to determine which implementation strategy was the most successful. The authors recommended a multifactorial approach that accounted for identified barriers and facilitators. Tailored interventions addressing barriers can be effective, and if so, the effect is small to moderate. This finding was presented in a recent Cochrane review, and methods on how to identify barriers and tailor interventions were further requested (53). However, whether to use multifaceted strategies (involving several components) or single-component strategies remains an unresolved issue. Two systematic reviews resulted in different conclusions. Squires et al. (54), performing both statistical and non-statistical analyses, concluded

that multifaceted interventions are not more effective than interventions with single components, whereas McCormack et al. (55) concluded, on the other hand, that multifaceted strategies seemed to be more effective than single-component strategies, especially in affecting guideline adherence.

Facilitation and Educational Outreach Visits

As mentioned in the beginning of this section, there are numerous implementation strategies. *Facilitation*, by supporting and enabling individuals or groups, is another method of changing practice. A frequently used definition of facilitation is “The process of enabling (making easier) the implementation of evidence into practice” (56). Facilitation is a multifaceted process with activities ranging from practical task-oriented (e.g., provide resources/tools, planning meetings) to more holistic (e.g., encouraging teamwork, enabling individual or group development). The facilitator can be either internal or external, i.e., from within or outside of the implementation setting. The facilitation process can include either an individual or several persons or groups (57, 58). Problems with evaluating the effect of facilitation on guideline implementation are mainly due to a lack of a clear definition and difficulties distinguishing between facilitation and other implementation activities (57). However, a systematic review has been conducted on the effect of facilitation on guideline implementation in the primary care setting. The review found a moderate effect in favour of facilitation activities compared to controls, although publication bias was present. Tailoring interventions to the context and intensity of the intervention has been associated with larger effects (59). Yet another strategy is *Educational Outreach Visits* (EOV). EOV has been referred to as “academic detailing” but more specifically as “a personal visit by a trained person to healthcare professionals in their own setting”. EOV has been shown to result in small to modest improvements in clinical practice, particularly in prescribing practices (60).

To summarize, all implementation strategies appear to have the potential to change practice, with at least small to moderate effects. The evidence base is still too limited to recommend a defined strategy for a specific setting or circumstance, mostly because the effects and designs of the strategies are variable and the number of high quality studies is small. However, establishing effectiveness of different strategies is challenging since their effect might also depend on contextual, organisational or individual factors.

Individual factors of the staff

The staff, or the target audience for the implementation efforts, may also affect the implementation process positively or negatively. Adverse attitudes towards nutrition and ageing among nursing home staff have been identified as a barrier to improving nutritional care. A Swedish and an Austrian study using the same instrument (Staff Attitudes to Nutritional Nursing Care Geriatric, SANN-G) to assess attitudes among registered nurses and nurses' aides working with older people had similar results. Only about a third (33% and 39%) displayed positive attitudes towards nutritional care. The most positive attitudes (71% and 72%) were towards nutritional interventions, and less positive attitudes (27% and 36%) were observed for organization of mealtimes and involvement of the residents in mealtime preparation. Nurses displayed more positive attitudes than nurses' aides (61, 62).

Nutrition in general, seems to have a low priority in nursing homes, and this lower prioritization is also reflected by the lack of nutritional knowledge among care staff (31, 32). For instance, nutritional knowledge among nursing staff was low in a study by Beattie et al. (29), only about half (55%) of the nursing staff had correct answers on the test. Higher scores were found for questions about risk factors of malnutrition, whereas there was lower knowledge regarding the requirements, sources and functions of micro- and macronutrients. Bauer et al. (62) also assessed nutritional knowledge among nursing staff and found that approximately two-thirds (61%) of the respondents scored correctly; the greatest lack of knowledge was found regarding which professions to involve in nutritional care, reflecting poorly defined responsibilities in nutrition. The nurses scored better than the nurses' aides (62).

The organizational context

The organizational context is an important factor to consider in an implementation process. However, it is a complex, multifaceted concept and probably also setting specific, i.e., every setting is unique in its own way. The organizational context can be defined as the features of the setting where the implementation is to take place. A comprehensive way of dividing and describing organizational context is as follows: 1) *the physical environment* (e.g., number of beds, rooms, ward layout), 2) *organizational culture* (e.g., leadership, interdisciplinary communication, values and beliefs), 3) *operational structures* (e.g., decision-making processes, expertise availability, staffing levels), 4) *technology* (e.g., information technology availability, skills and knowledge of key stakeholders), and 5) *support systems* (e.g., resources, types of support offered, peer communication, facilitation methods

and processes) (63). Greenhalgh et al. (64) include basically the same components but divide organizational features into structural and non-structural determinants. The structural determinants are, e.g., size, differentiation (informal division of labour), slack resources, specialization (expertise and specialist resources), and decentralized decision-making structures. The non-structural determinants are the prevailing culture and climate, leadership style, visions and goals, attitudes towards risk taking, and social relations (internal and external networks). Thus, context is a multifaceted concept in which structural, physical, environmental, economic, cultural and social factors interact in a complex manner. This makes it very difficult to identify all contextual factors. However, leadership, culture and resources are usually included in the concept of context (65-67). Commonly reported barriers in nursing home settings that are related to the organizational context include a lack of time, staffing (29, 42, 52), and resources (31, 42, 52), poorly defined responsibilities (32, 62), and an unsupportive organization or management (68).

Thus, there are two parallel problems. Firstly, there is a need to find effective implementation methods to improve nutritional practices due to the high prevalence rates of malnutrition and the reports on suboptimal nutritional care. Secondly, it is challenging to perform and evaluate implementation studies considering the multiple interacting factors that may influence the process and make it difficult to draw conclusions.

Previous studies regarding implementation of good nutritional practices in elderly care

A number of studies in the nursing home setting have been performed to improve nutritional care. Most studies focus on improving risk assessments of nutritional status and methods of preventing and treating malnutrition, whereas others focus on improving food service routines or mealtime ambience. The majority of the studies apply multi-component strategies, i.e., involving several activities, and have had a positive impact on some of the measured outcome variables. For example, two Swedish studies from 2009 (69, 70) used study circles to improve nutritional care and NH resident outcomes. Westergren et al. (69) reported improved precision in nutritional care and a decreased prevalence of low BMI in the municipality exposed to the study circles. Wikby et al. (70) did not observe any between-group differences, but in the within-group analyses, the number of residents with protein-energy malnutrition (PEM) decreased and motor activity and cognitive function improved in the experimental group. Two other studies using a multifaceted approach including education, training and support also had posi-

tive effects on the NH residents' energy intake and nutritional status (71, 72). A Danish study evaluated the effect of regular nutritional assessment and individualized nutritional care and observed that the proportion of weight stable NH residents increased (73).

In an Australian study, the impact of a train-the-trainer programme (i.e., an educational model in which experts train a staff member to become a Nutrition Coordinator) on NH residents' nutritional status was evaluated. NH residents in the intervention group were more likely to maintain or improve their nutritional status compared to those in the control group (74). Furthermore, in a quasi-experimental study, implementing computerized decision support systems (CDSS) and an educational programme resulted in improved resident and staff outcomes. The proportion of malnourished residents decreased in the intervention group receiving both education and CDSS, and improved nursing documentation of pressure ulcers and malnutrition was also observed (75, 76). The aim of mealtime environment interventions has been to create a homelike meal environment. Improved energy intake and increased weight has been observed in the intervention group (77-80). In the intervention studies by Nijs et al., positive effects on nutritional status, well-being and physical performance were observed among residents in the intervention group (79, 80).

Rationale of this thesis

The proportion of older adults (≥ 65 years or older) in the population is large and will continue to increase according to population projections. Additionally, the elderly care system is being restructured, with a decreasing number of individuals in NHs and an increasing number of individuals receiving home help services. The objective of encouraging older people to live at home as long as possible is evident. This development can reasonably be interpreted as resulting in an increased care burden in NHs because the persons living there will be more ill and dependent. Malnutrition and nutrition-related problems are strongly associated with morbidity, and as several studies have shown, malnutrition is common among older adults, particularly among those who are ill and dependent.

In recent years, nutritional issues in the nursing home setting have been raised at the macro, meso and micro levels; however, we have a lack of knowledge on *how* to implement these initiatives to achieve real improvements in practice. The process of implementing knowledge into practice is both complex and challenging. There is a lack of knowledge not only on effective implementation strategies but also on how the complex interactions of multiple factors may affect the implementation process, such as the organizational context and individual factors of the practitioners. Moreover, implementation studies in the nursing home setting and those regarding nutrition are scarce.

For these reasons, it is relevant to study how to implement good nutritional practices in the elderly care setting, to evaluate the effects of different implementation strategies and to identify possible determinants of change. Furthermore, it is relevant to evaluate the effects of the restructuring of the elderly care system and the simultaneous increased awareness of nutrition-related problems among frail older adults.

Aims

The overall aims of the thesis are to 1) update our knowledge of the nutritional situation in municipal elderly care and 2) evaluate two different implementation strategies (external facilitation and educational outreach visits) for the implementation of nutritional guidelines adopted by the Municipality of Uppsala in the nursing home (NH) setting.

The specific aims for papers I-IV are as follows:

Paper I: To describe the nutritional situation and its relation to subsequent one-year mortality in an NH population and to evaluate possible changes in nutritional status over time among NH residents by comparing present data with historical data from 1996.

Paper II: To evaluate the effects of the two implementation strategies on the performance of the NH staff in terms of food service routines and provision of mealtime ambience for the NH residents.

Paper III: To evaluate the effects of the two implementation strategies on the clinical outcomes of the NH residents.

Paper IV: To evaluate the effects of the two implementation strategies on the organizational context and individual factors of the NH staff based on three proposed conditions, namely, the staff's *ability* (Can) and *willingness* (Will) to implement the nutritional guidelines and their *understanding* (Understand) of them.

An overview of the four papers of this thesis is provided in Table 1.

Table 1. An overview of the four papers in the thesis.

Paper	I.	II.	III.	IV.
Aims	To describe the nutritional situation and one-year mortality of an NH population and to compare present data with historical data	To evaluate the effects of the two implementation strategies on the performance of the NH staff	To evaluate the effects of the two implementation strategies on the clinical outcomes of the NH residents	To examine if the two implementation strategies influenced the organizational context and individual factors of the staff
Study design	A descriptive one-year follow-up study	A cluster quasi-experimental study with pre-post measurements	A cluster quasi-experimental study with pre-post measurements	A cluster quasi-experimental study with pre-post measurements
Intervention	-	EF vs. EOv	EF vs. EOv	EF vs. EOv
Materials	172 residents from four NHs	Care staff from four NHs	101 residents from four NHs	118 staff (managers, nurses, care staff) from eight NHs
Methods	MNA-SF* ADL BI* SPMSQ* EQ-5D* Blood samples* One-year mortality data A historical dataset	Food records Mealtime observations	MNA-SF ADL BI SPMSQ EQ-5D Blood samples	Questionnaire
Statistical analyses	Descriptive analyses to describe the study population. Kaplan-Meier curves and logistic regression analyses to evaluate the relationship between nutritional status and one-year mortality.	T-tests for independent samples or Mann-Whitney U-tests to compare two groups. Cronbach's alpha coefficient to assess inter-observer reliability.	T-tests for independent samples or Mann-Whitney U-tests to compare two groups. Linear regression analyses to investigate possible predictors of relevant outcome variables.	Confirmatory factor analyses to establish construct validity of the questionnaire. Structural equation models to examine the latent constructs over time in each group.

* Included in Paper III as baseline data

NH=nursing home, EF=External Facilitation, EOv=Educational Outreach Visit, MNA-SF=Mini Nutritional Assessment-Short Form, ADL BI=Activities of Daily Living Barthel Index, SPMSQ=Short Portable Mental Status Questionnaire, Blood samples = albumin, C-reactive protein, insulin-like growth factor 1, creatinine, cystatin C, vitamin D.

Methods

Study designs and settings

Paper I presents a descriptive study with a one-year follow-up. The nutritional status of the NH residents was described as well as its relation to other clinical outcomes and one-year mortality. Furthermore, the present data in terms of nutritional status, the number of prescribed drugs, and prevalence of acute disease, mobility and neuropsychological problems (i.e., data from the Mini Nutritional Assessment forms) were compared with a historical dataset from 1996.

Papers II-IV present studies with a non-randomized (matched) cluster controlled design with baseline and follow-up measurements, evaluating effects on the NH staff (Paper II), NH residents (Paper III), and the organizational context, and individual factors of the staff (Paper IV). The interventions in these papers were the implementation strategies, i.e., external facilitation (EF) and educational outreach visits (EOV). The EF units were selected by the general managers of the elderly care providers, who were asked to suggest NHs units that were interested and motivated to participate in the project. Thus, the EF units were a convenience sample. The four EOV units were matched by provider of care, focus of care (nursing or dementia care) and number of beds. The number of beds and wards and the focus of care at each NH are displayed in Table 2.

Table 2. Number of beds and wards and the focus of care at each nursing home involved in the thesis.

NH unit (EF/EOV)	Number of beds	Number of wards	Focus of care
EF 1	51	3	Nursing and dementia care
EF 2	47	3	Nursing and dementia care
EF 3	25	3	Nursing and dementia care
EF 4	50	3	Nursing and dementia care
EOV 1	50	3	Nursing and dementia care
EOV 2	40	2	Nursing care
EOV 3	27	3	Nursing and dementia care
EOV 4	24	2	Nursing care

The duration of follow-up in Papers II-IV was approximately 18 months, and the studies were conducted from March 2009 to June 2011.

The nutritional guidelines

The nutritional guidelines adopted by the Municipality of Uppsala were the object of implementation in this thesis. The guidelines were used as an aid to implement good nutritional practices in nursing homes, and the reason for implementation was quality improvement. The nutritional guidelines only apply to the Municipality of Uppsala and act as guidance for all providers who, commissioned by the Senior Citizens Board, work with any type of food service for older persons in NHs or with home help services. In brief, the guidelines contain the overall responsibilities of the different professions; important laws and regulations; recommendations for water and energy intake, diets, meal patterns, duration of the overnight fast, and planning of menus; descriptions of a favourable mealtime ambience; and finally a section concerning nutritional problems. These guidelines were based on the 2004 Swedish Nutrition Recommendations (81) and recommendations for hospital food (82) and conform to a great degree with the guidance on how to prevent and treat malnutrition published by the NBHW in 2011 (83).

Prior to the implementation process, the guidelines were operationalized into more user-friendly recommendations by two of the research study team members (JT, AS) and a local stakeholder group comprising general managers of the elderly care providers, municipal officials from the Health and Social Welfare office and NH staff (nurses, nurses' aides, assistant nurses, kitchen staff, and occupational therapists). The operationalization of the guidelines resulted in three agreed upon and prioritised focus areas: 1) nutrition (nutritional screening, interventions, assessment/follow-up), 2) food (mealtime patterns, snacks, overnight fasting), and 3) mealtime ambience.

Interventions (Papers II-IV) - External Facilitation and Educational Outreach Visits

The two implementation strategies used to implement the guidelines were external facilitation (EF) and educational outreach visits (EOV). Four NHs received the EF strategy, and the other four received the EOV strategy. Both strategies were targeted to selected teams at each NH. The selected team consisted of a unit manager, a nurse and 5-10 nurses' aides/assistant nurses. Both strategies were implemented by one research study team member (AS), a researcher (PhD) and a registered dietitian (RD) with approximately 25

years of experience in the management of nutrition projects in the elderly care setting.

The EF was a long-term, multifaceted strategy. The facilitator met with the team every 3-4 weeks over the course of one year. The one-hour meetings were based on the principles of action research: 1) plan, 2) act, 3) observe, and 4) reflect (84). Workplace meetings (2-3 meetings/year) were also held to engage and involve the entire staff in addition to the team. The EF strategy consisted of practice audits and feedback on, for example, mealtime observations and dietary assessments. Furthermore, the facilitator encouraged the staff to critically evaluate current nutritional practices, increased the staff's nutritional knowledge and served as support in developing structures and goals to overcome obstacles and to continuously progress in the implementation process. The EF was developed to create a flexible strategy that could be adapted to the local setting and actively involved the staff by being responsive to their motivations and opinions. The changes were to be perceived as originating from the staff themselves.

The EOV comprised one three-hour lecture about the operationalized guidelines. After the lecture, the teams were provided with an opportunity to formulate a plan for implementing the guidelines. The EOV strategy was selected to resemble "conventional practice" because educational strategies are commonly used to influence staff practices with the intention of improving patient outcomes (49). These two implementation strategies were in focus, and thus no regular control group was included.

Participants

In Paper I, 196 subjects from four NHs were eligible for study participation. Twenty-one subjects (11%) declined participation, and three subjects (1%) were hospitalized or in poor general condition during data collection or had recently been admitted to the NH. In total, 172 residents (88%) participated in the study. Blood samples were collected from 111 subjects.

In Paper II, the performance of the care staff, mainly nurses' aides and assistant nurses, was observed and analysed. To study the staff's adherence to the guidelines, mealtimes were observed and food records were registered. In total, 47 mealtime observations at two NHs were performed (22 at baseline and 25 at follow-up) to evaluate the mealtime ambience provided to the residents. One hundred and nine (n=109) food records from four NHs were registered both at baseline and follow-up to evaluate the food service routines performed by the staff (e.g., how often and what type of snacks were served). Due to the data collection methods, the number of staff studied was

difficult to report. A median of four staff members was observed during each mealtime observation, but the number of staff working when the food records were performed was not collected. The data on staff characteristics in Paper II are from the questionnaire in Paper IV.

The 172 residents in Paper I constituted the baseline data in Paper III. At follow-up, 71 subjects were lost to follow-up mainly due to death (n=66). In total, 101 subjects were included in the follow-up analysis 18 months later. The SPMSQ test was performed on 46 NH residents who were communicative, and blood samples were collected from 60 residents. Of these 101 subjects, 55 belonged to the EF units and 46 to the EOV units.

In Paper IV, 275 and 279 questionnaires were distributed to all staff (managers, nurses, nurses' aides, assistant nurses, and administrators) at eight NHs at baseline and follow-up, respectively. In total, 217 and 220 questionnaires were returned at baseline and follow-up, respectively. Of the returned questionnaires, 118 staff members had answered the questionnaire at both time points.

Data collection

One of the research study team members (JT) performed most of the data collection, i.e., interviewed and examined the NH residents or interviewed the staff as a proxy if the residents had cognitive impairments or were non-communicable; collected data on birth date, NH length of stay, diagnoses, medications and mortality from the NH records; transported blood samples for analysis after they had been drawn by the NH nurse (Paper I, III); performed mealtime observations (Paper II) and distributed the questionnaire to the staff through personal visits at regular workplace meetings or to the administrators for those not present at the meetings (Paper IV). The food records (Paper II) were conducted by the care staff after oral and written information had been provided. Two of the research team members (JT, AS) visited the NHs every day during data collection to review the records and answer questions from staff.

Nutritional Assessment (Paper I, III)

The Mini Nutritional Assessment (MNA) is a screening tool specifically designed to identify risk or presence of malnutrition among older adults. It is frequently used in geriatric settings (13, 85). To facilitate the use of the tool in clinical practice, a shortened version of the tool was developed, the Mini Nutritional Assessment-Short Form (MNA-SF) (86). The short version, MNA-SF, has been validated against the original MNA with 18 items. The

MNA-SF proved to have good sensitivity (0.89) and specificity (0.82) and correlated well with the original (0.90) (87). In this thesis, the MNA-SF was used to assess the nutritional status of the NH residents. The tool consists of 6 items, covering the past three months and addressing Body Mass Index (BMI), food intake, weight loss, acute diseases, psychological stress and neuropsychological problems. BMI was calculated from height and weight. Height was measured to the nearest 0.5 cm. When possible, standing height was measured with a measuring tape. When standing was not possible, height was measured with a sliding scale with patients lying in bed. Weight was measured to the nearest 0.1 kg with a digital chair scale or a lift scale. When measurements of height or weight could not be performed, these data were collected from medical records. BMI was calculated in kg/m². The maximum MNA-SF score is 14 points; a score of less than 7 points indicates malnutrition, 8-11 points indicate risk of malnutrition, and 12-14 points indicate that the person has a normal nutritional status.

For the historical comparison, data on weight, height and MNA were retrieved from 166 NH residents examined in 1996 (88).

Functional Assessment (Paper I, III)

The ADL Barthel Index (BI) was used to assess functional ability (89). Degree of independence in ten basic self-care activities was assessed: feeding, bathing, grooming, toilet use, dressing, bowel and bladder control, transfers from bed to chair and back, mobility on level surfaces and climbing stairs. The scores range from 0-20, with higher scores indicating greater independence.

Cognitive Assessment (Paper I, III)

Cognitive ability was assessed with the Short Portable Mental Status Questionnaire (SPMSQ) (90). This tool consists of 10 items: current date, day of the week, current location, address, age, birth date, name of the prime minister, name of the past prime minister, maiden name of the resident's mother, and the task of counting down from 20 by three. The maximum score is 10 points; eight or more errors indicate severe cognitive impairment, 5-7 errors indicate moderate cognitive impairment, 3-4 errors indicate mild cognitive impairment, and 0-2 errors indicate normal mental functioning.

Health-related Quality of Life Assessment (Paper I, III)

The EQ-5D was used to assess health-related quality of life (91). This tool consists of a descriptive component and a vertical analogue scale (VAS). The descriptive component comprises five dimensions: mobility, self-care,

usual activities, pain/discomfort and anxiety/depression. Each dimension has three levels of perceived problems: no problems, some problems, and severe problems. Subsequently, the respondent or the proxy is asked to self-rate their state of health on a VAS scale. The VAS scale ranges from 0-100, where 100 is considered “Best imaginable health state” and 0 the “Worst imaginable health state”. A proxy version of the instrument was used for the residents who were unable to answer for themselves due to cognitive impairment, poor general condition, or inability to communicate. The EQ-5D index scores were calculated using preference scores generated from a large UK population (UK EQ-5D Index Tariff) (92). The EQ-5D index scores range from 0.00 to 1.00, where 0.00 indicates the worst possible health state and 1.00 the best possible health state. Negative scores were given a value of 0.

Comorbidity Assessment (Paper I, III)

Comorbidity was evaluated by the Charlson Comorbidity Index (CCI) (93), which takes into account both the number and the severity of 19 medical conditions and gives weighted points from 1 to 6. Total scores range from 0 to 37, with high scores indicating more severe comorbidity.

Biochemical markers (Paper I, III)

Blood samples were collected after a 12-h overnight fast by the NH nurse. All samples were protected from light, centrifuged and stored at -70°C until analysis for vitamin D, albumin, C-reactive protein (CRP), insulin-like growth factor 1 (IGF-1), creatinine and cystatin C using standard procedures at the Department of Clinical Chemistry at Uppsala University Hospital.

Food records (Paper II)

The food records were three-day (two weekdays and one weekend day) estimated food records (94). Everything the residents were served by the staff and everything they consumed (including breakfast, lunch, dinner, snacks between meals and beverages) during a 24-hour period (from 06:00 to 06:00 the next day) were noted in the food records according to quantity or common household measuring devices. To help the staff estimate the amount of food and beverages, the dishes (glasses, cups, plates, bowls) for each unit were measured, and illustrative pictures were produced. The food service variables were number of snacks and meals served, quantity of beverages served, type of snacks and beverages served and duration of overnight fasting.

Mealtime observations to evaluate mealtime ambience (Paper II)

To evaluate the staff's adherence to the guidelines in terms of providing an enjoyable mealtime ambience to the NH residents, a structured observational mealtime instrument was developed (see Appendix 1). To our knowledge, no such tool exists. The mealtime instrument was developed based on the operationalized guidelines and a review of the literature. The Five Aspects Meal Model (FAMM) was used as the theoretical model. The FAMM was originally developed for restaurants and was influenced by Guide Michelin. The FAMM is a framework or an aid for those who plan, prepare or produce meals and is derived from knowledge of different disciplines, including scientific, practical-productive, aesthetical, and ethical fields. Although the FAMM was developed for commercial meals, such as restaurants, we believe that it can also be applied to public meals. The overall aim of the FAMM is to give the guests an optimal meal experience, and, as the name implies, the FAMM studies five aspects of the mealtime: the room, the meeting, the product, the management control system and the atmosphere. *The room* is the setting of the meal, including the shape of the room, how the room is used and connected to other rooms, the interior environment and the table arrangement. *The meeting* is the interpersonal relations, i.e., the interactions not only between the guests and the staff themselves but also between the staff and the guests. *The product* is simply the food and the drink served. *The management control system* concerns administrative issues, such as economics, logistics, laws, regulations, and management. *The atmosphere* is the surrounding atmosphere and hence the perception of the entire meal. Atmosphere has been defined as feeling comfortable and at ease (95, 96). Our developed mealtime instrument included assessments of four of these aspects: the atmosphere, the meeting, the room and the product. The various aspects were operationalized into feasible measurable variables assessed on 100 mm VAS. The VAS ranged from "not at all" (0) to a "very high degree" (100), and to provide an answer, the observer placed a mark on a horizontal VAS line. The operationalized guidelines exemplified the "optimal situation". The tool includes description of the ward/unit, the food and beverages served and the room.

Staff questionnaire (Paper IV)

A questionnaire was designed to evaluate the prerequisites for the staff to use the guidelines in terms of the organizational context and individual factors (see Appendix 2). The questions were developed from three proposed conditions that were believed to support a successful implementation, namely, the staff's *ability* (Can) and *willingness* (Will) to implement the guidelines and their *understanding* (Understand) of them (97-99). The original questionnaire contained 48 questions related to the staff's ability and will-

ingness to implement the nutritional guidelines and their understanding of the guidelines. To test the construct validity of the questionnaire, a confirmatory factor analysis (described below) was performed and yielded a model with three latent constructs represented by four questions each. Thus, twelve questions are presented in this thesis.

The three conditions were supported with different theories and concepts. The *Can* condition refers to the organizational context and whether it creates sufficient incentives for care staff to implement the guidelines. This condition has been supported with the concept of context as described in the implementation literature (63, 64). In this thesis, organizational context is operationalized as having a clear assignment of responsibilities regarding nutrition and resources to implement the guidelines, such as tools, time and support from leadership.

The *Will* condition aims to investigate the care staff's attitudes towards and approval of the nutritional guidelines and factors related to changes in practice. This condition is based on a professional theory (100, 101) and addresses external autonomy, i.e., how guidelines affect the working situation, and internal autonomy, i.e., threats against the inner professional role.

Finally, the *Understand* condition refers to the care staff's interpretation of the guidelines, i.e., whether they understand the content and intentions of the nutritional guidelines. Michael Lipsky's theory of "street-level bureaucrats" was used to explain this condition (102). According to Lipsky, "street-level bureaucrats" (those who implement political decisions in practice) possess all of the power in the success of policy implementation because superiors have difficulties controlling and monitoring them, which enables discretion in implementing or ignoring policy goals. Understanding the policy content and intentions will probably increase the likelihood of the policy to be applied.

The development of the questionnaire included a pilot test at a NH unit not involved in the current thesis to test the feasibility of the questions and the time needed to complete the survey (data not shown). An overview of the different evaluation methods at each included EF and EOVS nursing home unit is displayed in Table 3.

Table 3. The different evaluation methods at each EF and EOV nursing home unit.

NH unit (EF/EOV)	Evaluation method	
	Resident outcomes	Staff outcomes
EF 1	MNA-SF, BI, SPMSQ, EQ-5D, CCI, BS	MO, FR, Q
EF 2	MNA-SF, BI, SPMSQ, EQ-5D, CCI, BS	FR, Q
EF 3		Q
EF 4		Q
EOV 1	MNA-SF, BI, SPMSQ, EQ-5D, CCI, BS	MO, FR, Q
EOV 2	MNA-SF, BI, SPMSQ, EQ-5D, CCI, BS	FR, Q
EOV 3		Q
EOV 4		Q

MNA-SF=Mini Nutritional Assessment-Short Form, BI=ADL Barthel Index, SPMSQ=Short Portable Mental Status Questionnaire, CCI=Charlson Comorbidity Index, BS=Blood samples, MO=Mealtime observations, FR=Food records, Q=Questionnaire.

Statistical analyses

Data are presented as proportions, mean values \pm standard deviations or the median (interquartile range) according to the type of data and distribution. To evaluate the differences between two groups, T-tests for independent samples or Mann-Whitney U-tests were performed according to the distribution of the data. T-tests for dependent samples or Wilcoxon matched pairs tests were used to assess differences within a group. χ^2 tests were used for nominal and ordinal variables.

In Paper I, differences between more than two groups were evaluated with ANOVA or Kruskal-Wallis tests according to data distribution. Spearman's rank correlation was performed for the correlation analyses. To evaluate the relationship between nutritional status and one-year mortality, Kaplan-Meier curves for survival analyses and logistic regression for determining the independent covariates of mortality were used. Co-variables with a trendwise ($p < 0.10$) univariate correlation were chosen.

In Paper II, to compare the measurements of mealtime variables between baseline and follow-up in each group, a more cautious approach was chosen. Mann-Whitney U-tests were used for the within-group analysis because the baseline and follow-up observations were considered independent of each other due to the different prevailing circumstances in terms of which staff were working and which residents were dining at the time of the observation. To assess the inter-observer reliability of the mealtime instrument, Cronbach's alpha coefficient was used.

In Paper III, linear regression analyses were conducted to examine the possible predictors of relevant outcome variables from the between-group difference analysis (in this case, change in cognitive status). Covariates included in the multiple regression analysis were chosen from the clinically relevant variables with a trendwise ($p > 0.10$) univariate correlation with change in cognitive status.

In Paper IV, confirmatory factor analysis (CFA) was performed to establish the construct validity of the questionnaire, i.e., how the questions related to the proposed conditions of Can, Will, and Understand, i.e., the latent constructs. CFA was performed using all individuals at baseline ($n=217$). A structural equation model (SEM) was generated to examine the development of the latent constructs over time in each intervention group (EF and EOV). Only individuals studied at both baseline and follow-up were included in the analysis ($n=118$).

P-values < 0.05 were considered statistically significant in all studies. In Papers I and III, Statistica version 10 was used. In Paper II, Statistica version 12 was used. In Paper IV, R version 3.2.3 and the R-packages lavaan 0.5-22 and Mice 2.25 were used for the statistical analyses.

Ethics

All studies included in this thesis were approved by the Regional Ethical Review Board at Uppsala University.

In Paper I, cognitively intact individuals gave their informed consent before being enrolled in the study. Consent for individuals with cognitive impairment was obtained from their next of kin or other surrogates after oral information had been provided by phone.

In Papers II-IV, which were cluster trials in which the intervention itself was targeted to a cluster (in this thesis, a NH unit), the unit managers functioned as guardians and consented to the intervention and study participation (103). In Paper II, the staff members at each NH unit were informed about the study and the different methods of data collection (food records and mealtime observations). In Paper III, in which the outcomes were measured among NH residents, informed consent was obtained before study entry from the individuals themselves or from their next of kin. In Paper IV, participant information was included in the questionnaire.

Results in brief

Paper I – Prevalence and consequences of malnutrition in nursing home residents

The prevalence of malnutrition according to the MNA-SF in the NH setting remained high, i.e., 30% were assessed as malnourished and 63% as at risk of malnutrition, and malnutrition was associated with deterioration in functional and cognitive ability and one-year mortality. Old age, high comorbidity score (according to the CCI), low BMI ($<22 \text{ kg/m}^2$) and malnutrition (according to the MNA-SF) were associated with one-year mortality (Table 4).

Table 4. Odds ratio (OR) and 95% confidence intervals (CIs) for one-year mortality using age (years), CCI score (0-37), BMI ≥ 22 or < 22 , and MNA-SF 8-14 p or ≤ 7 p as covariates in two separate multiple logistic regression analyses.

	OR	95%CI	p
BMI ^a	2.47	1.14 - 5.38	0.02
CCI score	1.60	1.23 - 2.08	<0.001
Age	1.08	1.01 - 1.14	0.02
MNA-SF ^b	2.37	1.07 - 5.26	0.03
CCI score	1.54	1.19 - 1.99	<0.001
Age	1.09	1.03 - 1.16	0.006

^a = BMI ≥ 22 or < 22

^b = MNA-SF 8-14 p or ≤ 7 p

The historical comparison of nutritional status according to the MNA between two NH samples from 2010 and 1996 revealed that despite being approximately two years older and having more prescribed drugs, the proportion of malnourished individuals was lower and the number of well-nourished individuals higher in the 2010 sample compared with the 1996 sample. The proportion of individuals with a BMI ≤ 20 was about equal in both samples, whereas the proportion of individuals with a BMI ≥ 27 had doubled in the 2010 sample (Figure 1).

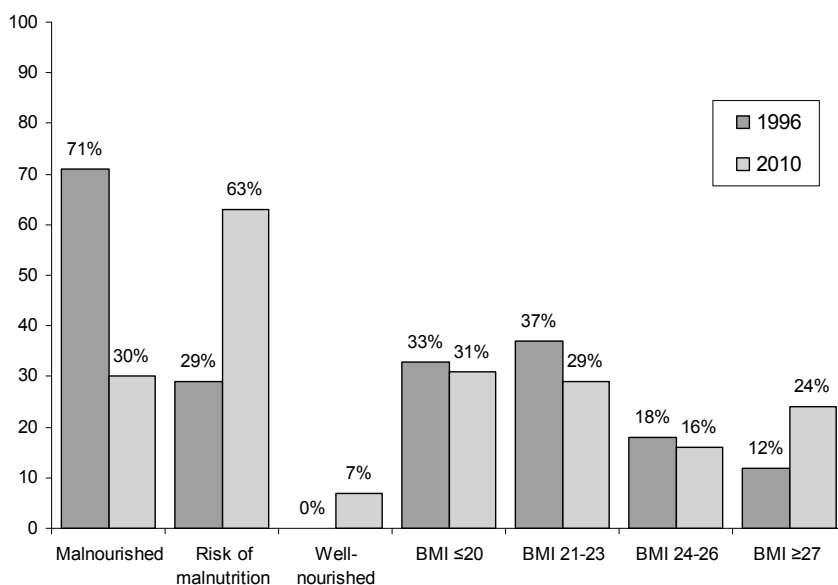


Figure 1. Nutritional status according to the MNA and the proportion of individuals with BMI ≤ 20 , 21-23, 24-26 and ≥ 27 in Swedish nursing home residents in 1996 and 2010.

Paper II – Effects of the two implementation strategies on mealtime ambience and food services

One year of external facilitation (EF) in the implementation of nutritional guidelines improved mealtime ambience with respect to arranging tables, offering a choice of beverage and more to drink, serving the meal, increasing social interactions between staff and residents, decreasing social interactions between staff and reducing noise from the kitchen compared to the EOV strategy.

However, food service routines in terms of the number of snacks and meals served, quantity of beverages served, type of snacks and beverages served and duration of overnight fasting remained unchanged in both groups.

Paper III – Effect of the two implementation strategies on clinical outcomes in nursing home residents

One year of external facilitation (EF) in the implementation of nutritional guidelines may be related to delayed cognitive deterioration among NH residents. In the sub-group of SPMSQ-tested residents (n=46), a more pronounced decline in cognitive status was observed in the EOV group than in the EF group (-2.0 (3.0) vs. -1.0 (3.0), p=0.008) at follow-up 18 months later. In the multiple linear regression analysis, the intervention group assignment (EF) remained associated with changes in cognitive status (Table 5).

Table 5. Relationship between change in cognitive status and other relevant predictors.

Predictors	Adjusted R ²	Adjusted p*
Intervention group (EF/EOV)	0.14	0.01
MNA-SF change	0.03	0.07
Gender (male/female)	0.04	0.22

* Multiple linear regression analyses with intervention group assignment, change in nutritional status, and gender as predictors of cognitive status change as defined by SPMSQ scores.

No differences between the intervention groups (EF and EOV) could be observed in nutritional or functional status among the NH residents after the implementation of the guidelines. Nutritional outcomes, i.e., weight, BMI and MNA-SF, remained remarkably stable over the 18-month observation period.

Paper IV – Effects of the two implementation strategies on organizational context and individual factors

One year of external facilitation (EF) in the implementation of nutritional guidelines improved, on average, the ability (Can) and willingness (Will) of the staff to implement the nutritional guidelines (Table 6). The staff's ability improved moderately over time in the EF group, i.e., the staff experienced a clearer assignment of responsibility regarding nutritional procedures and that they had more time, tools and support from leadership. Moreover, the staff's willingness also improved slightly over time, i.e., the staff felt that they experienced less resistance from work colleagues, that their knowledge and experience were valued, that the guidelines do work in practice and that the implementation of guidelines was not labourious.

No such change was observed in the EOV group over time, neither in the staff's ability (Can) and willingness (Will) to implement the guidelines nor in their understanding (Understand) of them (Table 6).

Table 6. The standardized factor loadings from the confirmatory factor analysis (CFA) and the mean change at follow-up from the structural equation model (SEM) for each latent construct, i.e., Can, Will, and Understand. Adapted from Paper IV.

Questions	CFA			SEM					
	CAN	WILL	UNDERSTAND	EF	EOV	EF	EOV	EF	EOV
To what extent do you feel that there are tools (e.g., utensils, assessment tools, scales, aids) to work in accordance with the nutritional guidelines?	0.62								
To what extent do you feel that you have time to work in accordance with the nutritional guidelines?	0.70								
To what extent do you feel that you have support from your leadership to work in accordance with the nutritional guidelines?	0.80								
To what extent do you feel that there is a clear assignment of responsibility between professionals regarding nutrition, food and mealtimes?	0.54								
I want to work according to the nutritional guidelines, but I face resistance from my work colleagues .		0.58							0.76
Working in accordance with guidelines means that my own knowledge and experience are not being valued .		0.59							0.45
Guidelines work only in theory , not in practice.		0.70							0.51
Implementation of guidelines is labourious .		0.67							0.64
Guidelines aim to guide and train staff.									
Food- and nutrition-related problems are common among older adults due to illness.									
Energy and protein deficits are common causes of malnutrition among older adults.									
Who should have energy- and protein-enriched food ?									
Intervention group (EF/EOV)									
Mean of latent construct at follow-up (SE)	0.554 (0.133) ***	0.102 (0.138)	0.177 (0.076) *	0.237 (0.133)	0.272 (0.193)	0.138 (0.203)			

CFA=Confirmatory factor analysis, SEM=Structural equation model, EF=External facilitation, EOV=Educational outreach visit, SE=Standard error,

***p<0.001, *p<0.05.

General discussion

The overall aims of the thesis were to update our knowledge of the nutritional situation in municipal elderly care and evaluate two different implementation strategies (external facilitation and educational outreach visits) for the implementation of nutritional guidelines in the nursing home (NH) setting. We observed that malnutrition remained prevalent in the nursing home setting, i.e., approximately a third of the residents were classified as malnourished and almost two-thirds as at risk of malnutrition according to the MNA-SF. Malnutrition was also associated with deteriorations in function and cognition and increased mortality. We also observed that the comparison between the present NH sample (2010) and a historical sample from 1996 indicated possible improvements in nutritional status over time (Paper I). We further observed that the EF strategy improved mealtime ambience in several mealtime activities compared to the EOVS strategy (Paper II), that the EF strategy may be associated with a delay in cognitive decline in communicative NH residents (Paper III), and that the EF strategy improve the staff's ability moderately and the staff's willingness slightly to implement the guidelines, whereas this impact was not observed for the EOVS strategy (Paper IV).

The prevalence of malnutrition

The prevalence of malnutrition (Paper I) in the current thesis corresponds well with the results of a systematic review by Bell et al. (16). The prevalence rates of malnutrition among NH residents varied greatly, but the majority of studies reported that approximately a third were malnourished and two-thirds at risk of malnutrition. Furthermore, our figures corresponded better with rates from long-term care (29% malnourished, 49% at risk) than with rates from the NH setting (18% malnourished, 48% at risk) in a systematic review of 240 international studies in different healthcare settings (15). Variations in how elderly care is organized in different countries might explain to some degree the difference in prevalence rates between international studies. However, two recent Swedish studies in the NH setting (25, 104), using the full MNA and MNA-SF, reported lower rates of both malnutrition (18% and 16%, respectively) and risk of malnutrition (40% and 44%, respectively) compared to our figures. These differences could be due to differ-

ences in the inclusion/exclusion criteria and geographical differences. Different tools have also been used to assess malnutrition, but the MNA-SF has been validated against the full MNA and is supposed to provide equivalent information (87). Nevertheless, the full MNA has been suggested to be a more appropriate tool for the NH population (16). However, of the 172 included subjects in Paper I, 138 (80%) received both the full MNA and the MNA-SF for their nutritional assessments. Of these 138 subjects, 33% were classified as malnourished and 60% as at risk of malnutrition, and these proportions correspond well with the figures of the overall study group (n=172, 30% malnourished and 63% at risk) assessed with the MNA-SF. Of the 138 subjects, 22 persons (16%) were categorized differently by the two tools; nine persons had a better nutritional status and 13 persons a worse nutritional status with the full MNA compared to the MNA-SF (data not previously shown). Another issue that could affect the variation in prevalence rates that is not frequently discussed is the skills of the assessor, i.e., the person conducting the nutritional assessments.

The comparison between the present data and an NH sample from 1996 (Paper I) indicated that the nutritional status of NH residents might have improved over time. However, more measurements must be performed to confirm this possible trend. What we do know is that the number of older adults is increasing and that old age, comorbidity and frailty are risk factors of becoming malnourished and dependent. Although the proportion of older adults in the population in need of social services has decreased due to the improved health among those ≥ 65 years, the absolute number of persons in need of social services and care has increased (2, 6). We also know that nutritional practice is suboptimal (29-32). Inadequate food service routines were also observed in our study (Paper II), with overnight fasts of 13-14 hours, an average of four meals (including snacks between meals) served per day and approximately 20 ml/kg bodyweight/day of beverage being served to dependent residents. A lack of knowledge and clearly defined responsibilities are frequently declared as barriers to optimal care and were identified almost 15 years ago (105). In municipal care, although the nurses are responsible for nutrition (32), they lack appropriate levels of knowledge (29, 32, 62). Questions that could be raised is how much in-depth nutritional knowledge nurses are expected to have and why more dietitians are not employed in municipal elderly care, which has the greatest nutrition-related problems.

The implementation strategies

The EF strategy was a long-term (over 1 year), multifaceted, flexible and active strategy, whereas the EOVS strategy was a more passive, didactic strat-

egy that occurred at one occasion. Both strategies were targeted to selected NH teams. Whether a multifaceted approach or a single-component approach should be used is still debated (54, 55). However, the results of this thesis indicate that the multifaceted EF strategy appears to be more effective than the EOVS strategy.

The multifaceted EF strategy involved several meetings over the course of one year between the selected NH team and the facilitator, who was a researcher and RD with several years of experience in managing projects related to nutrition in ageing. Accordingly, a question to be raised is whether the multifaceted approach or the attributes and skills of the facilitator had the most impact. Although it was not within the scope of this thesis to evaluate the skills of the facilitator, several studies emphasize that the facilitator should have credibility and relationship-building skills and be flexible and tenacious (106-108). However, we do believe that having in-depth knowledge of the content of the implementation (in this case, nutrition in ageing) is important, as previously stated by others (108-110). Being knowledgeable seems especially important when changing nutritional practices, as adverse attitudes and a lack of knowledge have been identified as barriers to changes in practice (61, 62). A recent paper indicated, however, that being a content expert is not necessarily an important facilitation factor (106) but that must depend on the target audience and what knowledge is being implemented.

Complex interventions are not easy to define, but they usually involve several components and complex dimensions, such as several possible outcomes, a variable target population, or different behaviours required by those receiving the intervention, and they allow flexibility of interventions (111). Thus, complex interventions are complicated to implement and evaluate. The implementation process in this thesis can be considered a complex intervention, as the flexible EF strategy included several components (plan, act, observe and reflect cycles, education, audit and feedback, support, guidance) targeting several staff groups (unit managers, nurses and care staff) and was evaluated using diverse outcomes (relating to NH residents, staff performance, organizational context and individual staff factors). Furthermore, the guidelines themselves are complex, as they also include several components. However, the operationalization of the guidelines together with a stakeholder group (mainly consisting of NH staff) resulted in three agreed upon focus areas (i.e., nutrition, food, mealtime) that were the priority during the interventions. The operationalization of the guidelines was considered an important step in the implementation process because guidelines that are compatible with existing practice and values are more likely to be adopted, as described in Roger's Diffusion of Innovation theory (112).

Complex interventions assessed with diverse outcomes might be warranted for this topic, since the aetiology of malnutrition is complex and multifactorial. Multimodal interventions are needed due to the complexity of food and fluid intake in older adults, as stated by Keller et al. (113). A recent systematic review, however, that evaluated the effects of multimodal interventions on nutritional status and other clinical outcomes in patients with malnutrition or at risk of malnutrition concluded that there was no evidence in favour of multimodal interventions for any of the studied outcomes. They further concluded that this finding was due to a lack of evidence rather than a lack of effect. The included studies were heterogeneous in several respects, e.g., study duration, number of participants, setting, clinical condition of the participants and intervention design (114). However, complex interventions are warranted for changing complex behaviours even if heterogeneity will challenge the reporting and evaluation of them. Improving the quality of nutritional care is a complex and demanding process, which will not be easily resolved by simple approaches.

Logical link between intervention and outcome

Considering that the intervention, i.e., the implementation strategy, and the object of implementation, i.e., the guidelines, are complex, it was essential to try to demonstrate a logical link between the intervention and the outcomes. Since positive outcomes were only observed for the EF strategy in terms of improved mealtime ambience (Paper II), delayed cognitive function in NH residents (Paper III), and improvements in the ability and willingness of the staff to implement the guidelines (Paper IV), we start with trying to understand these results.

The aim of the EF strategy was to be flexible and amenable to the staff's motivation and to actively involve them. The selected team that was exposed to the EF strategy consisted mainly of care staff (i.e., nurses' aides and assistant nurses), and they chose mealtime ambience as a priority area of change, not surprisingly, because providing an enjoyable mealtime ambience to the NH residents was the care staff's responsibility and also an area for which they have a mandate to change. Hence, there was a considerable focus on mealtime ambience during the implementation process.

There is a logical link between the two outcomes observed in staff and residents, i.e., improved mealtime ambience provided by the staff and delayed cognitive function, albeit a somewhat cautious association. Improved mealtime ambience focusing on individual preferences and choices (e.g., offering a choice of beverage, offering more to drink, presenting the main dish, increasing interaction between staff and residents) may have contribut-

ed to increased levels of interaction between staff and residents, which in turn may have contributed to cognitive stimulation of the NH residents. Engaging in social activities might protect against cognitive decline (115, 116). Others scholars have also observed positive effects on cognitive functions in NH residents after study circles (70), nutritional education (117) and improvements in mealtime ambience (78).

Other studies using similar activities as we did in the EF strategy (i.e., study circles with an opportunity to reflect and plan actions, education, support, audit and feedback) also show promising results. Study circles (69) and a multifaceted approach including education and support (71) had positive effects on staff performance in terms of improved precision in nutritional care and improved energy intake and overnight fast. The latter study, however, also included individualized meals to the residents (71). In addition, tailoring to the context, including audit and feedback and goal setting, as in this thesis, seems important in facilitation (59).

The factors that were identified as the most important in our study for being able to work in accordance with the guidelines, i.e., that best related to the latent construct Can (defined as the organizational context), were time, tools, support from leadership and clearly defined responsibility. These are frequently identified barriers in nursing home settings to improve nutritional care (29, 31, 32, 42, 52, 62, 68). Interestingly, support from leadership had the strongest correlations (0.80) with the Can construct, indicating that it is an important contextual factor, in line with the implementation literature (63-67).

The link between the EF strategy and the improvements in the staff's ability to implement the guidelines seems reasonable. The EF strategy itself aimed to set time aside for the implementation process and included the unit manager (support from leadership) at the EF meetings. The unit manager was included in the selected teams exposed to the intervention to ensure that she would provide support to the staff to later implement what had been said during the meetings. Furthermore, the practice audit and feedback of the mealtime ambience and dietary assessments provided the staff with appropriate tools, and the discussions at the EF meetings resulted in more clearly defined responsibilities.

Two of the items that related to the latent construct Will (staff's willingness to implement the guidelines) included "I want to work according to the guidelines, but I face resistance from my work colleagues" and "Working in accordance with the guidelines means that my own knowledge and experience are not being valued". The belief that guidelines replace clinical

judgement and poor teamwork among NH staff has also been reported by others (42, 118).

The logical link between the staffs' willingness to implement and the intervention is harder to establish because attitudes are more abstract. However, attitudes cannot be changed with a written or a passive approach but rather require social interactions and discussions. The more holistic approach of our facilitation approach therefore seems to be an appropriate strategy. Discussions at the EF meetings encouraged the staff to reflect on and critically evaluate current nutritional practices, and this reflection might have contributed to more positive attitudes. Workplace meetings involving all of the staff in addition to the selected team were also held (2-3 meetings/year) and might have contributed to overcoming resistance from work colleagues. The fact that the facilitator was external to the setting, was credible in terms of being an experienced researcher and was an expert in nutrition in terms of being a dietitian might have also contributed to changing attitudes.

The other outcomes

We included several outcomes both for staff performance and resident outcomes but did not achieve changes in all of them. Several diverse outcomes are usually included in implementation studies, but effects are seldom achieved in all of them. Clearly defined primary outcome are therefore emphasized (119), but also motivates us to highlight the outcomes where no effects were observed. For instance, food service routines (Paper II) were unchanged in both groups; the nutritional outcomes, i.e., MNA-SF, weight, and BMI (Paper III), remained stable in both groups; and no change in the staff's understanding of the guidelines were observed in either intervention group (Paper IV).

Food service routines (Paper II) may require more hands-on effort or a greater involvement of the nurses. Food service routines can be considered the responsibility of the nurses in terms of tailoring interventions (snacks, shorter overnight fasts, beverage quantity, etc.) based on nutritional assessments of the NH residents because the residents' nutritional status is a responsibility of the nurses. Nurses did not attend the EF-practitioner meeting to the same extent as care staff. Hence, food service routines received less focus and priority during the guideline implementation, which might also explain the stable nutritional outcomes (BMI, MNA-SF, weight) of the residents observed in Paper III.

The lack of effect in nutritional outcomes (Paper II) and the stability of these variables in both groups during the study period raises questions of what

effects can be expected in NH residents. Achieving improvements in nutritional status in an NH sample is challenging because the residents are old, have multiple diseases, have functional and cognitive impairments and are more or less in a terminal stage of life. The stable nutritional outcomes in both intervention groups may reflect the difficulties achieving positive outcomes due to these confounding factors (e.g., age, comorbidity, compliance). Therefore, in nursing home settings and other settings with an aged population with multiple illnesses, changes in care processes (i.e., the performance of the staff) might be more readily detected than outcomes in the study population.

The lack of impact on the staff's understanding of the guidelines is most likely due to shortcomings in how the variable was designed (discussed in more detail below).

Both interventions, EF and EOV, were designed to target only a selected group at each nursing home, whereas the impact of these strategies was measured on all staff. The rationale behind this approach was that the knowledge obtained by the selected team at the EF meetings would be disseminated to all the staff. Not involving all staff members had to do with resources and logistical challenges. Thus, we observed effects on the NH residents, the mealtime ambience, the staff's ability and willingness to implement the guidelines despite the fact that the EF strategy was targeted to only selected teams at the NHs (involving 10-15 individuals) and 14-15 EF-practitioner meetings were held during the year.

The last stage in implementation processes is sustainability, i.e., when the new method is integrated into the daily routines and is taken for granted regardless of staff turnover, reorganisation or political decisions. In Roger's diffusion model (112), this stage is called the "confirmation stage", whereas in Prochaska's readiness to change model (120), it is called "maintenance". This is the ultimate goal of all implementation projects/studies. Unfortunately, few studies look at the long-term effects, including this thesis. Lorefält et al. (71) observed improvements in all nutritional variables, when support from the project leader was the most intense. When the support was provided more sporadically, the MNA score, energy intake and overnight fast worsened slightly. This raises questions whether the effects of implementation efforts really persist after the observation time, and what is required to integrate a new routine into daily practice.

Methodological discussion

There are several methodological limitations that should be acknowledged and resulted in a somewhat cautious interpretation of the results of this thesis.

First, the intervention studies (Paper II-IV) were designed as cluster controlled studies, which differ from standard intervention studies targeted at individuals. In implementation studies, the intervention is targeted to a group of individuals (cluster) in, e.g., a hospital, clinic, department, unit, or, as in this thesis, an NH unit. Implementing an intervention at the group level rather than the individual level is usually accomplished to reduce the risk of contamination. However, the observations within clusters tend to be dependent, and independence is often an assumption for many of the statistical methods used for statistical inference. The degree of clustering is often measured by intraclass correlation (ICC) and any clustering must be accounted for when planning a study (e.g. power calculations) and in the statistical analyses. If the intervention study is randomized at cluster level, these studies are denoted clustered randomized studies (CRT studies). Thus, CRTs are more complex than standard intervention studies because they have multiple levels. They usually involve two levels, i.e., the cluster level (e.g., the NH unit) and the individual level (e.g., the staff or the NH residents). Therefore, CRTs are more complex to design and require in most cases more participants to reach statistical power, and the statistical analyses are more complicated (119).

Although the clustering effects were not accounted for in Paper II-IV, it can be argued in Paper II that the observations were not strongly correlated due to the different prevailing circumstances in terms of which staff were working and which residents were dining at the time of the observation. In Paper III, the ICC was 0.0667 (data not previously shown) for the outcome variable change in cognitive status, indicating a relatively low correlation between the observations. In Paper IV, the Can construct (the organisational context) remained significant ($p < 0.001$) even when clustering effects were taken into account in the analysis (data not shown), whereas the Will construct (staff attitudes) did not ($p = 0.101$). However, although being statistically significant when not taking clustering into account in Paper IV, the increase in Will was only small (0.177) and perhaps not of any great practical significance. To account for clustering we had to use another method of estimation, multilevel generalized SEM (GSEM). The drawback with this method is that it cannot provide an overall goodness-of-fit statistic, whereas the method we used in Paper IV (with polychoric correlations) could not estimate any models when accounting for clustering due to non-convergence. However, the results from Paper II-IV need to be confirmed in

future studies with a larger sample size, i.e., more clusters (NH units). Six to eight clusters are recommended to ensure valid analyses (52, 119).

Second, the NH units were not randomly assigned to the interventions (EF and EOV), which could have biased the results. The EF units were selected based on recommendations from senior community care managers. The main goal of the entire implementation project was quality improvement, which encourages the use of motivated NH units. These NH units might also represent the “most likely case”, suggesting that if implementation does not succeed when the conditions are optimal, it would most likely not succeed in any case. There was also a lack of a regular control group. However, educational strategies, such as the EOV, are standard implementation approaches and could be considered a control strategy. Furthermore, the strong ambition from the municipality to improve the nutritional care for the elderly through the guidelines would probably have made it difficult to recruit control NH units within the municipality.

Third, the participants (the staff and the NH residents) were blinded to the interventions, but the outcome assessor (JT) was not, which is a clear limitation.

Fourth, several of the evaluation tools used in this thesis, i.e., the mealtime instrument and the questionnaire, were developed within this project. These tools need to be further refined and validated in future studies. For instance, the latent construct Understand (Paper IV) showed poor model fit. Lack of knowledge is a frequently reported barrier to improved nutritional practices. However, we could not confirm this, probably due to the poor design of that variable (e.g., low variability between observations, the variable being dichotomous instead of continuous), despite the fact that the questionnaire was pilot tested.

The strength of this thesis is that we included diverse outcomes, i.e., outcomes measures for the NH residents, process measures for staff behaviour and conceptual outcomes for organizational context and individual staff factors. We also tried to establish logical links between the intervention (external facilitation) and the different outcomes.

Conclusions

The overall conclusion of this thesis is that malnutrition is prevalent in Swedish nursing homes. Implementation of nutritional guidelines by an external facilitator, as compared to traditional methods, may be more effective on mealtime ambience, provide better preconditions for change among the staff, and may have positive effects on cognition among nursing home residents.

The specific conclusions for paper I-IV are:

Paper I: Malnutrition in the NH setting remains prevalent and is associated with impairments in function, cognition and increased mortality. However, possible improvements in nutritional status among NH residents during the past 15 years were observed.

Paper II: The long-term external facilitation (EF) strategy appeared to improve the mealtime ambience in several mealtime activities.

Paper III: The long-term external facilitation (EF) strategy was associated with delayed cognitive deterioration in a sub-sample of communicative NH residents over an observation period of 1.5 years.

Paper IV: The long-term external facilitation (EF) strategy improved, on average, the ability and willingness of the staff to implement the nutritional guidelines.

Lessons learned

We are facing an ageing population. Although the older adults of today are healthier and less dependent, the absolute number of persons in need of social services and care has been increasing. We also know that the prevalence of malnutrition is high and that nutritional care practices are suboptimal. Therefore, we need to continue to evaluate and develop implementation strategies to improve nutritional care (i.e., screening, diagnosis, documentation, mealtime ambience, food service routines), as these problems will not decrease.

The lessons learned from this implementation project are that since malnutrition and nutrition-related problems are multifactorial in most cases, multifaceted interventions seem most appropriate. Furthermore, different approaches are needed to overcome the identified barriers to improve nutritional care. For instance, knowledge deficits need to be addressed with education, whereas adverse attitudes need to be discussed. In addition, the implementation strategies addressing nutritional care would most likely benefit from being directed more towards responsibility, since poorly defined responsibility is another identified barrier. For instance, nurses are responsible for the NH residents' nutritional status, and interventions addressing these issues should therefore be targeted to nurses. Practicing audits and providing feedback might also be an effective way of critically evaluating current practices in order to change practices. To achieve real long-term changes in nutritional practice, there appears to be a need of continuous support and guidance to pursue the development, and preferably by persons knowledgeable in nutrition. In this thesis, only a small selected group was exposed to the interventions. Due to logistical challenges and resource availability, this might often be a preferred approach. However, the dissemination techniques, i.e., how to spread knowledge to all staff, need to be addressed and evaluated in the future. Moreover, support from leadership appeared to be an important contextual factor in this thesis, demonstrating the importance of involving the leadership in quality improvement efforts. Furthermore, practical training was not included in the EF strategy, which we believe is a beneficial approach to changing nutritional care. In the current thesis, no qualitative methods were used to evaluate the implementation strategies, although they might be necessary to better understand and identify the successful components of a multifaceted strategy.

Svensk sammanfattning

Bakgrund

Sverige har en hög andel äldre (65 år eller äldre) i befolkningen och den siffran ökar hela tiden. År 1996 var andelen personer 65 år eller äldre cirka 17 %. År 2015 var cirka var femte person (19,8%) över 65 år och år 2060 förutses var fjärde person vara äldre än 65 år. Samtidigt sker omstruktureringar inom äldreomsorgen där kvarboendepincipen, det vill säga att underlätta för den äldre personen att bo kvar i det egna hemmet så länge som möjligt, visar sig väldigt tydligt. År 1996 bodde 127 000 personer på äldreboenden och 129 000 hade hemtjänst. År 2015 har antalet som bor på äldreboenden minskat med 39 000 medan antalet personer med hemtjänst i det egna hemmet har ökat med 94 000. Denna utveckling kan rimligen tolkas som att de som idag bor på äldreboenden är sjukare och mer beroende.

Hög ålder och sjukdom är starkt kopplat till undernäring. En nyligen publicerad sammanställningsstudie av 24 internationella studier rapporterade att i de flesta studier var cirka en tredjedel av de äldre på äldreboenden undernärda och två tredjedelar i risk för att bli undernärda.

Samtidigt har undernäring bland äldre fått ökad uppmärksamhet på senare år, vilket resulterat i olika initiativ. Här i Sverige till exempel, har regeringen under åren 2007-2012 delat ut cirka fem miljarder kronor i stimulansbidrag till kommuner och landsting för att förbättra kvaliteten av vården om de äldre, där mat och måltider varit ett prioriterat kvalitetsutvecklingsområde. Ett annat initiativ är Senior Alert, som är ett nationellt kvalitetsregister där bland annat riskbedömning, vidtagna åtgärder och resultat av undernäring registreras. Vidare har olika myndigheter, som till exempel Socialstyrelsen och Sveriges kommuner och landsting jobbat med olika kvalitetsarbeten. Ett exempel är öppna jämförelser där man kan jämföra kvaliteten på socialtjänsten och hälso- och sjukvården i hela Sverige. Lokalt, har Uppsala kommun antagit riktlinjer för mat och måltider inom äldreomsorgen i syfte att förbättra mat- och måltidssituationen för de äldre.

Däremot saknas det kunskap om hur dessa olika initiativ skall implementeras för att åstadkomma en faktisk förändring i praktiken. Processen att implementera kunskap till praktik och att ändra praxis är komplex. Forskningen

har idag inte lyckats visa vilken implementeringsmetod som är den mest effektiva i olika situationer och miljöer. De flesta implementeringsmetoder (till exempel utbildning, utbildningsmaterial, återkoppling, praktisk träning, handledning) har *någon* effekt. Huruvida man skall använda sig av en metod eller flera metoder för att åstadkomma förändring är inte heller helt klarlagt. Vidare kan andra faktorer påverka implementeringsprocessen. Till exempel personalens kunskaper, attityder, värderingar och övertygelser samt den rådande organisatoriska kontexten avseende till exempel tid, ledarskap, resurser och kulturen på arbetsplatsen kan påverka implementeringsprocessen positivt eller negativt. Implementeringsstudier inom äldreomsorgen är få, och de som handlar om mat och måltider är ännu färre.

Av dessa anledningar är det relevant att studera hur man kan implementera goda mat- och måltidsrutiner inom äldreomsorgen, att utvärdera effekterna av olika implementeringsmetoder samt att identifiera möjliga faktorer som kan påverka implementeringsprocessen. Vidare är det viktigt att utvärdera effekterna av omstruktureringen av äldreomsorgen och den samtida ökade medvetenheten kring undernäringens problematiken bland äldre.

Syfte

Det övergripande syftet med avhandlingen har varit att uppdatera vår kunskap om näringstillståndet inom kommunal vård och omsorg och utvärdera två olika implementeringsmetoder (ett års extern handledning och en tre-timmars utbildningsinsats) vid införandet av de lokala mat- och måltidsriktlinjerna antagna av Uppsala kommun (beskrivna ovan).

De specifika frågeställningarna för de olika studierna (I-IV) har varit:

- I Att beskriva näringstillståndet och dess relation till ett års dödlighet hos äldreomsorgstagare samt att utvärdera möjliga förändringar i näringstillstånd över tid (från 1996 till 2010) bland äldre på äldreboenden.
- II Att utvärdera effekterna av de två implementeringsmetoderna på personalen som arbetar på de inkluderade äldreboendena avseende matserveringsrutiner och måltidsmiljö.
- III Att utvärdera effekterna av de två implementeringsmetoderna på de äldre som bor på de inkluderade äldreboendena avseende näringstillstånd, funktionsförmåga, minnesförmåga och hälsorelaterad livskvalitet.
- IV Att utvärdera effekterna av de två implementeringsmetoderna på den organisatoriska kontexten och de individuella faktorerna hos perso-

nalen utifrån tre föreslagna förutsättningar, nämligen att personalen måste kunna, vilja och förstå riktlinjerna för att implementera dem.

Metod

De två implementeringsmetoderna som användes för att införa de lokala mat- och måltidsriktlinjerna var en tre timmars utbildningsinsats och extern handledning under ett års tid. Båda metoderna riktades sig till team, bestående av enhetschef, sjuksköterska och 5-10 undersköterskor/ vårdbiträden på de studerade äldreboendena, och genomfördes av en disputerad dietist. Den externa handledningen innebar flera olika aktiviteter såsom återkoppling, utbildning, stöd, vägledning, möjlighet till reflektion och målsättning.

I studie I och III utvärderades de äldres näringstillstånd med Mini-Nutritional-Assessment Short-Form, funktionsförmågan med ADL Barthel Index, minnesförmåga med Short Portable Mental Status Questionnaire, hälsorelaterad livskvalitet med EQ-5D, samsjuklighet med Charlson's Comorbidity Index samt blodprover på albumin, CRP, insulin-like growth factor 1 (IGF-1), kreatinin, cystatin C och vitamin D.

I studie II gjordes tre dagars uppskattade kost- och vätskeregistreringar och måltidsobservationer med hjälp av ett strukturerat måltidsobservationsinstrument och en måltidsnorm baserat på riktlinjerna och strukturen från FAMM (Five Aspects Meal Model) för att utvärdera personalens arbetssätt kring mat och måltider.

I studie IV gjordes en enkätundersökning för att undersöka förutsättningarna för personalen att använda nutritionsriktlinjerna. Frågorna i enkäten utgick ifrån tre föreslagna förutsättningar som antogs stödja en lyckad implementering, nämligen att personalen måste *kunna*, *vilja* och *förstå* riktlinjerna för att implementera dem.

Resultat

I studie I visade det sig att förekomsten av undernäring bland äldre på äldreboenden fortfarande är hög, det vill säga 30% var undernärda och 63% i risk för undernäring. Undernäring var kopplat till konsekvenser som försämrad funktionsförmåga, minnesförmåga och ökad dödlighet. Hög ålder, sjuklighet och dåligt näringstillstånd var i sin tur kopplat till ökad dödlighet. Jämförelsen av näringstillståndet på äldre på äldreboenden tyder på att näringstill-

ståndet har förbättrats över tid (från 1996 till 2010), då andelen undernärda var lägre och andelen välnärda högre.

Ett års extern handledning (studie II) vid införandet av mat- och måltidsriktlinjerna förbättrade måltidsmiljön i form av dukning, erbjudande av måltidsdryck, servering av måltiden, sociala kontakter mellan personal och de äldre samt mindre störande ljud från köket. Däremot sågs inga effekter på matserveringsrutinerna i form av måltidsordning, nattfastans längd, typ av mellanmål och dryck som serveras eller mängd dryck som serveras.

Ett års extern handledning (studie III) vid införandet av mat- och måltidsriktlinjer kan vara relaterat till en fördröjd försämring i minnesförmåga hos kommunicerbara äldre som bor på de studerade äldreboendena. Däremot såg vi inga förändringar på de äldres näringstillstånd eller funktionsförmåga.

Ett års extern handledning (studie IV) förbättrade också den organisatoriska kontexten (*kunna*) och personalens attityder (*vilja*), det vill säga personalen upplevde i högre utsträckning att de hade en tydlig ansvarsfördelning när det gäller mat och måltidsrutiner samt resurser att implementera riktlinjerna i form av tid, stöd från ledarskap och verktyg. Vidare förbättrades deras inställning att arbeta i linje med riktlinjerna. Personalen upplevde mindre motstånd från arbetskamrater, att deras egna kunskaper och erfarenheter togs tillvara, att riktlinjerna fungerade i praktiken och att införandet av riktlinjerna inte var jobbigt. Inga sådana effekter (i varken *kunna*, *vilja* eller *förstå*) observerades för personalen som fick tretimmars utbildningsinsatsen.

Diskussion

Den första frågeställningen i avhandlingen var att beskriva näringstillståndet bland äldre på äldreboenden. Det visade sig att undernäring fortfarande är väldigt vanligt på äldreboenden i Sverige och kopplat till sämre funktionsförmåga, minnesförmåga och ökad dödlighet. Däremot upptäckte vi en förbättring i näringstillståndet under de senaste decennierna. Dock måste fler mätningar göras för att se om detta är en trend eller inte.

I denna avhandling kunde vi se att den implementeringsmetod som innehöll flera olika aktiviteter och genomfördes under en längre tid, det vill säga den externa handledningen, hade bäst effekt. Vi observerade att personalen förbättrade måltidsmiljön, förbättringar hos de äldre i form av en fördröjning av försämringen av minnesförmågan, samt förbättringar i den organisatoriska kontexten och personalens attityder. Dessa effekter uppnådde vi trots att det endast var en liten grupp, det vill säga ett team bestående av enhetschef, sjuksköterska och vårdpersonal, som fick den externa handledningen, samt

att det totalt var 14-15 möten mellan den externa handledare och teamet som genomfördes under implementeringsåret. Den externa handledare var en disputerad dietist med fördjupade kunskaper kring mat och äldre, vilket vi tror är viktigt för att förändra mat och måltidsrutiner inom äldreomsorgen eftersom kunskapsbrister och negativa attityder är vanligt förekommande bland personalen.

Den externa handledningen syftade till att vara flexibel och mottaglig för personalens motivation och önskemål kring hur implementeringen skulle gå till. I efterhand kan vi konstatera att det har varit stort fokus på måltidsmiljö under implementeringsprocessen. Att det var just måltidsmiljö som blev ett prioriterat område att förändra är kanske inte så förvånande då teamet som fick den externa handledningen till största del bestod av omvårdnadspersonal (undersköterskor och vårdbiträden). Måltidsmiljö kan anses vara deras ansvarsområde och ett område där de har mandat att göra förändringar. En förbättrad måltidsmiljö med fokus på de äldres individuella preferenser och val (till exempel erbjudande om val av måltidsdryck, erbjudande om mer dryck, presentation av huvudrätt, ökade samtal mellan personal och de äldre) kan ha resulterat i ett ökat och förbättrat samspel mellan personal och de äldre som i sin tur bidragit till stimulering av minnesförmågan hos de äldre. Flera studier har även visat att det kan vara bra för minnesförmågan att engagera sig i sociala aktiviteter.

Effekterna av den externa handledningen på den organisatoriska kontexten (*kunna*) och personalens attityder (*vilja*) verkar också rimlig. Den externa handledningen innebar att tid avsattes för implementeringen av riktlinjerna och att enhetschefen (ledarskap) inkluderades i teamet för att ge sitt stöd till att jobba med dessa frågor. Att involvera och ha stöd från ledarskapet betonas också av andra forskare som viktigt när man ska förändra en verksamhet. Vidare innebar den externa handledningen återkoppling från kostregistreringarna och måltidsmiljön, vilket gav personalen verktyg att jobba vidare med dessa frågor. Diskussioner mellan den externa handledaren och personalen kan ha resulterat i en tydligare ansvarsfördelning och mer positiva attityder. Otydlig ansvarsfördelning och negativa attityder framkommer ofta i studier som hinder för att förbättra mat- och måltidsrutiner inom äldreomsorgen, och bör därför beaktas i framtida studier.

Vi uppnådde dock inte positiva förändringar i alla uppmätta utfall. Till exempel var de äldres näringstillstånd förvånansvärt stabilt i båda grupperna, det vill säga oavsett om personalen fick extern handledning under ett år eller en tretimmars utbildningsinsats. Matsserveringsrutinerna förändrades inte heller i någon av grupperna, och inte heller påverkades personalen förståelse (*förstå*) för riktlinjerna. Förklaringar till detta kan vara att det är svårt att uppnå positiva effekter på de äldre eftersom de är gamla och har flera sjuk-

domar. Vidare fick vi ingen förändring i matsserveringsrutinerna vilket också kan förklara varför näringstillståndet bland de äldre inte påverkades. Att ändra matsserveringsrutinerna hade troligen krävt mer handgripliga och praktiska metoder. Dessutom fick inte matsserveringsrutiner heller samma fokus under implementeringsprocessen. Brister i utformningen av förstå-frågorna i enkäten bidrog troligen till att inga förändringar kunde ses i personalens förståelse för riktlinjerna.

Det finns vissa metodologiska brister i denna avhandling. Implementeringsstudier skiljer sig från vanliga studier som riktar sig till individer. I implementeringsstudier vill man oftast påverka beteendet hos en grupp av människor, som i denna avhandling vill man påverka personalen på ett äldreboende. I implementeringsstudier pratar man därför om kluster, man studerar personer i ett kluster. Ett äldreboende är ett kluster i denna avhandling. Personer i samma kluster tenderar att vara mer lika varandra än personer som inte finns i samma kluster. Detta kallas för kluster-effekter och något som man måste ta hänsyn till i bland annat de statistiska beräkningarna. Detta gjordes inte i denna avhandling, vilket är en brist. Studierna i denna avhandling kan anses vara rätt små för att vara implementeringsstudier och därför bör dessa resultat bekräftas i större framtida studier med fler kluster, det vill säga fler äldreboenden.

Slutsats

Den övergripande slutsatsen av denna avhandling är att undernäring är vanligt på svenska äldreboenden, men att situationen möjligen är något bättre än för cirka 15 år sedan.

Att implementera mat- och måltidsriktlinjer genom extern handledning under ett år, tycks, jämfört med mer traditionella utbildningsinsatser, vara mer effektivt för att förbättra måltidsmiljön och ge bättre förutsättningar för förändring bland personalen. Dessutom kan en sådan implementeringsmodell vara förenad med positiva effekter på minnesförmågan bland de äldre på äldreboendena.

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Appendix I



STRUKTURERAD MÅLTIDSOBSERVATION

Ankomst matsal (klockan): _____

Typ av avdelning: Omvårdnad Demens Blandat

Typ av måltid: Lunch Middag

Maträtt: Varmrätt: _____
(Huvudkomponent: kött, fisk, fårs, korv. Bikomponent: potatis, ris, pasta, kokta grönsaker)

Tillbehör: _____
(Råa grönsaker, färsk frukt etc.)

Dryck: _____
(Lättöl, bordsvatten, mjölk m.m.)

Efterrätt: _____

Ritning av matsalen:

(P: Personal, G: Gäst)

Rummet:

Beskriv rummet:

- Miljö (*institution, hemlik etc.*)
- Väggar/tavlor
- Ljus (*belysning i rummet; dagsljus, bords-, vägg-, fönster-, takbelysning, lysrör etc.*)
- Rekvisita/dekorationer/blommor
- Formen på rummet
- Färger
- Matsalens placering i förhållande till störande moment
- Porslinet
- Anpassade möbler för funktion

R
U
M
M
E
T

Dukning <i>Rent/Ordning</i> Rent/avtorkat på borden <i>innan</i> måltiden börjar* <small>* mat/dryck börjar serveras</small> Undanplockat på borden/inget på borden som <i>inte</i> tillhör måltiden (arbetsmaterial, pärmar, böcker, tidningar, social aktivitet odyl.)	Inte alls	I ganska låg grad	I ganska hög grad	I mycket hög grad

	Inte alls	I ganska låg grad	I ganska hög grad	I mycket hög grad

Förekomst av tillbehör innan måltid* <i>Vackert/trevligt</i> <small>* mat/dryck börjar serveras</small>	Ja	Nej	Beskrivning (om ja-svar)	
Bestick	<input type="checkbox"/>	<input type="checkbox"/>	Vid varje sittplats?	Ja <input type="checkbox"/> Nej <input type="checkbox"/>
Glas	<input type="checkbox"/>	<input type="checkbox"/>	Vid varje sittplats?	Ja <input type="checkbox"/> Nej <input type="checkbox"/>
Tallrik	<input type="checkbox"/>	<input type="checkbox"/>	Vid varje sittplats?	Ja <input type="checkbox"/> Nej <input type="checkbox"/>
Servett	<input type="checkbox"/>	<input type="checkbox"/>	Servettställ?	Ja <input type="checkbox"/> Nej <input type="checkbox"/>
Kaffekopp	<input type="checkbox"/>	<input type="checkbox"/>		
Sockerskål	<input type="checkbox"/>	<input type="checkbox"/>		
Duk/löpare	<input type="checkbox"/>	<input type="checkbox"/>	På varje bord?	Ja <input type="checkbox"/> Nej <input type="checkbox"/>
Salt	<input type="checkbox"/>	<input type="checkbox"/>	På varje bord?	Ja <input type="checkbox"/> Nej <input type="checkbox"/>
Kryddor	<input type="checkbox"/>	<input type="checkbox"/>	På varje bord?	Ja <input type="checkbox"/> Nej <input type="checkbox"/>
Bordstabletter	<input type="checkbox"/>	<input type="checkbox"/>	Vid varje sittplats?	Ja <input type="checkbox"/> Nej <input type="checkbox"/>
Stearinljus/värmeljus	<input type="checkbox"/>	<input type="checkbox"/>	Tända?	Ja <input type="checkbox"/> Nej <input type="checkbox"/>
Blommor	<input type="checkbox"/>	<input type="checkbox"/>	Vissna?	Ja <input type="checkbox"/> Nej <input type="checkbox"/>
Bordsdekoration	<input type="checkbox"/>	<input type="checkbox"/>	På varje bord?	Ja <input type="checkbox"/> Nej <input type="checkbox"/>
Bröd	<input type="checkbox"/>	<input type="checkbox"/>		
Smörgåsfett	<input type="checkbox"/>	<input type="checkbox"/>		
Kanna med dryck	<input type="checkbox"/>	<input type="checkbox"/>		
Helhetsintrycket av dukningen <small>(rent/ordning/vackert/trevligt)</small>	Inte alls trevligt	Inte särskilt trevligt	Ganska trevligt	Mycket trevligt

Kommentar: (anpassad dukning efter gästerna, festdukning/vardagsdukning)				

Tid för måltiden	<i>Dryck</i> börjar serveras: Klockan:	<i>Mat</i> börjar serveras Klockan:		
Maten <i>Lockande/aptitlig</i> På tallrik ("à la carte") Från karott (ställs på bordet) Från serveringsfat (gäst tar själv)	Ja <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Nej <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
På tallriken	Varje komponent för sig: Ja <input type="checkbox"/> Nej <input type="checkbox"/>			
Färg: (komplettera varandra, kontraster)				
Doft: (doft av mat)	Ingen doft	Svag doft	Måttlig doft	Mycket doft

Helhetsintrycket av produkten (se aptitlig ut, dofta gott)	Inte alls trevligt	Inte särskilt trevligt	Ganska trevligt	Mycket trevligt

Komponenter som serveras/erbjuds				
Dryck (lättöl, bordsvatten och mjölk m.m.)		Ja <input type="checkbox"/>	Nej <input type="checkbox"/>	
Huvudkomponent (t ex kött, fisk, färs, korv)		Ja <input type="checkbox"/>	Nej <input type="checkbox"/>	
Bikomponent (t ex potatis, ris, pasta)		Ja <input type="checkbox"/>	Nej <input type="checkbox"/>	
Bröd och maffett		Ja <input type="checkbox"/>	Nej <input type="checkbox"/>	
Kokta grönsaker		Ja <input type="checkbox"/>	Nej <input type="checkbox"/>	
Råa grönsaker eller färsk frukt		Ja <input type="checkbox"/>	Nej <input type="checkbox"/>	
Efterrätt		Ja <input type="checkbox"/>	Nej <input type="checkbox"/>	
Erbjudande om dryck	Inte alls	I ganska låg grad	I ganska hög grad	I mycket hög grad
Gäst får <i>välja</i> mellan olika måltidsdryck	-----			
<i>Erbjudande om mer dryck</i>	-----			
<i>Servering av dryck utan tillfrågan</i>	I mycket hög grad	I ganska hög grad	I ganska låg grad	Inte alls
Beskrivning/presentation av dryck vid servering* * Vid servering av dryck utan tillfrågan	-----			
	Inte alls	I ganska låg grad	I ganska hög grad	I mycket hög grad
Erbjudande om mat	-----			
Erbjudande om <i>mer</i> mat	-----			
Erbjudanden om <i>annan</i> mat	-----			
Erbjudande om bröd/smörgås	-----			
Erbjudande om <i>mer</i> dessert Ej aktuellt <input type="checkbox"/>	-----			
Erbjudande om önskemål	-----			
Helhetsintrycket av serveringen/erbjudandet (grad av service)	Inte alls trevligt	Inte särskilt trevligt	Ganska trevligt	Mycket trevligt

Kommentar:

Gäst får maten beskriven	Inte alls	I ganska låg grad	I ganska hög grad	I mycket hög grad
Personal presenterar <i>varmrätt</i>	-----			
Personal presenterar <i>efterrätt</i> Ej aktuellt <input type="checkbox"/>	-----			
Sociala kontakter <i>Samtal mellan två eller fler personer</i>	Inte alls	I ganska låg grad	I ganska hög grad	I mycket hög grad
Mellan personal → gäst (P → G)	-----			
Mellan gäst → personal (G → P)	-----			
Mellan gäst → gäst (G → G)	-----			
Mellan personal → personal (P → P)	I mycket hög grad	I ganska hög grad	I ganska låg grad	Inte alls

Helhetsintrycket av mötet	Inte alls trevligt	Inte särskilt trevligt	Ganska trevligt	Mycket trevligt

Kommentar:				

Lugn och ro under måltiden	I mycket hög grad (Väldigt störande)	I ganska hög grad (Störande)	I ganska låg grad (Något störande)	Inte alls (Ej störande)
Spring (personal)	-----			
Spring (gäst)	-----			
Spring (besökare) Ej aktuellt <input type="checkbox"/>	-----			
Högt tal (personal)	-----			
Högt tal (gäst)	-----			
Högt tal (besökare) Ej aktuellt <input type="checkbox"/>	-----			
Skrammel/plock från kök	-----			
Diskmaskin stör	-----			
Annat: _____	-----			
Ljudnivå från:	Mycket hög (Väldigt störande)	Hög (Störande)	Ganska låg (Något störande)	Låg (Ej störande)
TV Avstängd <input type="checkbox"/>	-----			
Radio/musik Avstängd <input type="checkbox"/>	-----			
Telefon ringer	I mycket hög grad	I ganska hög grad	I ganska låg grad	Inte alls

Helhetsintrycket av stämningen (präglas av lugn & ro, trivsamhet)	Inte alls trivsamt	Inte särskilt trivsamt	Ganska trivsamt	Mycket trivsamt

Stämningen (måltiden som helhet)				
<i>Beskrivning av helhetsintrycket från måltiden</i>				
- atmosfären/känsla				
- service				
- sinnen				

Stöd vid måltiden	Inte alls	I ganska låg grad	I ganska hög grad	I mycket hög grad
I vilken omfattning får gäst det stöd och den hjälp för att kunna äta sin måltid (äthjälpmedel, matning, pedagogisk måltid, påputtning, personen som hjälper etc.)	-----			
Antal personal i förhållande till gäster:				
Antal personer som <i>matas</i> :				
Antal personer som <i>matar</i> :				
Personen som matar: (Beskrivning)				
Kommentar: (Tillräcklig tid måste avsättas för hjälp att äta)				
Gäst får väl tilltagen tid att äta	Inte alls	I ganska låg grad	I ganska hög grad	I mycket hög grad
I vilken omfattning <i>ges varje gäst den tid</i> den behöver under måltiden	-----			
I vilken omfattning har <i>gästerna ätit klart innan måltiden avslutas</i> (avdukning, diskning)	-----			
Kommentar:				
Tid för måltiden	Avslut för måltid: (sista gästen har ätit klart) Klockan:	Avdukning: (porslin börjar plockas undan) Klockan:	Avslut observation: Klockan:	

Helger uppmärksammas

Fråga personal:

Brukar ni göra på något annat sätt på helgerna?

- Annan dukning?
- Förrätt?
- Efterrätt?
- Alkohol?
- Variation i matsedel/meny?
- Miljö?
- Högtider, andra festligheter (*julafton, påskafton, midsommar, födelsedagar etc.*) ?

Appendix II



ENKÄT OM ”RIKTLINJER FÖR NUTRITION”

Nedan följer en enkät som handlar om Riktlinjer för nutrition. Äldrenämnden har beslutat att riktlinjerna skall gälla vid måltidsservice inom äldreomsorgen i Uppsala kommun. Syftet med enkäten är att utvärdera MuMs-projektet (Mat under Måltidsprojektet). Projektet är ett samarbete mellan Uppsala universitet och Uppsala kommun och har initierats av Äldrekontoret för att stödja kommunens verksamheter att arbeta efter riktlinjerna. Du tillfrågas att fylla i enkäten eftersom den enheten Du arbetar på ingår i projektet. Frågorna handlar om ”Riktlinjer för nutrition”, vilka i enkäten kommer att benämnas nutritionsriktlinjer. Nutritionsriktlinjerna är uppdelade i tre olika delar: nutrition, mat och måltider. Med nutrition menas riskidentifiering av ät- och måltidsproblem samt åtgärder vid ät- och måltidsproblem. Med mat menas olika kosten, dessert, nattfasta och måltidsordning. Med måltider menas måltidsmiljö och vad som händer kring måltidssituationen. Några frågor handlar om riktlinjer generellt och uttrycks då endast som riktlinjer. Dina svar kommer att behandlas konfidentiellt, det vill säga inga obehöriga kommer att kunna ta del av de uppgifter som Du lämnat och vid redovisning av resultaten kommer inte någon enskild persons svar att kunna urskiljas.

När Du fyller i enkäten ber vi Dig att ange ett kodnummer, motsvarande Dina fyra sista siffror i personnumret. Kodnumret behöver vi för att kunna jämföra i vilken grad samma personer besvarat enkäten före och efter utbildningsinsatserna.

Vid frågor, hör gärna av Dig till oss!

Uppsala 2009

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Dina uppgifter

Jag arbetar som:

- vårdbiträde
 undersköterska
 sjuksköterska
 gruppledare/gruppchef
 enhetschef
 verksamhetschef
 annat: _____

Jag jobbar mestadels: dag kväll dag/kväll natt

Födelseår: 19 _____

Antal år på nuvarande arbetsplats: _____

Frågor om användandet av nutritionsriktlinjerna

Fråga 1-8

1. Hur ofta erbjuds brukarna bedömning enligt blanketten ”Bedömning av ät- och måltidsproblem”?

Flera svarsalternativ kan anges.

- aldrig
- 1 gång per år
- var 6:e månad
- var 3:e månad
- varannan månad
- 1 gång per månad
- vid inflyttning
- vid sjuksköterskans ordination
- annat: _____

- vet ej

2. Hur stor andel av brukarna på Din enhet uppskattar Du att Ni har bedömt hittills, enligt blanketten ovan?

- 0 %
- 0 – 25 %
- 25 – 50 %
- 50 – 75 %
- 75 – 100 %
- 100 %

- vet ej

3. Dokumenteras individuella åtgärder vid ät- och måltidsproblem?

- aldrig
- sällan
- ibland
- för det mesta
- alltid

- vet ej

4. Vem dokumenterar åtgärderna?

- dietist
- enhets-/verksamhetschef
- kontaktperson
- köksansvarig
- läkare
- sjuksköterska
- olika personer för varje gång
- annan: _____

- ej aktuell fråga

-
5. Hur ofta mäts brukarnas individuella nattfasta (antal timmar mellan sista och första ät- och drickstillfället)?
- aldrig
 - 1 gång per år
 - var 6:e månad
 - var 3:e månad
 - varannan månad
 - 1 gång per månad
 - vid behov
 - annat: _____
- vet ej
6. Hur ofta erbjuds brukarna dessert till lunchmåltiden?
- aldrig
 - någon enstaka gång per månad
 - en gång per vecka
 - några gånger per vecka
 - dagligen
- vet ej
7. Hur många måltider (frukost, lunch, middag och antal mellanmål) erbjuds brukarna dagligen?
- 3
 - 4
 - 5
 - 6
 - fler
- vet ej
8. Vad av nedanstående görs **i regel** i samband med mat- och måltidssituationen?
Kryssa i de rutor som stämmer överens med vad Ni gör. Flera svarsalternativ kan anges.
- Beskriver för varje värdtagare vilken mat och eventuell dessert som serveras
 - Dukar fram bestick, glas och servetter innan måltiden serveras
 - Erbjuder samtliga värdtagare mer mat
 - Erbjuder samtliga värdtagare olika måltidsdryck
 - Har salt och kryddor på matborden
 - Sitter med vid matbordet och stimulerar till trevliga samtal
 - Stänger av TV och radio
 - Torkar rent bord innan/efter måltid
 - Uppmuntrar värdtagarna till att ta god tid på sig vid måltiden
 - Uppmärksammar helger, högtider och festligheter via menyval
 - Uppmärksammar helger, högtider och festligheter via dukning

Eventuella kommentarer:

9. I vilken omfattning har Du fått information om nutritionsriktlinjerna sedan tidigare?

- inte alls
 liten omfattning
 måttlig omfattning
 stor omfattning
 mycket stor omfattning

10. Vem har **huvudsakligen** informerat Dig om nutritionsriktlinjerna?

- arbetskamrater
 enhets-/verksamhetschef
 gruppleddare/gruppchef
 medicinskt ansvarig sjuksköterska (MAS)
 MuMs-projektet (Mat under Måltids-projektet)
 region-/områdeschef
 sjuksköterska
 Äldrekontoret
 annan: _____

ej aktuell fråga

11. I vilken omfattning anser Du att Du har tillräckliga kunskaper för att arbeta efter nutritionsriktlinjerna?

- inte alls
 liten omfattning
 måttlig omfattning
 stor omfattning
 mycket stor omfattning

12. I vilken omfattning har Du fått handledning/utbildning i **hur** nutritionsriktlinjerna ska användas?

- inte alls
 liten omfattning
 måttlig omfattning
 stor omfattning
 mycket stor omfattning

13. I vilken omfattning...

Värdera frågorna

	Inte alls	Liten omfattning	Måttlig omfattning	Stor omfattning	Mycket stor omfattning	Ej aktuell fråga
a) ...anser Du att det finns redskap (ex. köksredskap, bedömningsinstrument, vågar, hjälpmedel) för att kunna arbeta efter nutritionsriktlinjerna?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) ...anser Du att Du har tid att arbeta efter nutritionsriktlinjerna?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) ...anser Du att det finns tillräckligt med personal för att arbeta efter nutritionsriktlinjerna?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) ...upplever Du stöd från Din ledning för att arbeta efter nutritionsriktlinjerna?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) ...anser Du att det finns en tydlig ansvarsfördelning mellan yrkeskategorierna kring nutrition, mat och måltider?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) ...trivs Du på Din arbetsplats?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Frågor om Din inställning till nutrition, mat och måltider

Fråga 14

14. I vilken omfattning...	Inte alls	Liten omfattning	Måttlig omfattning	Stor omfattning	Mycket stor omfattning
<i>Värdera frågorna</i>					
a) ... anser Du att nutrition, mat och måltider ingår i Dina arbetsuppgifter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) ... tycker Du att nutrition, mat och måltider är intressanta ämnen?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) ... anser Du att nutrition, mat och måltider har betydelse för de äldres hälsa?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) ... anser Du att det finns behov av att förändra det nuvarande arbetssättet kring nutrition, mat och måltider?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Påståenden om Din inställning till nutritionsriktlinjerna

Fråga 15

15. Värdera påståendena	Stämmer inte alls	Stämmer ganska dåligt	Stämmer varken bra eller dåligt	Stämmer ganska bra	Stämmer helt och hållet	Vet ej
a) Att arbeta efter nutritionsriktlinjerna innebär mer arbete än tidigare.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Att arbeta efter nutritionsriktlinjerna försvåras på grund av att de äldre inte tycker att detta är viktigt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Jag vill arbeta efter nutritionsriktlinjerna, men möter motstånd från mina arbetskamrater.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Nutritionsriktlinjerna tycker jag är användbara i mitt arbete.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Språket i nutritionsriktlinjerna är lätt att förstå.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Påståenden om Din inställning till riktlinjer generellt

Fråga 16

16. Värdera påståendena	Stämmer inte alls	Stämmer ganska dåligt	Stämmer varken bra eller dåligt	Stämmer ganska bra	Stämmer helt och hållet	Vet ej
a) Att arbeta efter riktlinjer innebär att mina egna kunskaper och erfarenheter inte tas tillvara.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Riktlinjer fungerar endast i teorin, inte i praktiken.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Att arbeta efter riktlinjer är ett bra sätt att utveckla en verksamhet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Att arbeta efter riktlinjer fungerar inte, eftersom samarbetet inom personalgruppen är dåligt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Att införa riktlinjer är jobbigt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Att arbeta efter riktlinjer innebär att någon annan bestämmer över mitt arbetssätt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Frågor om innebörden av riktlinjer

Fråga 17-27

17. Vad anser Du är det övergripande syftet med riktlinjer generellt?*Kryssa i rutan under "ja" om Du tycker att påståendet stämmer, kryssa i rutan under "nej" om Du inte tycker att påståendet stämmer.*

	Ja	Nej	Vet ej
Riktlinjer syftar till att förbättra vården och omsorgen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Riktlinjer syftar till att alla i personalgruppen skall göra likadant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Riktlinjer syftar till att vägleda och utbilda personalen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Riktlinjer syftar till att spara pengar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Riktlinjer syftar till att styra innehålllet i vård och omsorg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Riktlinjer syftar till att effektivisera vården och omsorgen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. Vad anser Du är det övergripande syftet med nutritionsriktlinjer?*Kryssa i rutan under "ja" om Du tycker att påståendet stämmer, kryssa i rutan under "nej" om Du inte tycker att påståendet stämmer.*

	Ja	Nej	Vet ej
Att användas som rekommendationer för nutritionsarbetet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Att användas som vägledning och utbildning till personal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Att användas som information till de äldre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Att upptäcka eventuella problem med nutritionsarbetet, för att kunna göra avvikelserapporteringar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Att användas som receptbok vid tillagning av mat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Att användas som information till anhöriga	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. Värdera påståendena*Kryssa i rutan under "ja" om Du tycker att påståendet stämmer, kryssa i rutan under "nej" om Du inte tycker att påståendet stämmer.*

	Ja	Nej	Vet ej
Mat- och näringsproblem är vanligare bland äldre på grund av sjukdom.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Näringen i maten är viktig för att bibehålla olika funktioner i kroppen, såsom rörelseförmåga, minne, sår läkning, immunförsvar etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Äldre har svårare att tillgodogöra sig näringen i maten än yngre personer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Äldre personer behöver i regel mindre vitaminer och mineraler än yngre personer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Äldre personer behöver i regel mindre energi/kalorier än yngre personer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Äldre personer bryter ner näringen i maten långsammare på grund av en fördröjd förbränning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brist på energi och protein är en vanlig orsak till undernäring bland äldre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. Vad står A-kost för?

-
- Alternativ-kost
 - Allergikost
 - Normalkost till äldre
 - Anpassad konsistenskost

vet ej

21. Vem skall ha A-kost?

- Den som har allergier
- Äldre personer inom vård och omsorg
- Den som har tugg- och sväljproblem
- Den som vill ha önskekost

vet ej

22. Vad står E-kost för?

- Ekologisk kost
- Enteral kost
- Energi- och proteinrik kost
- Elementar kost

vet ej

23. Vem skall ha E-kost?

- Den med mag-tarmbesvär
- Den som vill äta ekologiskt
- Den med mag-tarmsjukdomar
- Den som bedöms vara undernärd eller i risk för undernäring

vet ej

24. Vad är syftet med en nattfasta på max 11 timmar?

- Aptiten är större på kvällen, och därför behövs kvällsmål
- Förbränningen är störst på natten, och därför behöver äldre personer nattmål
- Att sprida ut måltiderna över så stor del av dagen som möjligt, för att öka matintaget
- Att öka förbränningen genom att äta fler mellanmål, såsom kvälls-/nattmål
- Äldre har oftast en rubbad nattsömn och då ska man passa på att ge mellanmål
- Äldre personer tillgodogör sig vitaminer och mineraler bäst på natten, och därför behövs nattmål

vet ej

Övriga synpunkter eller kommentarer som Du önskar framföra

(Fortsätt gärna och skriv på baksidan!)

Tack för Din medverkan!

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