



Gourmet

Good, Nutritious Meals for All Older People

**Whitepaper on providing
nutritious, high-quality meals
for older people**

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FOREWORD

The Danish demographic trend points towards more older people and rising life expectancies, which poses a number of challenges as regards food culture, food supply and the health and welfare of older people. In Danish municipalities, demand is rising for more nutritious meals-on-wheels to older people who live at home and can no longer cook for themselves. Given this development, there is a focus on developing new customised solutions that can maintain the health of the older so they can take care of themselves for as long as possible in their own homes.

The municipalities' focus on high-quality meal services means that there is a need to assess the benefits and costs of the various types and combinations of meals. Appetising meals with sufficient high-quality protein and other key nutrients, as well as physical exercise, are prerequisites for helping the older to stay mobile, self-sufficient and living in their own homes for as long as possible.

Against this background, the Food Culture Association (Madkulturen) and the University of Copenhagen have appointed a working group with external expertise to prepare a whitepaper on providing nutritious, high-quality food to the older. This whitepaper examines the challenges of providing good meals for the older while taking into account age-related physiological, sensory and social changes that affect their life skills. The whitepaper also describes barriers to reaching this goal and knowledge gaps and proposes solutions and research areas.

The hope is that politicians, officials in the municipalities and regions, and other stakeholders will use and benefit from this whitepaper in their work on providing the best possible meals and mealtimes for the older.

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1. INTRODUCTION

Approximately 1,000,000 Danes are over 65 years old and this number is expected to rise to about 1,500,000 in the next 30-40 years. 13% of Danes over 65 years receive their food from the public services.

Many older people do very well, live active lives, eat good food and have good meal experiences. They maintain their weight, eat healthy food, age well, take steps to prevent diseases, relieve symptoms, are very socially committed and have a high quality of life.

Unfortunately, this is not the case for many others: many are at risk of developing malnutrition or are already malnourished. There are various reasons for this. For example, the older person may be living alone in their home after the death of their spouse, and may no longer experience any pleasure in eating; they may not feel physically up to shopping and cooking for themselves; they may have a diminished sense of taste and smell; they may have dementia, depression, poor dental health, or have had a stroke, making it difficult or impossible to eat; or they may be hospitalised with severe illness, which means that their nutrition is not the top priority when it comes to their treatment.

The fact is that a large proportion of older Danes do not eat optimally. Many are underweight, which is associated with increased illness and costs of treatment and care. Many lack important nutrients, which weakens the immune system and the body's ability to regenerate itself. Many miss the sense of community around meals, and their sensory needs are not being met. This can have dramatic effects on their daily lives, physical capacity, health and mood. It can also result in high costs for society, because the older people make up a growing proportion of the Danish population.

Conversely, preventing malnutrition and weight loss can both counteract disease and improve older people's mobility, independent living and quality of life. Of course we believe it is sensible to ensure that older people get the best possible food. But there are many barriers of personal, staff-related, financial and practical nature.

The intentions are good, but they are still not being put into practice well enough, and not always in a way that is backed-up by scientific evidence. In addition, the staff may not be adequately qualified, and the financial resources are limited and often not used as optimal as possible.

To shed light on this essential area in Danish society, the whitepaper's working group has reviewed the scientific literature focusing on nutritious, high-quality meals for the older, including randomised clinical studies. The research is still rather sporadic. In particular, there is a need for a systematic assessment of which interventions are especially beneficial for the older people from a holistic perspective. As this whitepaper concludes, much more research is needed in this area.

Fortunately, we already know a lot about how to focus on providing better food for the older who live at home or in nursing homes, as well as older hospital patients – for the benefit of the individual and Danish society as a whole.

2. METHODOLOGY AND READING GUIDE

The focal point of this whitepaper is the “Making the Most of Mealtimes” model (M3) developed in Canada in connection with providing meals for older people in nursing homes (Keller et al. 2014) (see Figure 2.1).

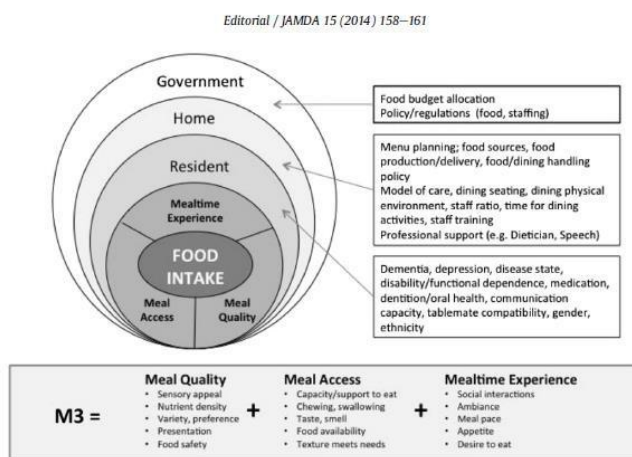


Fig. 1. Making the Most of Mealtimes (M3) conceptual model.

Figure 2.1 The “Making the Most of Mealtimes” (M3) model (Keller et al. 2014).

The M3 model was inspired by another model, the “Five Aspect Meal Model” (FAMM), which is a tool designed to give restaurant patrons the best possible meal experience. The FAMM model describes five factors that should be taken into account in connection with the meal: the physical environment, the encounter with the staff, the food, the management and the atmosphere.

Although these five factors are also very important when it comes to providing meals for older people, there are additional criteria that apply to the older. One important criterion as regards the older is meal access, i.e. the possibility of getting something to eat at all, which can be difficult, for example if the older person has trouble chewing and swallowing food or needs eating assistance. Another criterion is the meal quality, including the taste and variation of the food, which is to be eaten for a long period of time, not just in a single restaurant visit.

This whitepaper is structured as follows: first, the provision and intake of meals are described based on the criteria of meal access, meal quality and mealtimes experience. The focus here is on reduced appetite, the meal ambience and the social interaction.

The next chapter focuses on the older person (the “Resident” in Figure 2.1) and the importance of food and mealtimes for life skills, physical and cognitive function, and during hospitalisation. Then follows a chapter on the importance of the care-giving staff having appropriate education (“Home” in Figure 2.1). The following two chapters (“Government” in Figure 2.1) describe the overarching policy, i.e. the financial and organisational framework for providing meals for the older and the importance of a food and mealtimes policy.

Each chapter takes as its starting point the three settings in which the older are offered meals by the public services: home care, nursing homes and hospitals.

2.1. Methodology

During the preparation of this whitepaper, the authors reviewed the literature on food and mealtimes for the older, as well as the relevant Danish studies and recommendations of which the working group was aware. The literature reviews mostly focused on collecting background information, on randomised controlled studies within the various frameworks, as well as on whether these studies examined the effect of the various measures on the so-called patient-relevant endpoints, i.e. quality of life, physical, social and mental function, morbidity and mortality. The nutritional status is not considered a patient-relevant endpoint. In areas where such studies were not conducted, the working group chose to describe studies with different approaches to provide inspiration for further research in those areas.

2.2. Links to other initiatives

In January 2015, the National Board of Social Services will publish its “Recommendations for Nutritional Interventions for Older people with Unplanned Weight Loss”. This whitepaper refers to and quotes from that document. In autumn 2014, the Ministry of Food, Agriculture and Fisheries appointed a think-tank on meals which among other things has been tasked with giving advice on meals to supplement the existing dietary guidelines. One of the target groups is older people who eat alone. The think-tank’s work is expected to be completed during the winter of 2015 and will supplement the whitepaper.

In winter 2014, a Forum for Undernourishment was established through collaboration between the Danish Agriculture and Food Council, the Danish Society for Clinical Nutrition and the Danish Diet and Nutrition Association. The target groups include older people in nursing homes, home care and hospitals. During 2005, the forum plans to produce 10 proposals for initiatives to prevent undernourishment.

2.3. Scope

This whitepaper focuses on today’s older people in nursing homes, home care and hospitals. Only a minority of these people were overweight in their younger days, and their main current problem is inadequate intake of food and liquids. In future, older people in nursing homes, home care and hospitals may have the same problem of eating too little, but many will have been overweight for much of their lives. This double negative health impact may mean that different measures may have to be taken in the future when it comes to the older.

As mentioned, this whitepaper focuses on older people who are already underweight or have experienced unplanned weight loss. Thus we do not describe initiatives that are mainly aimed

at primary prevention. Such initiatives can be found in the prevention manual prepared by the National Board of Social Services and the National Board of Health, which is currently (January 2015) in consultation, as well as in the prevention package for food and mealtimes prepared by the National Board of Health and the Danish Veterinary and Food Administration.

2.4 Concepts

(Based on Beck et al. Recommendations for the development of “Attractive Meal Services for Older People”. Danish Institute for Food and Veterinary Research 2006.)

Nutrition is closely associated with the concept of diet and is understood as a person’s intake of nutrients (carbohydrates, fats, proteins, vitamins, minerals and water) and the body’s use of these nutrients.

Diet refers to how much and what type of food and liquids a person consumes in a specified period.

Food is used in the broad sense and comprises raw ingredients, meals, drinks and menus.

Meal services are services offered under the Social Services Act to people who cannot cook food for themselves due to temporarily or permanently impaired physical or mental capacity or special social problems. Meal services are offered to older people in nursing homes and hospitals and to older people in home care in the form of meals-on-wheels.

The menu plan is a composition of dishes and beverages that can form the basis for a meal.

Mealtimes is used in a broad sense to indicate a sequence of events ranging from planning the meal to buying and preparing the raw ingredients, setting the table, gathering the diners, eating and conversing.

The social setting of the meal refers to the sense of community among the nursing home residents who sit together at a table and the staff who either sit at the table or work near it.

Meal quality refers to the users’ assessment of the food’s taste, smell, appearance, consistency, temperature, the options and variety of the food, as well as the physical meal ambience.

Mealtime service is a broader definition of meal services, combining food and nutrition with a focus on the meal’s social interaction. Mealtime service is thus not only a question of the kind of food that is served, but also involves a number of external factors that create the meal’s social interaction.

Physical meal ambience refers to the physical setting of the meal, e.g. the table, the table setting, flowers, napkins, colours, the aroma and presentation of the food, music, and so on.

2.5 References

Gustafsson, I.-B., Öström, A., Johansson, J. and Mossberg, L. The Five Aspects Meal Model: a tool for developing meal services in restaurants. *Journal of Foodservice*; 2006, 17: 84-93

Keller, H., Carrier, N., Duizer, L., Lengyel, C., Slaughter, S., Steele, C. Making the most of mealtimes (M3): Grounding mealtime interventions with a conceptual model. *JAMDA* 2014; 15: 158-61

3. BACKGROUND

This chapter contains three sections that describe the special physiological factors regarding older people's food intake, the nutritional status of older people in the three settings, the demographic development of the numbers of older people, and the scope of meal services.

3.1 PHYSIOLOGICAL FACTORS AFFECTING FOOD INTAKE, NUTRITIONAL STATUS, PHYSICAL FUNCTION AND QUALITY OF LIFE

With age, people experience a number of anatomical, physiological and psychological changes that may have an effect on food intake, nutrient metabolism and physical function. These include poorer oral and dental health, lower metabolism, decreased muscle mass, bone decalcification, loss of nerve cells, changes in mental resilience and poorer memory. In addition, a number of medical conditions and other factors such as financial, family and social circumstances can affect dietary intake. In the following we describe some of the physiological conditions that affect food intake and nutrition and thus physical function and quality of life.

Ageing has a significant effect on weight, height and body shape. Men's body weight usually increases up to the age of 50-60, while women's increases up to the age of 70. The weight then stabilises for a period, after which it decreases in the very older. Due to changes in bones, joints and muscles, body height tends to decrease from about the age of 40, more so in women than men. With age, the body's total bone and muscle mass decreases, while body fat increases (Paddon-Jones et al. 2008). In addition, the body's fluid content is diminished because of physiological changes such as a decrease of body protein, reduced effectiveness of the anti-diuretic hormone receptors with increased fluid excretion through the kidneys, as well as reduced thirst related to a decrease in osmosis receptor sensitivity.

From the age of around 50 years muscle mass is reduced by about 1% per year (this is called sarcopenia), and the maximum muscle strength declines accordingly. The reasons for this are complex and include a reduction of hormones such as testosterone, oestrogen, growth hormone and IGF-1, as well as lower insulin sensitivity. In addition, there is a slight increase in the level of proinflammatory cytokines, changes in the function of muscle mitochondria, loss of alpha motor neurons, inadequate energy intake (especially protein), as well as reduced physical activity. Sarcopenia plays a primary role in the development of frailty and disability in the older, and it is estimated that almost one in three people over 60 years and half of people over 80 years are affected (Paddon-Jones et al. 2008). Diseases of the locomotor system (osteoarthritis, osteoporosis) often affect the older and can reduce their physical function, which in turn can increase the risk of undernourishment because it becomes more difficult to shop, cook and eat.

3.1.1 Appetite regulation and intestinal function

The appetite is regulated by a delicate system which causes us to automatically adjust our dietary intake depending on our previous meals. This means that we tend to eat less after a period of energy-rich meals and more after a period of undernourishment. However, older people's appetite regulation is not as delicate as that of younger people, which is why, after periods of illness and reduced energy intake, the older do not increase their energy intake to regain weight to the same extent as younger people. Appetite decreases as a response to the decreased need for energy with age, partly because the metabolically active muscle mass is reduced and partly because the older person is less physical active.

In addition, the tongue's taste receptors and senses of smell and sight are dulled ("food used to taste better") and the stomach's ability to expand is reduced, all of which contributes to lower appetite. The term "age-related anorexia" (Moss et al. 2012) refers to reduced appetite and food intake in the older, which can have serious consequences, since older people's need for nutrients such as protein, vitamins and minerals does not diminish, and the reduced energy intake thus increases the risk of not getting enough of these nutrients.

3.1.2 Changes in large intestine and intestinal flora

The appetite is mainly regulated by intestinal hormones which are released by food intake. With age, this hormonal response changes, so that the feeling of being full increases while hunger is inhibited. The rate of gastric emptying also decreases, which increases the feeling of being full. The number of nerve cells in the intestines decreases, which affects peristalsis and propulsive activity, so the passage rate is extended (Britton and McLaughlin 2013). This can lead to constipation, which can further reduce appetite and food intake.

Smoking, a poor diet and medication can lead to reflux disease, stomach ulcers and stomach cancer and resulting symptoms such as anorexia, weight loss, anaemia, vomiting and difficulty swallowing, which in turn can also reduce food intake.

3.1.3 Sight and dental health

Eye diseases such as diabetic retinopathy, glaucoma and age-related macular degeneration (AMD), which impairs vision, are frequent among the older (Rasmussen and Johnson 2013). Diet probably plays a role both in the development and alleviation of these diseases. Impaired vision can limit older people's opportunities to buy and prepare food.

Loss of teeth, decreased salivary function, dryness of the mouth cavity and reduced muscle and joint function can make it difficult to chew and swallow food. This can change the individual's food choices and food preparation and thereby reduce their intake of nutrients; for example, they may avoid foods that are hard to chew or boil food excessively and thus lose nutrients.

3.1.4 Cognitive function

Dementia is an age-related brain disease that impairs memory, the ability to function in everyday life and the ability to orient oneself. The most common type of dementia in the older is Alzheimer's disease, which affects 25% of people over 85 (Cardozo et al. 2013). The reasons for this are not clear, but lifestyle-related diseases and factors such as type-2 diabetes, high blood pressure, overweight, high cholesterol, alcoholism and smoking can be contributing factors.

Dementia can affect food intake, for example because the person forgets to eat and drink, loses the desire to eat, or has problems swallowing.

3.1.5 Chronic diseases

Chronic diseases, infections and other conditions that require prolonged medical treatment can lead to malnutrition in the older. Hospital admissions and medication, including possible side-effects, increase the risk of malabsorption, loss of appetite, nausea, vomiting, delayed gastric emptying and diarrhoea.

3.1.6 Dietary recommendations for frail older people with low appetites

For frail older people with low appetites, meals with a high energy density are recommended, i.e. an energy mix of 15-20% protein, 50% fat and 30-35% carbohydrates. In addition, a multivitamin and mineral supplement is recommended to meet the Nordic nutrient recommendations. Six to eight small meals daily is recommended, individually adapted to the older person's ability to chew and swallow (National Board of Social Services 2013).

Unlike many other countries, Denmark does not have systematic national statistics on the nutritional status, diet and physical activity of frail older people. Information about this is therefore derived from various research projects. Only a very small proportion of healthy older people are underweight. However, 10-20% of frail older people in nursing homes and home care who receive meals from the social services are underweight. Many frail older also experience so-called unplanned weight loss, largely due to inadequate food intake. This is a very serious condition, since unplanned weight loss is closely related to loss of muscle mass and muscle strength. Weight loss thus increases the risk of disabilities and reduced physical activity and capability. Physical function tends to decrease even after a slight unplanned weight loss of 1% per year (National Board of Social Services 2015). Malnourished older people are also at risk of eating even less and becoming even frailer.

3.1.7 Macronutrients

Eating enough protein is necessary to maintain enough fat-free body mass and avoid degradation of muscle tissue, which can lead to sarcopenia and osteoporosis. A 2009

Cochrane review of 62 clinical studies found that, in 42 studies, protein and energy supplements resulted in a slight weight gain of 2.2%, and a decrease in mortality rate among the weakest older people (Milne et al. 2009). Similarly, sufficient fat intake is necessary as a source of energy, for absorbing fat-soluble vitamins and for optimal health. Long-chain omega-3 fatty acids are especially in focus when it comes to the health of older people. Results from observational studies in particular suggest that omega-3 fatty acids can be beneficial for cognitive function, immune function (Ubeda et al. 2012) and joint pain (Miles et al. 2012). However, most available studies are observational; randomised controlled studies are lacking.

3.1.8 Micronutrients

Micronutrients are also essential to optimal physical function and quality of life (see table 3.1), and a number of studies have looked at the effect of supplements of single micronutrients on the treatment of age-related conditions. So far the results are inconclusive. The available studies have looked at the effect of dietary supplements with increased amounts of micronutrients, but not at an actual optimisation of diets. However, this does not mean that optimising the diet has no effect. Studies that have examined the effect of full-day meal plans suggest that diet optimisation improves physical function and quality of life (Trichopoulou et al. 2005).

Table 3.1 Function of essential micronutrients and consequences of deficiency in the older (modified from Mak and Caldeira 2014)

	Functions	Deficiency
A	Sight, cell division	Night blindness, blindness
B	Energy conversion and metabolic functions, DNA synthesis, cell division, homocystein metabolism, regulation of mental and neurological functions, etc.	Increased homocystein concentration, anaemia, reduced muscle strength, memory loss, confusion, depression, possible development of dementia, Alzheimer’s disease, etc.
C	Redox system, coenzyme in the collagen synthesis, iron absorption, antioxidant	Scurvy, impaired healing of wounds
D	Calcium regulation, immune system	Rickets, osteoporosis, muscle weakness, metabolic syndrome, increased mortality
E	Antioxidant	Neurological dysfunction
Calcium	Healthy bones and teeth, cell signalling, coagulation, muscle contraction, nerve transmission	Increased bone loss, osteoporosis

Magnesium	Energy conversion, cell division, muscle function, cell signalling, DNA synthesis, protein synthesis	Increased production of free radicals, inflammation, muscle loss, sarcopenia, impaired immune response, cardiovascular disease, diabetes
Selenium	Included in the antioxidant and anti-inflammatory enzymes	Impaired immune function, reduced cognitive function, increased mortality
Zinc	Normal growth and development, neurological function, wound healing, immune function	Increased risk of infections, diarrhoea, eczema, reduced sense of taste

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3.2 NUTRITIONAL STATUS OF OLDER PEOPLE IN HOME CARE, NURSING HOMES AND HOSPITALS

In Denmark, the National Board of Social Services and the National Board of Health have developed official methods to assess the nutritional status of older people in nursing homes, home care and hospitals. Currently there is no systematic collection of data in this area in Denmark, unlike in a number of other countries. For example, the Netherlands uses systematic data collections of older residents' nutritional status and has demonstrated a positive effect of this data collection on the prevalence of underweight (Meijer et al. 2014). In Denmark, indicators for assessing the nutritional status of older citizens have been proposed by Local Government Denmark and the Danish Institute for Quality and Accreditation in Healthcare (www.ikas.dk).

However, none of these were developed to identify the effect of nutritional interventions on e.g. older people's physical function and dependence on assistance with everyday living (National Board of Social Services 2014).

In many countries, the results from what is known as the minimum data set (MDS) – developed for older people in home care, residential care and acute hospitalisation – are used for quality assurance of various initiatives, since MDS contains various quality indicators (for example relating to falls, bedsores, pains and weight loss). In addition, MDS is used to calculate resource needs and adjust care tasks based on a division of residents into subgroups according to their functional ability (National Board of Social Services 2014). Finally, MDS can detect changes over time and thus is also a good tool for evaluating the effect of interventions to improve older people's nutritional status, everyday life, physical function, use of expensive health-related interventions (such as hospitalisations and rehabilitation stays), etc. and MDS has therefore been used in a wide range of intervention studies. This information is not only relevant when it comes to measuring the effect of a nutritional intervention but also more generally, for example when looking at the effect of rehabilitation interventions (National Board of Social Services 2014).

According to the 2013 National Health Profile, which surveyed approximately 16,000 representative men and women aged 75 +, 5.4% of the women and 0.7% of the men were underweight, defined as having a BMI under 18.5 kg/m² (National Board of Health 2014). It is estimated that the proportion of underweight older people in nursing homes and hospitals is up to 10 times higher.

Unplanned weight loss is particularly common among older people in hospital, but also among senior citizens who receive home care or live in nursing homes. Almost half of older people who receive home care or live in nursing homes experience unplanned weight loss (National Board of Social Services 2015).

Unplanned weight loss can have serious consequences for physical, mental and social function. Unplanned weight loss and underweight can increase older people's need for home care, and

the risk of disease, hospitalisation, readmission, prolonged hospitalisation, complications during illness and hospitalisation, and premature death (National Board of Social Services 2015).

Table 3.2 shows the prevalence of unplanned weight loss and underweight in older people. The data is based on information from nutritional screenings carried out in various projects in 2008 and 2009 with funding from the Development of Better Care for the Older Fund (National Food Institute and National Board of Social Services 2011).

A report published by the National Board of Social Services provides information on the prevalence of underweight and unplanned weight loss based on data compiled using the National Board of Social Services' nutritional assessment form (National Board of Social Services 2014).

In home care

Very few projects focus on older people receiving home care, and only a single report from Kalundborg Municipality from 2008 contains specific data on the nutritional status of older people in home care (see Table 3.2). The prevalence of underweight was on the same scale as in a Danish study published in 2002, in which 12% of the subjects had BMIs under 18.5 kg/m² (Beck et al. 2002).

One research project indicated (via the National Board of Social Services' evaluation form) that 30% of people receiving home care either had lost weight, or that it wasn't known if this was the case. 22% had BMIs under 18.5 kg/m², which is the threshold of underweight. The results are based on older residents who receive meal services and therefore are not representative.

Table 3.2 Results of screenings of older people's nutritional status (based on National Food Institute and National Board of Social Services 2011). The MNA (mini nutritional assessment) is a screening tool for assessing the nutritional status of older people.

Project municipality	n = number of older
Bornholm, home care/nursing home 2008/2009	n = 1067 BMI 18.5-24 kg/m ² : 37% BMI < 18.5: 12%
Egedal, nursing home 2008	n = 117 BMI < 24 kg/m ² : 52% BMI < 18.5: 13%
Gentofte, nursing home 2009	BMI < 24 kg/m ² : 60% BMI < 18.5 kg/m ² : 16%
Gladsaxe, nursing home 2009	n = 123 BMI < 24 kg/m ² : 61% BMI < 18.5 kg/m ² : 12%

Kalundborg, home care/nursing home 2008	n = 396 BMI < 24 kg/m ² : 39% BMI ≤ 18.5 kg/m ² : 11% n = 212 BMI < 24 kg/m ² : 48% BMI ≤ 18.5 kg/m ² : 9% n = 120 (nursing home) MNA 17-23.5: 59% MNA < 17: 21%
Copenhagen I, nursing home 2008	n = 43 BMI < 24 kg/m ² : 63% BMI < 18.5 kg/m ² : 22%
Copenhagen II, nursing home, 2008	n = 59 BMI < 24 kg/m ² : 65% BMI < 18.5 kg/m ² : 19%
Copenhagen III, nursing home 2007	n = 144 BMI < 19 kg/m ² : 22% MNA-SF ≤ 11: 90%
Køge, home care/nursing home 2008	n = 841 MNA 17-23.5: 43% MNA < 17: 16% n = 358 (nursing homes) MNA 17-23.5: 56% MNA < 17: 23%
Middelfart, nursing home 2009	n = 20 MNA 17-23.5: 45% MNA < 17: 15%
Morsø, nursing home 2008	n = 25 MNA 17-23.5: 44% MNA < 17: 12% BMI < 24 kg/m ² : 56% BMI < 18.5 kg/m ² : 4%
Odder, nursing home 2009	n = 55 BMI < 24 kg/m ² : 42% BMI < 18.5 kg/m ² : 13%
Roskilde, nursing home 2009	n = 13 MNA 17-23.5: 85% MNA < 17: 15% BMI < 24 kg/m ² : 46%
Aarhus, nursing home 2008	n = 19 MNA 17-23.5: 63% MNA < 17: 26% BMI < 24 kg/m ² : 53%

In nursing homes

Table 3.2 shows that there were significant differences in the prevalence of underweight (i.e. BMI under 18.5 kg/m²) among older people in nursing homes in 2008/2009. Thus the figures vary from 4% in Morsø Municipality to 22% in Copenhagen Municipality.

In 2013, the National Board of Social Services indicated the prevalence of underweight and unplanned weight loss based on information compiled by using its nutritional assessment form (National Board of Social Services 2014). One research project that used the nutritional assessment form indicated that 20% of older people in nursing homes either had lost weight, or that it wasn't known if this was the case. 11% had BMIs under 18.5 kg/m².

By way of comparison, the prevalence of underweight in the Danish study published in 2002 was 22%, and the incidence of weight loss was 38% among the residents who were weighed on a regular basis (Beck et al. 2002). This study also found great variation in prevalence among the five participating nursing homes.

From March 2004 to March 2007, the Department of Nutrition at the Food Institute carried out the project "Preventing Loss of Physical, Mental and Social Function by Focusing on Older People's Nutritional Status and Risk Factors". The participants in the project's first part were residents of 11 Danish nursing homes, whose nutritional status was monitored for a year. The results have been published in several scientific papers. Table 3.3 below is based on one of these (Beck et al. 2012). It shows, for example, that 16% of the subjects had BMIs under 18.5 kg/m² and that almost half lost weight over the course of a 6- and 12-month period respectively.

Table 3.3 Basic data and incidence of weight loss in older people in nursing homes in the course of a 6- and 12-month follow-up period respectively (based on Beck et al. 2012).

N	441
Age at start, years (SD)	85.2 (7.5)
Time at the nursing home, years (SD)	2.5 (3.3)
Women (%)	80
Alive at first visit after 6 months (%)	87
Alive at second visit after 12 months (%)	74
BMI, kg/m ² (SD)	23.4 (5.0)
BMI under 18.5, kg/m ² (%)	16
Weight loss of more than 1% after 6 months (%)	42
Weight loss of more than 5% after 6 months (%)	19
Weight loss of more than 10% after 6 months (%)	8
Weight loss of more than 1% after 12 months (%)	46
Weight loss of more than 5% after 12 months (%)	29
Weight loss of more than 10% after 12 months (%)	14

In hospitals

The national database on geriatric patients compiled information about geriatric patients' weight development during hospital stays until 2013 (national database on geriatric patients, annual report 2013). This registration was stopped in 2013, as it was considered that the information was already being registered during the assessment of the risks to the patients' nutritional status. The database stills collects information about patients whose BMI is measured when they are admitted to hospital. However, the specific results, such as the proportion of older people with BMIs below 18.5 kg/m², are not available.

Thus the annual report from 2012 is the last report containing data on weight development (national database on geriatric patients, annual report 2012). Of the 7,797 geriatric patients (58%) who were weighed both on admission and discharge, 43% had lost weight during their hospital stay. Two recent Danish studies among older patients in poor nutritional condition have shown that weight loss typically continues for at least three months after discharge (Beck 2013, Beck 2014).

Two Danish observational studies contain information on the BMIs of older patients. One of these studies stated that 41% of older patients had BMIs under 22 kg/m² (Poulsen et al. 2006). In the second study, only 14% of patients over 65 years had BMIs below 18.5 kg/m² (Beck et al. 2000).

Summary

Data from various development and research projects suggests that many older residents in nursing homes and hospitals experience weight loss.

In general, it appears that older people in nursing homes and home care who receive meal services are more often underweight than healthy self-sufficient older people.

3.2.1 Proportion of older people and the extent of public meal services for the older

According to Statistics Denmark's projections, the number of older people over 65 years of age will increase by approximately 50% over the next 30 years. The number of people aged 85 years or above will increase most (Figure 3.1). Although in general, the older are expected to be more self-reliant and in better health, it is still likely that more and more will use various types of meal services in the coming years.

Statistics Denmark's projections also show that the proportion of older people in Denmark of non-Western origin will increase dramatically, and that older non-Western people will make up about 15% of all older people in the year 2050, which may require changes to the meals offered to the older.

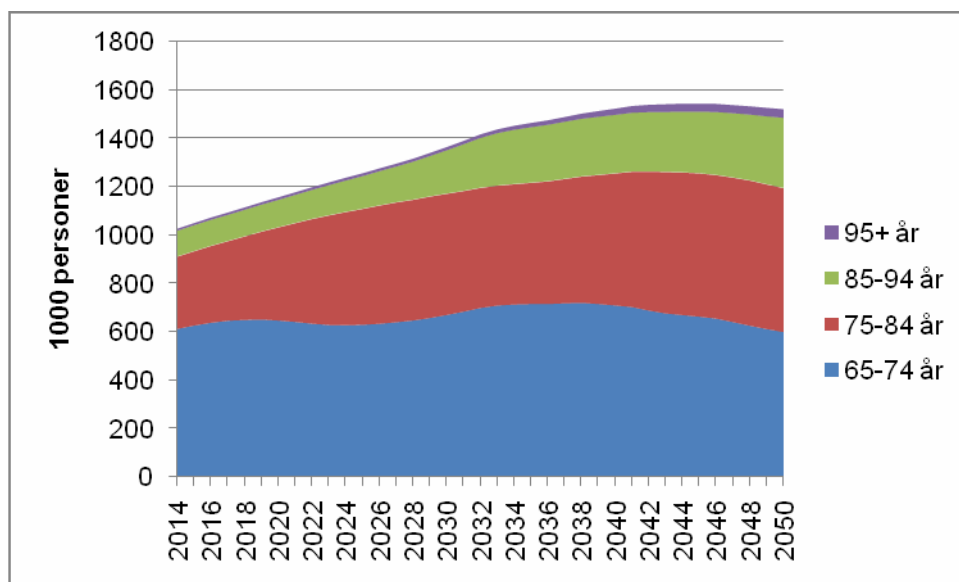


Figure 3.1 Statistics Denmark's projection of the number of older people until 2050, divided into age ranges. Blue=65-75 years of age, red=75-84 years of age, green=85-94 years of age, purple=95+ years of age.

In addition to the demographic developments, some aspects of the general social developments will also play a role when it comes to meal services for older people in the future. For example, the retail trade will undergo a structural development whereby grocery stores will increasingly be concentrated in larger cities, meaning that older people in rural areas and smaller towns will have fewer opportunities to shop and cook for themselves if their mobility is limited, e.g. if they have no car, driver's license or public transport links. Such developments will increase the need for well-function meal schemes for these older people.

In 2006, the consultancy firm Rambøll produced a survey of meal services for the Ministry of Social Affairs (Ministry of Social Affairs 2006). In 2008, Local Government Denmark and the Ministry of Welfare published a document detailing the costs, user fees, organisation, etc. of meal service schemes in 2007.

According to Local Government Denmark (2008), meal services for citizens in their own home usually consist only of the main meal of the day (typically a main course and a side dish). According to Local Government Denmark (2008), the average user fee for a meal service in a private home was DKK 1,541 per month in 2007, varying from an average of DKK 1,251 per month in the 10 municipalities with the lowest fees to DKK 1,854 per month in the 10 municipalities with the highest fees. Municipalities can provide subsidies for meal services in private homes, and in 2007 an average of DKK 426 was provided per month. 14 municipalities offered no subsidies, while the average for the 10 municipalities with the highest subsidies was DKK 1,442 per month. There was apparently no significant correlation between the sizes of the user fees and the subsidies. In municipalities with high subsidies, the total price of the meal service was almost twice as high as in municipalities without subsidies.

Meal services in nursing homes typically consist of full-day meal plans. For full-day meal services in nursing homes, the average user fee was DKK 3,001 per month, varying from DKK 2,440 per month in the cheapest municipalities to DKK 3,821 per month in the most expensive municipalities. This should be seen in the light of average production costs of DKK 3,818 per resident per month (varying from DKK 2,762 to DKK 5,416 per month in the 10 cheapest and most expensive municipalities) according to Local Government Denmark (2008).

According to Local Government Denmark’s publication, almost 51,000 older Danish people received meal services in their private homes in accordance with the rules on free supplier choice in the municipalities in 2007. There are no statistics on the number of recipients of meal services in nursing homes, but the publication points out that there were almost 45,000 nursing home places in 2007. In addition to this, approximately 10,000 people live in residential homes under sections 107 and 108 of the Social Services Act (which includes temporary residential care homes, etc.). Thus it is estimated that there are 100-110,000 older users of meal services. As Table 3.4 shows, in 2007 there were approximately 835,000 citizens over 65 years of age. Thus the older people made up 13% of the users of meal services. If we assume that users of meal services in their own homes are also typically assessed for their need for home care, these users accounted for approximately 45% of the older people who received home care.

Table 3.4 Older users of meal services

	2008	2009	2010	2011	2012	2013
Total no. of older people	853.0	875.5	902.9	933.8	968.1	999.8
Residents in nursing homes	9.3	8.4	7.8	6.8	6.3	5.1
Residents in nursing homes primarily for older people	30.6	31.2	32.2	32.8	33.3	33.9
Receive home care	140.2	139.2	134.5	126.0	117.9	111.3
Men	36.0	36.5	35.7	33.5	31.5	30.1
Women	104.1	102.7	98.8	92.5	86.3	
	81.2					

Table 3.4 shows that the number of people who receive home care has decreased quite sharply since 2008, although the number of older people over 65 years has increased. This can be due to the fact that the older people have become more self-reliant during this period, but is perhaps more likely a result of the significant restructuring and reprioritisation of care in many municipalities during this period. It is therefore not entirely clear whether the need for meal services has increased or decreased in recent years. Moreover, it is uncertain whether the municipalities can continue to reprioritise their resources to accommodate the rising number of older people in the coming years.

With an average of approximately 1,000 users per municipality, meal services play a significant role in the municipal budgets and financial prioritisations – a role that is set to

grow in the coming years. Meals are expensive to produce and distribute for the municipalities, but they are also a source of revenue due to the users' fees.

Since there is not necessarily a one-to-one correlation between costs and user fees, the municipalities' net costs (i.e. the differences between the costs and user fees) for meal services for the older may be one area where savings can be made, either in the form of increased user fees or requirements for cost reductions.

The latter could entail a risk of rationalisations of food production, which could affect the quality of the food and/or mealtimes, e.g. by limiting users' opportunities to eat with others in cosy surroundings. However, rationalisations can also lead to more efficient organisation of the production, e.g. through organisational changes that do not necessarily affect quality, as long as the opportunities are not already exhausted.

One financial and organisational barrier may be that the suppliers do not have sufficient financial incentive to provide high-quality meals for the older. Given that the sector that supplies meals to the older is likely to grow significantly in the coming years, it is important to look at these financial and organisational factors.

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4. MEAL QUALITY

This chapter consists of three sections. The first section describes the official recommendations for food and liquids for older people in nursing homes, home care and hospitals. The second section concerns the importance of sensory changes and taste preferences to older people's intake of food and enjoyment of mealtimes. The third section deals with the diets provided to older people in nursing homes, home care and hospitals.

4.1 RECOMMENDATIONS FOR FOOD AND LIQUIDS FOR OLDER PEOPLE IN NURSING HOMES, HOME CARE AND HOSPITALS

It is important that the menus offered to older people in the three different settings (at home, in nursing homes and in hospitals) are adapted to their individual needs and ability to eat. A close collaboration between caregivers and the kitchen staff is therefore necessary.

There are official recommendations for the food and liquids that older people in the three settings should be offered. These are described in the "Recommendations for Danish Institutional Diets" (Pedersen and Ovesen 2009) and in The Complete Danish Diet Handbook (www.kostforum.dk). These recommendations are briefly reproduced below.

4.1.1 Normal menu

The normal menu is designed for older people with good appetite who maintain their weight. Older people who score 0 points on the National Board of Social Services' nutritional assessment form under "assessment of nutritional status", or older patients who score 0 points according to the National Board of Health's method for assessing risks to their nutritional status are usually offered the normal menu (Technical University of Denmark and National Board of Social Services 2012, The Complete Danish Diet Handbook).

4.1.2 Menu for older people with low appetites

In the menu for older people who eat little, approximately half of the energy comes from fat. This menu consists of three small main meals and three to five snacks throughout the day and is designed to stimulate the appetite in older and ill people with reduced desire to eat. Older people who score 1 or 2 points on the National Board of Social Services' nutritional assessment form under "Assessment of nutritional status" or older patients who are at risk of worsening nutritional status and score 3 points or more according to the National Board of Health's method for assessing risks to their nutritional status should be offered menus for people who eat little (or a chewing- and swallowing-friendly menu).

It is especially important to offer energy and protein drinks as snacks, since most people find it easiest to get energy by drinking. In addition, they are less likely to lose their appetite for the main meals. The snacks should constitute up to half of the day's energy content, so it is very important to ensure that the older consume them (Technical University of Denmark and National Board of Social Services 2012, The Complete Danish Diet Handbook).

4.1.3 Food that is easy to chew and swallow

A chewing- and swallowing-friendly menu is a special menu for older people with low appetites; it has a softer consistency and is important as a nutritional addition.

A chewing- and swallowing-friendly menu is often suitable for seniors and patients who have difficulty chewing or swallowing or need help to eat, e.g. because of paralysis, dementia, Parkinson's disease or poor dental health.

The snacks should also constitute up to half of the day's energy in this menu, so it is essential to ensure that the older consume them (Technical University of Denmark and National Board of Social Services 2012).

4.1.4 Diet

Diets are used as part of the treatment of diseases and conditions such as diabetes, cardiovascular disease, obesity and kidney disease. However, when it comes to frail older people, there is a lack of documentation of the beneficial effect of most diets in the course of their diseases, except in the case of kidney disease. Older people with kidney diseases should be assigned a clinical dietician.

In addition, older people in nursing homes, home care or hospitals should not be put on diets without the close collaboration of a physician (Technical University of Denmark and National Board of Social Services 2012).

4.1.5 Specifically for nursing homes

Meal services for residents in nursing homes, etc. consist of a full-day meal plan that meets the resident's need for food and liquids for 24 hours. A full-day meal plan typically consists of six servings: three main meals (breakfast, lunch and dinner) and three snacks (late morning, afternoon and late night). A full-day meal plan typically includes beverages such as coffee, tea, milk, juice, juice and water, but does not usually include capsule products.

Residents usually have the opportunity to opt out of all or part of a full-day meal plan. The full-day meal plan is typically divided into different modules, for example a morning, afternoon and evening module, and the user has the opportunity to opt out of individual modules. However, some municipalities stipulate that if a resident needs to receive a special nutrient-rich diet for health reasons, he or she should receive a full-day meal plan (Deloitte

2009).

4.1.6 Specifically for delivery meal services

As a general rule, the food should be supplied seven days a week. If the kitchen only supplies a main course, as is often the case, the energy content of the main course should make up at least 30% of the energy content of a whole day's menu, i.e. in practice about 2.7 MJ per day. The percentage of energy content in the main course should correspond to that of the full-day meal plan (Pedersen and Ovesen 2009).

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4.2 SENSORY CHANGES AND TASTE PREFERENCES

4.2.1 Why it is important

Most people's food preferences and general sensory experiences in connection with food happen at an early age and remain relatively stable through adulthood. On the other hand, there are indications that food preferences change at an advanced age (Dovey et al. 2008), but the reasons for this are not yet clear. There are probably several factors at play, such as changes in diet and the functions of the sense organs (taste, smell, hearing, touch and sight), as well as difficulty remembering to eat, retaining sensory memories and gaining new sensory impressions. Sensory changes, as well as changes in living conditions, personal well-being and depression can all reduce the appetite.

A critical period occurs when the older person loses the ability to control their own food supply. Older people who are no longer able to make their own customary food are likely to eat less if the food is not what they are used to. It is a big challenge for catering staff at nursing homes and hospitals, as well as for meals-on-wheels services, to provide the individual older person with meals that are tailored to their preferences and at the same time are nutritious, tasty and well made. A meal can easily be of a high culinary quality from the chef's point of view, and still not appeal to the "customer's" taste.

4.2.2 Sensory changes

Food intake is affected by the individual's sensory sensitivity to particular tastes and textures. Some sensory impressions stimulate food intake (sweet flavour, soft consistency, etc.), whereas other flavours (e.g. bitter and strong) and hard textures reduce the desire to eat. In addition, the person's own experience of the sensory aspects of the product and how full it makes them affects how much of it they eat.

The senses are central to the perception of the food's quality. In healthy adults the senses are usually very stable and are therefore important for determining whether a food or a meal meets one's expectations. The senses can weaken as we get older, which can affect how satisfied we are with a certain food or meal. A high consistency between expectations and the experience of the meal's quality is an essential factor in food intake.

It is well documented that the senses weaken with time. In particular, sensitivity of taste and smell and the ability to discriminate between different tastes and smells start to fade from around the age of 55, often a little more slowly for women than men (Figure 4.1). However, this differs widely from person to person: some people preserve their sense of taste and smell into old age, while others start to lose their ability to taste relatively early (Doty 2014). Impairment of the sense of smell is also closely linked to changes in memory function, which in turn can be related to the development of forms of dementia such as Alzheimer's disease.

Dementia affects the sense of smell earlier than the other senses and can be tested with specific scent tests (e.g. Doty 2003).

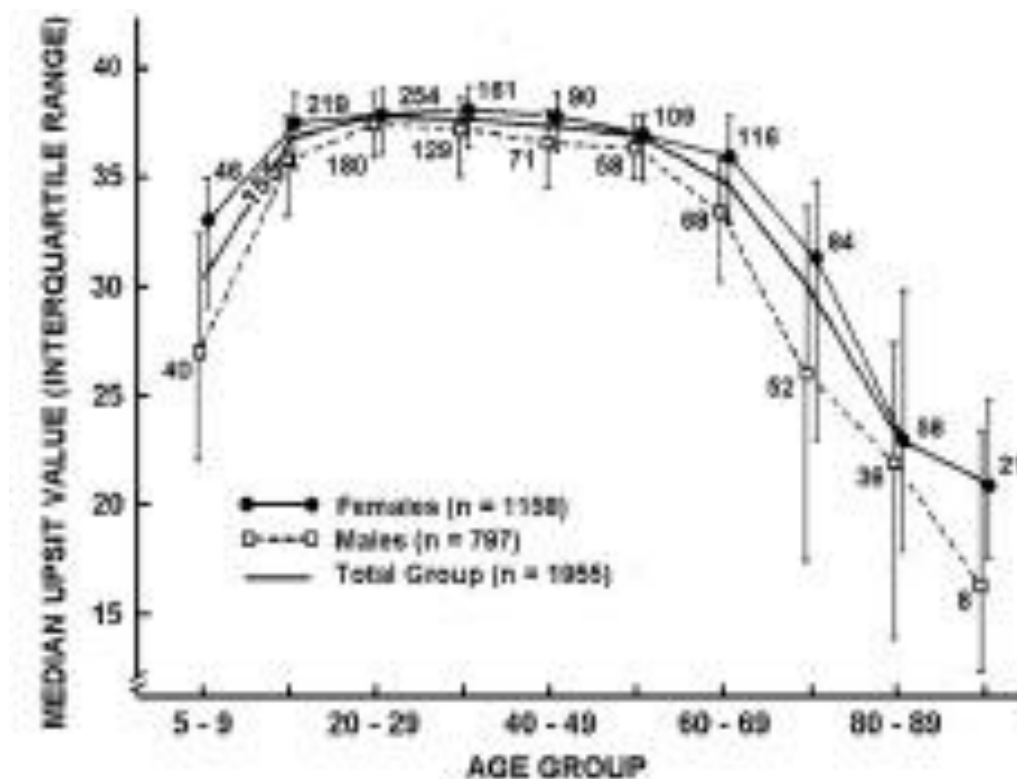


Figure 4.1 Reduction in the sensitivity of the sense of smell as a function of age (Doty 2014).

Disorders of the sense of smell are very common: 20% of the population suffers from one or more smell-related dysfunctions. Losing the sense of smell mainly interferes with the ability to enjoy meals. Most people can manage this limitation of the sense of smell, but a minority have considerable problems and experience a noticeable decrease in their general quality of life and become more vulnerable to depression (Croy et al. 2014).

Smell is essential to sensing nuances of taste. The sense of taste, too, is affected by the ageing process. The taste buds change in older people, as does the processing of taste signals to and in the brain. Several studies have shown the consequences of this in the form of reduced sensitivity to and discrimination between basic tastes. Less saliva production while eating and changed saliva composition affects the release of flavour in the mouth. Medication can affect the experience of aromas and flavours (Doty 2003). There is still insufficient systematic information about how the combination of medicines and changes in diet affect the sense of taste.

The literature shows that the decline in the function of the senses differs fairly widely from person to person. At the same time, only relatively big changes affect older people's daily routines and living conditions. In many cases, moderate changes in taste and smell do not

affect the experience of the quality of food or food preferences (Mojet et al. 2001; Mojet et al. 2003; Kremer et al. 2005; Kremer et al. 2007; Croy et al. 2014; Giacalone et al. 2015).

4.2.3 Food preferences and desire to eat

There is a substantial amount of information about the mechanisms involved in the development of food preferences and eating habits, especially in children and younger adults. The degree of acceptance of new foods varies throughout life (Figure 4.2). Adults have a very stable preference for the foods they have learned to eat, while still remaining open to new foods. This changes in old age, when people tend to become more averse to new foods (Dovey et al. 2008). The reasons for this are not yet entirely clear, but are likely to be related to health issues, changes in the supply of food, as well as a number of psychological and social factors.

Many food preferences are learned through frequent exposure to certain foods in various eating situations, which are linked to the local food culture one grows up in. Through exposure one learns to associate certain foods and products with certain sensory experiences and to eat foods in certain portions. This presents a challenge to the older person who, having been self-sufficient suddenly becomes dependent on a meal service and has to adapt to a new diet. There is insufficient systematic information about how new food is accepted by older people and how the level of acceptance relates to their health and well-being.

There have only been a few studies on older people's food preferences and habits. It is likely that the food preferences of the older have specific patterns that can be identified and grouped through segmentation analyses. Models based on these segmentation analyses can be used to plan meals for individual people based on their preferences and eating habits. Predictive consumer models are known from consumer analyses of adults, but also have potential to be further developed with the care sector of older people in mind. New methods have been developed to identify dietary preferences and fussy eating in older people (e.g. Maitre et al. 2014; Den Uijl et al. 2014), but it may also be possible to adapt and use other methods of measuring food preferences and phobias in adults.

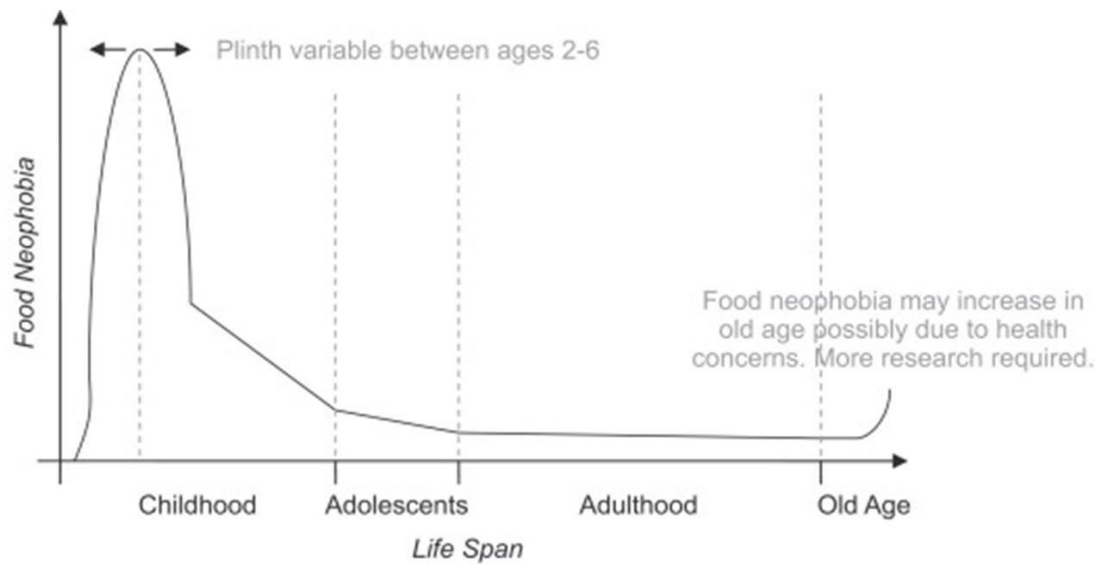


Figure 4.2 Development of food acceptance throughout life (Dovey et al. 2008).

4.2.4 Official Danish recommendations

The older people's food preferences are taken into account to some extent when the municipal meal service offers are planned. The National Food Institute and the National Board of Social Services (2012) have prepared a guide to provide nutritious diets to older people in nursing homes and home care. The guide suggests ways to involve older people in planning the meals and refers to material on the National Board of Social Services' website. Inspiration for the dialogue with the older can be found in the pamphlets "Open Me – Refrigerator", "Open Me – Kitchen Cupboard" and "When You Need to Put on Weight" (National Food Institute and the National Board of Social Services 2012). The government has decided that older people receiving home care should be offered a choice between at least two meal providers.

4.2.5 Barriers

Older people's changing perceptions of food can have important consequences for their food intake and nutritional status. We still lack sufficient understanding of the causes of these changes and about measures that can stimulate food intake. A number of options for stimulating appetite should be examined, such as providing tastier meals of a high culinary quality or food-nudging to remind the older of their mealtimes.

To help older people eat more, we need a better understanding of the degree of pleasure the older take in eating a delivered meal and of the options for letting them compose their own meals.

There is a fair amount of information about the decline in the function of the senses, but not about when this begins to affect the older person's quality of life.

More knowledge is needed about the importance of sensory memory for food choices and quality of life in old age and what can be done to promote quality of life.

4.2.6 Areas where more research is needed

In Denmark there is no systematic registration of sensory changes in the older and their food preferences. Gaining more research of this through cohort and intervention studies would help develop test methods and give the municipalities specific information they could use to develop and adapt meal services in nursing homes, home care and hospitals. It is very important that the food for the older is matched as closely as possible to the individual's needs, eating patterns and preferences. Areas where knowledge is lacking include:

- Encouraging food acceptance and new eating habits in the older.
- The importance of altered sensory memory for food acceptance.
- Sensory factors that promote appetite and food intake.
- Basic preference types, i.e. segmentation of older people into food preferences.
- Systematic information about how combinations of medicines and changes in nutrition affect the older persons taste sensations.
- Knowledge of preferences and food habits among older people.

4.2.7 Next steps

There is a need for research into the following areas, among others:

- Identifying and segmenting food preferences in older people in nursing homes and home care in order to form a better basis for developing meal services and deliveries.
- Identifying food preferences from an earlier age (55+) to provide a guideline for meal services for the future generations of older people.
- Gaining a better understanding of the mechanisms (sensory factors, exposure and memory) that form the older persons preferences for new foods and product categories, and using these to promote quicker acceptance and stable food intake.

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4.3 DIETS FOR OLDER PEOPLE IN NURSING HOMES, HOME CARE AND HOSPITALS

4.3.1 Why it is important

Diets involving food and mealtime restrictions can have a negative impact on the nutritional status and quality of life of older people. It is therefore important that restrictive diets are only offered on the basis of evidence.

4.3.2 Use of disease-specific diets

In nursing homes and home care

A survey of residents in 11 different Danish nursing homes showed that 10% had diabetes, 5% had cardiovascular diseases, and 13% had BMIs over 29 kg/m² (Beck and Damkjær 2007). Among the older with BMIs over 29 kg/m² there was a higher prevalence of lifestyle diseases than among those with BMI less than 29 kg/m², but also better survival and quality of life (Beck and Damkjær 2008). The available data does not show whether the residents with lifestyle diseases were on disease-specific diets.

The report “Meal Services in Nursing Homes” (Beck and Kofod 2003) shows the frequency of different diets offered to older recipients of meal services in nursing homes and home care. The total number was 5,572, which corresponds to 15% of the total food that was produced. By far the most frequent diets were disease-specific diets designed to counteract obesity, diabetes and cardiovascular diseases. 55% of these diets were diabetic diets (almost 10% of all produced food), 13% were energy-reduced diets (2% of all produced food), and 12% were fat- and/or cholesterol-reduced diets (almost 2% of all produced food). By comparison, diets for people with low appetites made up 6% of all the food produced. As far as we know there is no newer data, but the websites of various meal service providers status that the disease-specific diets are still offered.

In hospitals

There is no information on the use of disease-specific diets for older people in hospitals.

4.3.3 Dietary interventions

In nursing homes

No systematic reviews of the evidence basis for disease-specific diets have been found. One review paper considers, among other things, disease-specific diets designed to counteract obesity, diabetes and cardiovascular diseases (Darmon et al. 2010). As regards energy-reduced diets, the authors conclude that these should be avoided for older people over 80

years due to the risk of loss of muscle mass that often accompanies weight loss. A single randomised controlled study was found that dealt with type-2 diabetes (Coulston et al. 1990). 18 residents of nearly 80 years of age in nursing homes with well-treated type-2 diabetes and BMIs of around 25 kg/m² were put on a diabetes diet for four weeks, followed by eight weeks with regular food, and then again four weeks with a diabetes diet. The participants increased their energy intake during the period when they ate normal food, mainly because they ate more cakes and sweets. However, they were not people with low appetites beforehand. During both periods, 50% of their calorie intake was made up of carbohydrates. During the period with a regular diet, the proportion of their calorie intake made up by fat rose from 31% to 35%. There was no difference in weight, blood sugar and cholesterol. It is not clear what the participants thought of the changes, for instance whether they had difficulty accepting that the foods that had been forbidden were now allowed again. This was a small study involving well-treated participants with normal weight and a relatively small change of diet, so it is difficult to make any general conclusions based on its results.

Similarly, there does not seem to be any evidence as regards fat- and cholesterol-modified diets, so the preliminary conclusion must be that diets should be based on individual assessments. As in the case of overweight and high blood pressure, the paradox is that there is better survival among older people with high levels of total cholesterol (Petersen et al. 2010).

In home care

No intervention studies among older people receiving home care have been found.

In hospitals

In a Swedish study, older patients were given guidance from a clinical dietician once just before their discharge and then once after (Persson et al. 2007). The focus of the intervention group was to increase the intake of fatty foods. At the same time the participants were offered an industrially manufactured nutritional supplement. Cholesterol and other values were measured in the course of the study. A positive effect was found on weight and everyday living functions, but no change in cholesterol levels after four months. Unfortunately the resulting diet composition is not available.

4.3.4 Official Danish recommendations

Pedersen and Ovesen (2009) make the following recommendations for institutional diets:

Like other patients, patients on disease-specific diets can be at risk of undernourishment [...]. In such cases it may be necessary to deviate from the diet to restore a good nutritional status. If the patient is at risk of malnutrition, the diet should be changed to the hospital diet or the diet for people with low appetites. The same applies to older people in nursing homes and home care. In any case it is advisable to work with a clinical dietician. Normal menus should

only be used for nutritionally “healthy” people who are hospitalised, moved into nursing homes or receive meals-on-wheels.

4.3.5 Barriers

There is rarely a chance to make an individual assessment, which is necessary to determine whether an older person benefits from a certain diet.

If an older person has been on a certain diet for many years, it can be hard for them to understand that it is suddenly possible to eat as much as they want.

4.3.6 Areas where more research is needed

There is very limited understanding of the effect of disease-specific diets for older people with diet-related lifestyle diseases in all three settings.

There is a lack of new data on the prevalence of lifestyle diseases among frail older people, as well as on the effect of different disease-specific diets.

There is also a lack of information about the effect of diets for older people with low appetites on their blood sugar, cholesterol values, etc.

4.3.7 Next steps

More research is needed in the areas pointed out above.

4.3.8 References

Abbott RA et al. Effectiveness of mealtime interventions on nutritional outcomes for the elderly living in residential care: A systematic review and meta-analysis. *Ageing Research Reviews* 2013; 12: 967– 981

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5. MEAL ACCESS

This chapter consists of three sections focusing on different aspects of older people's ability to eat and access food. It can be difficult for older people to eat if they are dependent on eating assistance or have trouble chewing and swallowing food.

5.1 EATING ASSISTANCE IN NURSING HOMES, HOME CARE AND HOSPITALS

5.1.1 Why it is important

Weakening of the hands and arms can cause problems eating and drinking. Older people may have trouble opening packaging, peeling vegetables or holding a knife, fork, frying pan, coffee mug, or a heavy glass. It can be hard to bring food and liquids to their mouth or it can take so long to eat that the food gets cold. Some older people are unable to cook for themselves, which can make it hard to retain their life skills. Others need to be fed and in these cases it is especially important to ensure they have a good mealtime experience.

5.1.2 The importance of eating assistance to ensure intake of food and liquid

In nursing homes and home care

Need of eating assistance is one of the risk factors in the National Board of Social Services' nutritional assessment form. The reason for this is that a close correlation has been found between need of eating assistance and an increased risk of weight loss and death during a 6- and 12-month follow-up period, respectively, for older people in three nursing homes (Beck 2015). In this study almost one in three residents needed eating assistance.

The National Board of Social Services' cost-effectiveness study, which used the nutritional assessment form, found that 16%, 12% and 44% of residents at the three participating nursing homes needed eating assistance – defined as assistance with setting the table, cooking, serving and eating (National Board of Social Services 2014).

It is unclear how many older Danes receiving home care need eating assistance. If the nutritional assessment form were applied to older people receiving home care, all those who receive meal services would score points in the risk factor category "needs eating assistance". However, the experiences from the cost-effectiveness study show that this category was rarely selected for senior citizens (National Board of Social Services 2014).

The report "Mealtime Services in Nursing Homes" indicates that there are very limited possibilities of receiving assistance during mealtimes, since there are often only two people present to assist all the residents, including those who need to be fed (Beck and Kofod 2003).

Feeding is a time-consuming process, especially when more than one person needs it.

In hospitals

In a German study of geriatric patients, 46% said they have trouble cutting up their food, while 22% needed eating assistance. The challenge was that the nursing staff only indicated figures of 34% and 10% (Volkert et al. 2010).

(See also the sections on dementia and the importance of the social and meal ambience, where other intervention studies are described).

5.1.3 Interventions regarding eating assistance

In nursing homes

A systematic literature review including meta-analyses on mealtime interventions among older people in nursing homes identified six studies (two of which were randomised controlled studies) focused on eating dependency. Most the studies focused on feeding, but one also involved offering snacks between meals (Abbott et al. 2013). In one randomised study, information was compiled about the participants' weight changes, and a positive effect of feeding was observed. In another randomised study, information was gathered about the participants' dietary intake, and here a positive effect was also observed. No studies focused on making it easier for the older to eat by themselves, for example by adapting the mealtimes to their physical function or using eating aids. No studies used patient-relevant endpoints.

A scoping¹ review of multidisciplinary interventions that might improve energy intake, etc. in older people in nursing homes identified studies focused on the need for assistance with eating, including the mobilisation of paid staff and volunteers to help and urge residents to eat, training in this area, social interaction and conversation at mealtimes, as well as measures to promote older people's ability to eat by themselves (Vucea et al. 2014). There were few randomised controlled trials, and the endpoints were very different. No conclusions about the effectiveness of the various methods can be made based on this review.

In home care

No intervention studies among older people receiving home care have been found.

In hospitals

A scoping review of "food first interventions" for hospitalised patients identified 35 studies, five of which (including one randomised controlled study among older patients) focused on the patients' need for eating assistance (Cheung et al. 2013). Four of the five studies used trained volunteers to assist the participants, while the nursing staff in the fifth study was professional staff. There seems to have been a positive effect on energy intake, which was the main endpoint. However, all these studies lasted only a few days, and the volunteers mainly helped

during main meals on weekdays. Furthermore, time was spent on training the volunteers before the start of the studies. The intervention was assessed positively by the volunteers.

¹ A scoping review provides an overall picture of a specific area in order to identify areas where there may be a need for further research. A systematic review is more in-depth. A scoping review, as opposed to a systematic review, does not assess the quality of the literature and therefore also includes studies of a lower quality, such as non-randomised studies (Cheung et al. 2013).

No studies focused on making it easier for the older to eat by themselves, for example by adapting the mealtimes to their physical function or using different aids for eating.

5.1.4 Official Danish recommendations

Needing eating assistance is included as a risk factor in the National Board of Social Services' nutritional assessment form. This means it is recommended that staff pay attention to and deal with this risk factor.

The National Board of Social Services' ideas catalogue offers suggestions for this (National Board of Social Services 2009), as does part two of the Danish Veterinary and Food Administration's publication "Without Food and Drink" (Danish Veterinary and Food Administration 2002).

5.1.5 Barriers

Staff should be aware of the residents' potential need for eating assistance. This risk factor is included in the nutritional assessment form, but there can be challenges when it comes to older recipients of meal services.

The "needing eating assistance" risk factor is not included in the system used to assess hospital patients' nutritional risk (National Board of Health 2008), so there may be a risk that the problem is overlooked by the nursing staff.

Although the use of volunteers is becoming more widespread, it is unlikely to be a useful basis for a systematic initiative, partly because it takes time to train the volunteers.

5.1.6 Areas where more research is needed

Studies on older people in nursing homes who need assistance to eat have not provided clear conclusions.

There is a lack of general information about whether meals adapted to the physical abilities of hospital patients, nursing home residents and older people living at home have a positive effect on patient-relevant endpoints.

5.1.7 Next steps

The above section describes a number of issues that researchers may want to cover in future.

5.1.8 References

Abbott RA et al. Effectiveness of mealtime interventions on nutritional outcomes for the elderly living in residential care: A systematic review and meta-analysis. *Ageing Research Reviews* 2013; 12: 967– 981

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5.2 DYSPHAGIA IN OLDER PEOPLE IN HOME CARE, NURSING HOMES AND HOSPITALS

5.2.1 Why it is important

Dysphagia refers to problems with food intake, swallowing and/or other difficulties with eating and drinking, and often occurs as a result of strokes, dementia or Parkinson's disease. Dysphagia makes it difficult for the older to chew and swallow normal food. The food's consistency is rarely ideally suited to the older's ability to chew and swallow, which is why it is often hard for them to eat neatly and normally. To remedy this problem, many older people are offered blended food with a low nutrient content and a sad, uniform appearance, which neither promotes appetite or quality of life.

5.2.2 The significance of dysphagia to the intake of food and liquids

All three settings

The "Thematic Report on Dysphagia: On the Dangers of Problems with Swallowing" (National Agency for Patients' Rights and Complaints 2012) highlights the fact that dysphagia is widespread among older people in nursing homes. Up to 90% can experience problems, especially older people with Parkinson's disease, dementia or complications after strokes.

Dysphagia is associated with high morbidity and mortality and has great social and personal costs. In addition, dysphagia may result in poor oral nutrition, malnutrition, dehydration, problems with swallowing, aspiration pneumonia and even asphyxiation.

The National Agency for Patients' Rights and Complaints has compiled the reported adverse events in which dysphagia has been a contributing factor. These have been included in the Danish Patient Safety Database. 121 such adverse incidents were reported between January 2011 and May 2013, of which four were fatal, 14 were classified as serious, and 103 incidents had moderate to no consequences for the patients. The incidents were primarily reported from municipalities and hospitals (Bommersholdt 2013).

For some older people, dysphagia becomes a chronic condition, so that the person has to live with it and consume a chetexture modified diet for many years, which affects both their nutritional status and quality of life (Andersen et al. 2012).

In nursing homes and home care

Chewing and swallowing problems are two of the risk factors included in the National Board of Social Services' nutritional assessment form. A close link has been found between problems with chewing and swallowing and an increased risk of weight loss. Swallowing

problems were also related to an increased risk of death among older people in nursing homes in a 6- and 12-month follow-up period, respectively (Beck 2015).

A European study among older people receiving home care, which included Denmark, found a close relationship between swallowing problems and weight loss (Sørbye et al. 2008).

As mentioned above, up to 90% of older people in nursing homes may have problems with dysphagia (National Agency for Patients' Rights and Complaints 2012). By comparison, a Danish study among older residents has found that, according to the nursing staff's own documentation, only 10% of the residents have problems swallowing (Beck 2015). The National Board of Social Services' cost-effectiveness study, which used the nutritional assessment form, found that only 18%, 12% and 24% of residents in the three participating nursing homes had problems with chewing and swallowing (National Board of Social Services 2014). Another Danish study showed that only 11% of older residents were offered a texture modified diet (Beck and Kofod 2003). As shown, it is a big challenge simply to recognise that there is a problem.

Among the 11% who were offered texture modified diets, the most frequently offered diets were minced diets (8%) and blended diets (2%), while 1% were given other types of food (Beck and Kofod 2003). The 2005 report "Readymade Food for Pensioners" analysed the macro-nutrient composition of various diets in 10 kitchens that deliver and serve food to older people in nursing homes and home care (Hansen and Beck 2005). Minced and blended diets rarely meet the official recommendations for calories and fat, and both contain too little protein in the main meals and too few calories in the snacks compared to the recommended quantities. The report concluded that these diets did not improve the nutritional status and well-being of older people.

In hospitals

There is not enough documentation of patients' difficulties with eating after being discharged from hospital wards for stroke victims and released to the primary care sector and this can have implications for their further rehabilitation. There is currently no documentation of eating difficulties among people who have had strokes (Zielke Schaarup et al. 2013).

5.2.3 Interventions regarding dysphagia and the intake of food and liquids

In nursing homes

In August 2012, the Centre for Clinical Guidelines approved new guidelines for recommendations of modified diets and liquids for adults (Andersen et al. 2012). The background was the lack of guidelines for various types of modified diets and liquids, both in Denmark and internationally.

The guidelines were designed to ensure that people with dysphagia are given sufficient nutrition and hydration with the lowest possible risk of not being able to swallow. A systematic literature review was conducted to answer the following questions:

- What evidence is there that a modified diet can significantly reduce aspiration in adults with upper dysphagia?
- What evidence is there that adults with upper dysphagia can achieve better nutrition and fluid intake with a modified menu than with a normal menu?
- What evidence is there that adults with upper dysphagia who receive modified menus and/or liquids achieve better nutrition (weight and BMI) than with normal food and liquids?
- What evidence is there that adults with upper dysphagia who receive modified diets and/or liquids experience significantly less aspiration pneumonia than with regular food and liquids?

The clinical guidelines were based on 16 papers (10 papers based on randomised controlled studies, four systematic review papers and two papers based on cohort studies). In many of these papers it was unclear what food and liquids the participants had actually been given, so it was only possible to give specific recommendations regarding the type of food and liquids that should be given to older people in nursing homes to improve their nutritional status and intake: customised and nutrient-enriched modified diets (soft and pureed food in the form of timbales) and liquids (nectar, honey and pudding consistency) plus options can be recommended for older people with chronic dysphagia. This recommendation was based on a single randomised study which was downgraded because it did not meet part of the criteria when it was reviewed (Andersen et al. 2012). It was not possible to draw any conclusions with regard to patient-relevant endpoints, in this case aspiration pneumonia.

In home care and hospitals

No randomised controlled studies were found.

5.2.4 Good examples

In its food and mealtime policy “Appetite for Life”, Copenhagen Municipality has set out its aim “to provide food with a consistency that is easy for older people to eat, and to assess the older persons ability to chew and swallow”. To achieve this aim, the municipality has started an interdisciplinary project involving nurses, occupational therapists and kitchen staff. It is also important to work on the food’s sensory qualities, i.e. to make the texture modified food look inviting and taste and smell good (Diætisten 2013).

Aalborg Municipality has established an interdisciplinary collaboration on food for older people with dysphagia that involves assessment, home care, dieticians, occupational therapists and Ålborg meal service. In addition, on-the-job training courses have been established for different professional groups, along with a close cooperation with the hospital

(Diætisten 2013).

5.2.5 Official Danish recommendations

The clinical guidelines (Andersen et al. 2012) include the following recommendations (Figure 5.1):

Acute dysphagia

Individual advice and continuous guidance, as well as adjustment of modified fluid and diet in cooperation with a clinical dietitian and an occupational therapist

As an example, the “stairs of texture” from the “Recommendations for Danish Institutional Diets” can be used in examination and training situations

Chronical dysphagia

Chin down procedure and thin fluids.
Self-selected diet texture



For older nursing home residents, there should be a choice of different options of chew- and swallowing friendly diets, such as a soft diet, a purée diet and a gratin diet.

Figure 5.1

Chewing and swallowing problems is one of the risk factors in the National Board of Social Services’ nutritional assessment form, so care staff should be aware of and deal with it.

There are official Danish recommendations for texture modified diets. These are described in the “Recommendations for Danish Institutional Diets” (Pedersen and Ovesen 2009) and in The Complete National Diet Handbook (<http://www.kostforum.dk/>).

5.2.6 Barriers

It is important that the staff is aware of the risk of dysphagia so they can take appropriate measures. This risk factor is included in the nutritional assessment form, but it seems to be a challenge to recognise the problem.

Dysphagia is not included in the method used to assess the nutritional risk to hospitalised patients (National Board of Health 2008), so there is a risk that the staff may overlook the problem.

The National Agency for Patients’ Rights and Complaints points out that one of the problems is that the staff is unable to recognise and distinguish between the different types of texture modified diets (National Agency for Patients’ Rights and Complaints 2012). When the clinical guidelines for modified diets and liquids for people with dysphagia were being prepared, it was also very difficult to identify what kind of texture modified diets the participants were actually given in the individual studies. The problem with recognising the various types of texture modified diets is not confined to Denmark, and an international initiative has been

launched to achieve consensus in this area (see more here <http://iddsi.org>).

5.2.7 Areas where more research is needed

There is very limited understanding of the effect of modified diets and liquids for people with dysphagia. In particular, there is a lack of knowledge about the possibilities of optimising these diets when it comes to nutrient composition, taste, variety and appearance.

Keller has suggested a number of relevant research and development opportunities (Keller et al. 2012):

- How widespread is the use of texture modified diets in the different settings?
- What are the indications for the use of texture modified diets?
- What are the barriers to offering texture modified diets?
- Can prescribing a specific texture modified diet have a positive effect on the patients' nutritional status and relevant endpoints?
- Do the recipes meet the recommendations for macro-nutrient composition?
- Which taste sensations are most important for people with dysphagia?

5.2.8 Next steps

The above section describes a number of issues that researchers may want to cover in future.

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5.3 CHEWING PROBLEMS IN OLDER PEOPLE IN HOME CARE, NURSING HOMES AND HOSPITALS

5.3.1 Why it is important

Losing teeth is not a natural part of old age. With the right dental hygiene, people can keep their own teeth for their whole lives. However, many people either lose some or all their teeth and need dentures. Dental problems make it harder to bite and chew properly. Losing teeth can also make the older person lose the desire to eat. Dentures can create problems, as can poor oral hygiene.

5.3.2 The importance of chewing problems to the intake of food and liquids

In nursing homes and home care

There is a high prevalence of dental disease in older people in nursing homes and home care, and an unmet need for help with daily dental care.

Among residents of Swedish nursing homes in 2009, 78% needed help with oral hygiene, but only 7% received the necessary help (Hede et al. 2014). In a Danish study among older residents, according to the nursing staff's documentation, only 20% of the residents had chewing problems and only 5% had problems with oral hygiene (Beck 2015). According to the National Board of Social Services' cost-effectiveness study, which was based on the nutritional assessment form, only 18%, 12% and 24% of residents in the three participating nursing homes had problems with chewing and swallowing (National Board of Social Services 2014). Only 5% of older people in nursing homes and home care were offered dental care.

Dental diseases and deficient oral hygiene contribute to serious health problems in the older. Several studies conclude that poor oral health significantly lowers older people's quality of life (Hede et al. 2014).

Chewing and swallowing problems are one of the risk factors in the National Board of Social Services' nutritional assessment form, because a close link between chewing and swallowing problems and increased risk of weight loss among older people in nursing homes was shown in a 6- and 12-month follow-up period respectively (Beck 2015).

A European study among older people receiving home care, which included Denmark, demonstrated a clear link between mouth problems and weight loss (Sørbye et al. 2008).

A 2003 report, "Mealtime Service in Nursing Homes", states that the most frequently offered chewing- and swallowing-friendly diets were minced diets (8%) and blended diets (2%) (Beck and Kofod 2003). The 2005 report "Readymade Food for Pensioners" analysed the macro-nutrient composition of various diets in 10 kitchens that deliver and serve food to older people in nursing homes and home care (Hansen and Beck 2005). Minced and blended diets

rarely meet the official recommendations for calories and fat, and both contain too little protein in the main meals and too few calories in the snacks compared to the recommended quantities. The report concluded that these diets, as they were composed at the time, did not improve the nutritional status and hence the well-being of older people.

In hospitals

A Danish survey among geriatric patients found a clear link between mouth problems and poor nutrition (Poulsen et al. 2006).

5.3.3 Interventions regarding poor dental health and intake of food and liquids

All three settings

Danish studies have provided evidence that effective mouth care programmes can significantly prevent pneumonia in nursing homes (Hede et al. 2014). These studies have focused on tooth brushing, etc., rather than on interventions regarding food and mealtimes. Data on the participants' dietary intake, etc. is not available, but some studies have found positive effects on various aspects of everyday living, which indicates that there may also have been a positive effect on the nutritional status.

In nursing homes

An 11-week study covering a total of 121 Danish residents in nursing homes included several types of interventions: providing chocolate and energy-rich drinks, exercise, and dental care once or twice a week by the dental hygienist. The study found a positive effect on the older's nutritional status, muscle strength, balance and social function (Beck et al. 2008; Beck et al. 2010). However, there were problems with compliance with the dental care, since many residents were not ready when the hygienist came, and plaque was not reduced (Beck et al. 2009). The prevalence of pneumonia was not included as an endpoint.

In home care and hospitals

No intervention studies among older people in home care or hospitals were found.

5.3.4 Official Danish recommendations

Dental health problems are one of the risk factors in the National Board of Social Services' nutritional assessment form. This means it is recommended that staff pay attention to and deal with this risk factor.

5.3.5 Barriers

According to the official recommendations, diets for people with low appetites should include plenty of sweet foods, and between-meal snacks are important, especially in the evening (Pedersen and Ovesen 2009). In practice, snacks in the form of energy-rich drinks are particularly effective at increasing older people's calorie intake. But trying to improve the nutrition of older people by serving them goodnight drinks containing sugar may aggravate another big problem, namely poor dental health (Kragelund and Beck 2004).

Not nearly enough people are offered dental care, and the staff may not have time to offer oral hygiene care (Klebak 2014).

5.3.6 Areas where more research is needed

There is clear evidence that poor oral and dental health has a negative impact on older people's nutritional status. It has also been shown that it is possible to improve oral and dental health through systematic care by a dental hygienist and dentist. However, there is a need for studies on whether the improved oral and dental health in fact results in better nutrition.

In addition, we do not know enough about the possibilities of optimising texture modified diets (i.e. their nutrient composition, taste, variety and appearance), or about the effects of an intervention focused on both oral hygiene and meals and mealtimes.

5.3.7 Next steps

The above section describes a number of issues that researchers may want to cover in future.

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6. MEALTIME EXPERIENCE

This chapter consists of two sections, both of which deal with issues that are important to the meal experience. The first section concerns reduced appetite and resulting reduced intake of food and liquids. The second concerns the meal ambience and the social interaction.

6.1 REDUCED APPETITE AND INTAKE OF FOOD AND LIQUIDS IN OLDER PEOPLE IN NURSING HOMES AND HOME CARE

6.1.1 Why it is important

With age, the delicate appetite regulation system becomes less sensitive, so that energy intake is not automatically adapted to energy needs. This often results in a negative energy balance, leading to weight loss, which has serious consequences for the older person's well-being, quality of life and physical and social function. Poor nutrition can also have major societal consequences.

6.1.2 Knowledge about intake of food and liquids

There is no systematic collection of data on the food intake of older Danish people aged 75 years old or more, since this group is not covered by the Technical University of Denmark's nationwide diet studies. The following is therefore based on information compiled in connection with various research projects.

In a Danish study from 2002, the energy intake of older people in nursing homes and home care was above the estimated need; with a PAL value of 1.4-1.5 (PAL is a measure of physical activity level). Despite this, a number of older participants were underweight (Beck and Ovesen 2002).

In a more recent Danish study among older people in nursing homes, the energy intake was slightly lower, with a PAL value of 1.2 (Beck et al. 2008, Beck et al. 2010). In this intervention study, the participants in the control group did not increase their energy intake, but still maintained their weight, which indicates that their energy intake was sufficient. However, here too, some participants were underweight.

The above findings would seem to illustrate the problem many older people have with recurring periods of reduced energy intake due to various nutritional risk factors. These risk factors can be due to disease, lack of appetite regulation, etc. After a period of reduced energy intake, they do not necessarily start to eat more, unlike younger people (Ingerslev et al. 2002). Thus they only slowly reach the level of their original energy intake, if at all, before a new

period of reduced appetite occurs.

6.1.3 Interventions to increase intake of food and liquids

This section focuses on interventions to increase energy intake by means of food and liquids, without using appetite stimulants or other similar methods.

Systematic reviews of the literature on the effect of nutritional interventions among older people with poor nutrition show that these interventions mostly use industrially produced energy- and protein-rich drinks. The biggest of these reviews, covering 62 studies including meta-analyses, is a Cochrane review on the effect of nutritional interventions among older people who are malnourished or are at risk of malnutrition, including older people in nursing homes and home care (Milne et al. 2009). The review concluded that the interventions had a positive effect on the participants' weight and a tendency towards a positive effect on survival, but that there was no demonstrated effect on physical and mental function or quality of life, mainly due to lack of data.

The same conclusion is drawn in a more recent systematic literature review focused on industrially produced energy and protein drinks (Cawood et al. 2012). The most recent systematic review by the Swedish Council on Health Technology Assessment, which only comprises 10 studies because it uses different inclusion criteria, also concludes that there is a lack of documentation of a positive effect on patient-relevant endpoints (Swedish Council on Health Technology Assessment 2014).

A systematic literature review looked at three randomised controlled studies in which the food was adapted by offering snacks and exemptions from the diet (Abbott et al. 2013). The meta-analysis found no changes in the participants' nutritional status.

When the National Board of Social Services prepared its "Recommendations for Nutritional Interventions for Older People with Unplanned Weight Loss", it conducted a systematic literature review to identify randomised controlled studies of the effect on physical function, etc. in older people who are discharged from hospitals with or without a plan for rehabilitation, older people who are assessed for municipal rehabilitation, and older people in nursing homes and home care (National Board of Social Services 2015). The board found 15 studies of older people in nursing homes and eight studies of older people in home care.

Two studies of older people in nursing homes focused on optimising the food. In one of these studies, 41 residents with BMIs under 18.5 kg/m² were given calorie-rich meals with added cream, etc., and homemade energy and protein drinks for 12 weeks (Leslie et al. 2012). A non-significant but nevertheless positive weight gain was found in the intervention group. Patient-relevant endpoints were not evaluated, but there appears to have been a positive effect on survival (5% vs. 26% dead), which the authors, however, do not comment on.

In the second study residents at risk of undernourishment (mini-nutritional assessment (MNA) ≤ 23.5) were given energy- and protein-rich meals and snacks with added cream, protein powder, etc. for 12 weeks (Smoliner et al. 2008). Among the 52 participants (22 in the intervention group), there was no difference in intake, weight, quality of life and everyday physical function after 12 weeks.

No studies among older people receiving home care focused on optimising the food.

(See also the section on dementia and physical function, which describes other intervention studies).

6.1.4 Good examples

Figure 6.1 is from the National Board of Social Services. National Action Plan for Meals and Nutrition for Older People in Nursing Homes and Home Care.

■ Senior Center "Kastaniehaven"

At the senior center, "Kastaniehaven" in Give, they have experience working with food, meals and nutrition as part of the overall effort. The food is produced in each individual unit with the greatest possible involvement of the residents. Social and health care staff in charge of shopping and cooking, is supported both kitchen technically and nutritionally by the professional kitchen manager of the day center café. The kitchen manager of the day center café has the overall responsibility for the quality of the menus and the self-inspection. The nurse at the senior center ensures that there will be developed action plans in relation to residents who are particularly at nutritional risk. Thereby, the meals are planned and prepared with the involvement of the older as well as various professional groups.

Figure 6.1

6.1.5 Official Danish recommendations

There are official Danish recommendations for food and liquids for older people in nursing homes and home care. These are described in the "Recommendations for Danish Institutional Diets" (Pedersen and Ovesen 2009) and in The Complete National Diet Handbook (<http://www.kostforum.dk>).

Reduced dietary intake is listed as a risk factor in the National Board of Social Services' nutritional assessment form. This means it is recommended that staff pay attention to and deal with this risk factor.

The National Board of Social Services is preparing its "Recommendations for Nutritional Interventions for Older People with Unplanned Weight Loss", which partly focuses on

nutritional interventions for older people in nursing homes and home care (National Board of Social Services 2015, in consultation).

The National Board of Health's "Tools for Early Detection of Signs of Disease, Impaired Physical Function and Undernourishment" describe how to become aware of changes in the older persons physical function and nutritional status at an early stage (National Board of Health 2013).

Danish Regions, Local Government Denmark and the Danish College for General Practitioners oversee various initiatives to ensure increased information, availability and use of the "Tools for Early Detection of Unplanned Weight Loss" as well as better collaboration and communication between GPs and municipalities. The work on these tools will support nutritional interventions in nursing homes and home care (National Board of Health 2013).

6.1.6 Barriers

One barrier is that it takes extra time to screen the older people, train the staff and enlist the assistance of a clinical dietician (NICE 2006). However, the time spent on the actual intervention, e.g. serving snacks and nutritional drinks, is minimal.

The National Board of Social Services' cost-effectiveness study also calculated the time spent on interdisciplinary nutritional interventions, including time spent on screening, training and the assistance of the clinical dietician, though not on serving the food and fluid (National Board of Social Services 2014). The conclusion was that the extra time was well spent, since the older persons increased quality of life made the intervention cost-efficient.

In a survey carried out in the Danish municipalities in October 2013 in connection with the preparation of the report "Malnutrition: the Hidden Social Problem", 65 out of 98 surveyed municipalities responded (Arla Foods and the Danish Diet and Nutrition Association 2014). Only 16% of the municipalities prioritise the food's energy density; almost a third do not have a written strategy for providing food to the older; almost half follow the official recommendations for the Danish institutional diet; 60% carry out systematic nutritional screening; and 40% offer dietary and nutritional guidance.

6.1.7 Areas where more research is needed

There is a lack of recent data on the dietary intake of older Danish people in nursing homes and home care.

Although many intervention studies have been conducted among older people in poor nutritional condition, they have primarily involved adding industrially produced energy- and protein-rich drinks, and there is seldom data on patient-relevant endpoints.

There is a lack of information on whether optimising food for older people in nursing homes and home care can have a positive effect on their well-being, quality of life and physical and

social function, as well as on the national economy as a whole.

6.1.8 Next steps

Studies in the areas where more information is needed, as pointed out above.

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6.2 THE SOCIAL INTERACTION AND THE IMPORTANCE OF THE MEAL AMBIENCE FOR THE DESIRE TO EAT

This section first deal with the social aspects of the mealtime experience and then discusses the importance of the meal ambience.

Among other things, this section considers the extent to which older people's senses and appetites are stimulated when they smell food; the importance of the dining room's layout; the importance of feeling that one is eating in a community with others; the importance of a comfortable eating situation; and the consequences of getting the necessary assistance during the meal.

6.2.1 Why it is important

Older people thrive better when they have a good meal ambience and a good social interaction during mealtimes, whether they are eating in their own homes, in nursing homes or in hospitals.

The social framework for meals differs depending on whether the older person lives at home, in a nursing home, or has been admitted to hospital. It also depends on the older people themselves. How self-reliant are they? Is the meal being served in the home of a person who is alone and lonely? Is the meal being served in a nursing home, where meals are usually eaten together with others, but where some residents may prefer to eat alone? Is the meal served in a dining club for the older? If the older is in the hospital, do they eat their meals in the common room or in their bed in the ward?

Regardless of the settings they eat their meals in, most people associate meals with a social context, such as being with their spouse, family, friends or colleagues. For older people it is no different, regardless of whether they eat their meals at home, in a nursing home or in a hospital. However, experience shows that many older who still live at home eat alone, that meal times in hospitals are not used as part of the treatments, and that meal times in nursing homes are focused on all kinds of other things than creating a social interaction. This can have consequences for the older persons health and quality of life, which is why it is important to know what opportunities there are for organising mealtimes differently.

6.2.2 The significance of the meal's social interaction

All three settings

One study (Kofod 2000) among users of public meal services in all three settings found that the most important parameter for a good mealtime experience was a social setting that the users felt comfortable with. This increases older people's satisfaction with the meals, as well as the amount of food they eat. In other words, the social interaction is more important than what is on the plate.

The older attach great importance to eating with people they know and whom they themselves have chosen to eat with. They don't want to eat with older people who eat and drink messily because they are given food and liquids with a texture modified consistency or do not get enough eating assistance (Danish Veterinary and Food Administration 2002a). This shows that the perception of a meal can be complex, as can preparing and serving meals as part of a social service.

As for the older people who eat less neatly, the awareness of this can worsen their nutritional condition, and there is a risk that the surrounding diners may lose their appetite. Similarly, physical disabilities can make it challenging for older people to eat and thereby weaken their nutritional status.

In nursing homes

In nursing homes, older people with dementia, Parkinson's disease, etc. may have trouble communicating. This makes it hard for them to take active part in the socialising during mealtimes. Other residents will often avoid talking to them because they seem unresponsive. Thus older people with these types of illnesses often feel socially isolated. Some people with dementia have periods of disruptive behaviour such as yelling, excessive suspicion, jealousy, delusions or aggression, which can also lead to social exclusion (Danish Veterinary and Food Administration 2002b).

The older person may find it undignified not to be able to cut up their own food. Instead of asking for help, some may choose to eat alone.

Serving food and liquids with the wrong consistency to older people with chewing and swallowing problems can lead to them filling their mouths with food, drooling, coughing, feeling pain, spitting out the food and vomiting. The result is a poor mealtime experience for both the older people themselves and their fellow diners (Kofod 2000).

A 2003 Danish study found that there was a larger proportion of underweight older people among residents of nursing homes with a low level of social interaction (Beck, Ovesen 2003). Also, older people who chose to eat alone were more likely to be underweight than those who ate with others. However, an interesting finding was that the older who chose to eat alone functioned better mentally than the other residents, and perhaps precisely for this reason did not want to eat with lower-function residents.

Social statuses and life histories also affect who the older want to eat with, and their experience of the quality of mealtimes increases when they can be in the company of the residents they want to eat with (Kofod 2000). Where the residents are placed during mealtimes is important, as their nutritional condition can be negatively affected if they do not enjoy the social interaction (Kofod, Birkemose 2004).

In a Swedish study, some residents clearly stated that they did not want to eat with others at all. They were reluctant to share a table with residents with various eating problems, though the nursing staff considered this better (Sidenvall et al. 1994).

Many mealtime-related conflicts can be resolved early if the staff are sufficiently attentive to the importance of the social interaction (Kofod 2000, Beck et al. 2006). The report “The Future Diet for Older People” (Beck and Kofod 2003) therefore recommended that basic degree programmes and on-the-job training courses for care workers focus more on how to create social contact between residents and preventing and resolving conflicts so that they do not negatively affect the common meals (see also the chapter on staff skills).

In home care

For single older people in particular, losing their physical abilities can make it difficult to maintain a social network, including during meals. This can have a very negative impact on their appetite and nutrition, since one of the areas where the social interaction is key to the experience of mealtime quality is with single older recipients of meal services. The food does not become a “proper” meal, because the social interaction around food is completely missing (Kofod 2000).

In connection with “The Future Diet for Older People” report, the researchers wanted to look more closely at whether single older people receiving meal services would change their calorie intake if they were offered communal meals. The idea was that the carer, as well as preparing the meal, would also eat a snack or their packed lunch and speak to the older person during the meal (Beck and Kofod 2003). However, the study was not carried out, since not enough participants could be found. A potential participant said that they refused because “I eat messily because I have a paralysed arm”.

For the same reason, in a Swedish study, two older women who were hospitalised for long periods of time refused to participate in the common meals in the dining room due to frailty or paralysis, since they did not feel able to live up to their own standards for table manners (Sidenvall et al. 1994).

There are various possible reasons for the lack of interest in participating in the trial. Like the Swedish women, some do not wish to participate in communal meals because they do not feel they can live up to their own standards for table manners due to paralysis or other types of impairment. Others may not feel that the home carers are attractive social company (Beck and Kofod 2003).

In hospitals

Some older patients do not have the opportunity to socialise because they cannot get out of bed or their rooms. Others would like to, but have a hard time making friends because the patient turnover is too rapid. Other older people choose not to eat with the others because they do not want to be identified as “a sick person”. A final group prefer to eat alone because they do not feel up to being around other people and cannot live up to the norm of socialising

or eating neatly (Kofod 2000).

6.2.3 Interventions regarding the meal's social interaction

In nursing homes

A systematic review focusing on food assistance for residents with dementia in nursing homes found a single controlled intervention study that focused on the social framework for a group of residents who planned, prepared, ate and cleaned up after breakfast together, assisted by an occupational therapist, which improved a number of cognitive functions compared to the control group (Whear et al. 2014).

Another systematic review identified a single controlled study in which residents with dementia in a nursing home had lunch together with the nursing staff. At the same time, an effort was made to improve the meal ambience. This had a positive effect on the residents' weight after three months when compared to residents in another nursing home (Abbott et al. 2013).

In home care and hospitals

No intervention studies with a focus on the social interaction were found.

6.2.4 Good examples

The evaluation of a project in Herlev Hospital shows that meal hosts can give older patients with low appetites a greater desire to eat (Lund 2012). Meal hosts are people with expertise in food and mealtimes who act as supporting staff to help give the patients back their desire to eat. The meal hosts helped ensure a greater focus on the individual's dietary intake and on the meal experience. In addition, they increased cooperation between the kitchen staff and the other staff and reduced food waste.

The National Action Plan for Meals and Nutrition for Older People in Nursing Homes and Home Care describes how the organisation DaneAge and Odense Municipality have collaborated on the project "Eating Friends", designed to help recipients of home care meal services (National Board of Social Services 2013). An "eating friend" is a volunteer visitor from DaneAge who eats with and keeps the older person company. The initial experiences show that a volunteer eating friend can improve an older person's weight, physical function and mood. Among 25 older people, 15 gained weight and 10 of those improved their physical functions. Every third participant stated that they felt in better health as a result of the project.

6.2.5 The significance of the meal ambience

In nursing homes

According to a report based on a survey of Danish nursing homes, as early as 2003, many nursing homes sought to improve their meal ambiances (Beck and Kofod 2003). However, there is still room for improvement. For example, only one in four nursing homes set tables before meals, and two out of three dispense medication during meals. This can create unease and disturbance, especially among older residents. In general, there is often a lot of traffic (including wheelchair users) in the dining room during meals, as well as a fair amount of noise from the diners themselves.

In home care

No studies focusing on the meal ambience were found.

In hospitals

In a study among older medical patients in Glostrup Hospital, 11 issues that affected the patients' mealtime experiences were identified: communication, food ordering, preparation of the meal ambience, space, hosting, urging patients to eat, interruptions, social interaction, organisation, snacks and the food.

These factors all play a part. For example, the hospital could serve gourmet dishes or set up a new ordering system without necessarily improving the patients' overall meal experience. Therefore, to improve the overall mealtime experience it is necessary to address more than a single issue (Glostrup Hospital 2012).

6.2.6 Interventions regarding the meal ambience

The following describes the intervention studies that were found. A systematic review identified three randomized controlled studies focused on the meal ambience in nursing homes. A meta-analysis showed that the studies found no positive effect on older people's energy intake and weight (Abbott et al. 2013). However, a Dutch study found very positive results regarding nutrition, physical function and quality of life when seeking to imitate typical family meals based on the following five factors: table setting, food serving, the role of the staff, the role of the resident, and a mealtime setting without other disruptive activities (Nijs et al. 2006).

In home care

No intervention studies that focused on the meal ambience among older people in home care were found.

In hospitals

A scoping review focusing on mealtime interventions in nursing homes and among older people who were hospitalised for long periods of time found an older Swedish study with a before-and-after design in which changing the interior decoration of the dining room to a 1940s style improved the residents' energy intake (Vucea et al. 2014).

Another scoping review focusing on nutritional interventions for hospitalised patients, including the effect of so-called protected meals, found eight studies, but none were controlled (Cheung et al. 2013). Many of the studies have focused on preventing disturbances during the meal, which has often been difficult to do in practice. When it has succeeded, the results suggest that it has had a positive effect on energy intake.

(See also the chapter on dementia, which describes various interventions in relation to the meal ambience for this target group).

6.2.7 Good examples

Ålborg Hospital has focused on the eating environment in connection with the project "MORE" and has made various improvements to the patients' dining rooms in collaboration with architects. This was one of many initiatives, which included establishing nutrition teams and improving the patients' food. On average the patients were 65 years old, and the before-and-after measurements showed positive effects on energy and protein intake, among other things (Holst et al. 2014).

6.2.8 Summary of the significance of the meal ambience

The above studies and research projects on mealtimes have mainly focused on staff in nursing homes rather than in private homes and hospitals. Stays in hospital tend to be more temporary than stays in nursing homes, but there are parallels between the needs of hospital patients and nursing home residents. For example, the older may want to be shielded and assisted during mealtimes; they may want to eat with others; or they may expect to be greeted by an "ambassador" like the meal hosts in Herlev Hospital. Older people living at home may need assistance with shopping, cooking and eating in their own homes, and with maintaining their day-to-day skills. These issues are elaborated in the chapter on older people's life skills.

In addition to the benefits of communal meals, studies of nursing homes point to other relevant social issues that should be addressed to create better social frameworks (Kofod 2000). To some extent it may be possible to apply this knowledge to the hospital setting.

In general, there are indications that the social framework can affect older people's desire to eat in all three settings (i.e. own home, nursing home or hospital).

6.2.9 Official Danish recommendations regarding the meal ambience and the social framework of the meals

Most of the above findings were included in the National Board of Social Services' recommendations to the Danish municipalities and regions, e.g. the National Action Plan for Meals and Nutrition for Older People in Nursing Homes and Home Care (National Board of Social Services 2013). In connection with its "Good Food, Good Life" project, the National Board of Social Services has published practical tools for improving meals and mealtimes for older people living at home or in nursing homes.

"Idea Catalogue: Ideas for Good Meals for Older People Living at Home or in Nursing Homes" (National Board of Social Services 2009) focuses on the social significance of meals, for example the fact that menus are identity markers, and that the older person's wishes about sitting in certain places with certain people must be respected. The ideas were developed to provide inspiration for staff in nursing homes and concern issues such as communal dining, table settings and serving, the physical environment, food and appetite, mealtime atmosphere, mealtime conversation and meal presentation.

According to the idea catalogue, there are different challenges when it comes to older people receiving home care. It can be hard to create a good meal setting for older people who live alone and who often lack a social network. This is why it is important to find out whether the older person wants to be included in meals with others or whether they prefer to eat alone, and on that basis create the desired setting for the individual.

Concerning the physical environment, the National Board of Social Services writes: "The physical environment in which the meal takes place is important in determining how long the person wants to sit at the table, and the longer you sit, the more you eat. Therefore it is a good idea to set aside some time to make sure the physical setting is cosy and comfortable to eat in. It is also a good idea to make some changes now and then for the sake of variety, so the residents have something new to look at and talk about" ("Idea Catalogue: Ideas for Good Meals for Older People Living at Home or in Nursing Homes" National Board of Social Services 2009).

On the topic of conversations during the meal, the Board writes: "A good meal is often associated with good company and lots of chatting, but as we age, it becomes harder for most of us to follow a fast-moving conversation between several people. Moreover, if the residents do not know each other very well due to a high turnover, it may be difficult for them to ask questions about each other and thus start and maintain a conversation. Therefore it is important that the nursing staff initiate a conversation that involves all the residents. This can be done by preparing some good conversation topics before the meal or by talking to the individual people around the table as a starting point" ("Idea Catalogue: Ideas for Good Meals for Older People Living at Home or in Nursing Homes" National Board of Social Services 2009).

The mealtime barometer (National Board of Social Services 2010) is a quality assessment tool for gaining an overview of the local conditions for providing good meals for the older, and for identifying areas for improvement. The mealtime barometer can give the municipal administration, kitchen staff, nursing homes and home care districts a clearer picture of the quality with which they jointly provide meals for the older, and suggest further measures to enhance the quality by focusing on the whole process from making the food to the actual meal.

6.2.10 Barriers

In a Dutch study, nursing homes imitated the “family meal” to create the best possible mealtime setting (Nijs et al. 2006). But for older people who live at home and receive meal services, “family meals” are no longer an option. They no longer have a natural social setting for meals. Kofod (2000) points out that older people living at home do not feel that eating a meal they receive from a meal service is a “real meal”. At the same time, they are nutritionally more vulnerable due to reduced appetite. “Eating depends on delicate habits that can easily change” (Kofod 2000). On the other hand, older people living at home who eat at a nursing home once or several times a week experience a significant sense of community during mealtimes.

The challenge is that many older recipients of meal services are or become malnourished. Potential barriers:

- In practice, the staff is not trained to help create a good meal ambience and social interaction. In a field study of mealtimes in nursing homes, 60 meals were observed (Kofod 2012). The observations and interviews showed that the meals did not meet the residents’ needs and that the staff was frustrated about not being able to include the residents in conversations. One challenge is that nursing home residents have changed. For example, there are more people with dementia, which demands more from the staff than in the past. “Mealtimes are a pedagogical exercise that they are not particularly well equipped to handle” (Holm-Petersen 2012).
- There is a lack of understanding of the importance of mealtimes in relation to the rest of the care, as well as of the preventive and rehabilitative prospects. Consequently, mealtimes are not given priority in nursing homes, home care and hospitals. An example of this is that older people living at home in Faaborg-Midtfyn Municipality are given vacuum-packed sandwiches for a week at a time. According to the chair of the Social Affairs Committee Herdis Hanghøj, “it was a question of making cuts where it hurt least and keeping the funding for the direct care work intact so that the older still get regular cleaning and help with bathing and so on” (Johansen, Jyllandsposten, 5 October 2014).

6.2.11 Areas where more research is needed

The research performed so far on meal ambience is inconclusive, and there is a need for further research. There are some tentative indications that the meal ambience can influence eating behaviour. We need more knowledge about the possibilities to influence the creation of good mealtime environments in peoples own home and if this have effect on well-being and life quality. It can be hard for older people living at home to create a good physical mealtime environment by themselves. Another question is whether an extra focus on the physical environment can really change the eating behaviour of older people living in their own homes, where they have their own routines and traditions. In the other two settings - nursing homes and hospitals - much can be done to ensure the best possible physical meal ambience.

There is very little evidence from randomised controlled studies concerning the importance of the social interaction and physical environments, and the existing documentation stems from studies carried out in nursing homes. However, the systematic literature reviews have identified a number of non-controlled studies suggesting that, for example, the dining room's layout, scents, colours, music, serving customs etc. influence how much older people eat. This can provide inspiration for future scientific studies in this area. To ensure increased public focus on the social and physical frameworks of meals for the older, the following needs and questions should be addressed:

- More systematic research into the effect of meals and their physical and social interactions on the well-being of the older who live at home or in nursing homes, and those in hospitals.
- How many nursing homes, home carers and hospitals base their work on the National Board of Social Services' material? What effect does it have?
- More information about whether the measures suggested by the National Board of Social Services work in practice and contribute to the older peoples well-being, and whether direct effects can be measured.
- What the meal's social and physical environments mean for weight loss and gain, medicine intake etc. in all three settings.

6.2.12 Next steps

- Carrying out research projects with the municipalities investigating the effect of meals-hosts on quality of life and nutrition of older people. These research projects should be highly interdisciplinary, so that the meal is looked at in all its complexity.
- Supporting the municipal implementation of the National Board of Social Services' "Good Food, Good Life" scheme, as well as relevant additional research.
- Calculating the financial savings that can be made by prioritising mealtimes as part of the care of older people in home care, nursing homes and hospitals.
- Defining ideal forms of cooperation and division of tasks and responsibilities between the carers and kitchen staff as regards the meal ambience.

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7. THE RESIDENT

The four sections of this chapter deal with the effect of nutrition on older peoples physical function, as well as the importance of dementia, hospitalisation and life skills for food intake.

7.1 THE EFFECT OF NUTRITION ON THE PHYSICAL FUNCTION OF OLDER PEOPLE IN NURSING HOMES AND HOME CARE

7.1.1 Why it is important

Older people want to continue to do the activities that are important for them. Many normal daily activities such as climbing stairs, getting up from or sitting down on chairs or walking around indoors require a certain amount of muscle strength. Ordinary and necessary daily functions that are easy for younger people may require all the older persons muscle strength. Many older people fear becoming dependent on the help of others, and this can diminish their sense of independence. A good nutritional status helps maintain physical function and reduce the need for help.

7.1.2 The significance of food and liquids on physical function

In nursing homes and home care

Unplanned weight loss and loss of muscle mass and strength are closely related, and weight loss therefore increases the risk of reduced physical function and activity. A decline in physical function can be observed already after a slight unplanned yearly weight loss of 1% (Figure 7.1).

Weight loss increases the need for assistance with everyday skills. In a Danish study that followed 450 older nursing homes residents for a year, residents who lost weight needed more help with everyday tasks from the nursing staff than those who maintained their weight (Beck et al. 2012). A 2005 Swedish study measured the amount of care needed for residents in sheltered housing from a scale of 1 to 7 (with 7 requiring the most care). Residents in good nutritional condition scored 2, while residents in poor nutritional condition scored 5 (Olin et al. 2005). A similar Norwegian study found that people in home care who lost weight received 1.5 times more visits by home carers and home nurses than people who did not lose weight (Sørbye et al. 2008).

One major challenge is that the older people do not often manage to regain their weight and physical function before a new period of reduced appetite occurs as a result of various risk factors; cf. Figure 7.1 (Ingerslev et al. 2002).

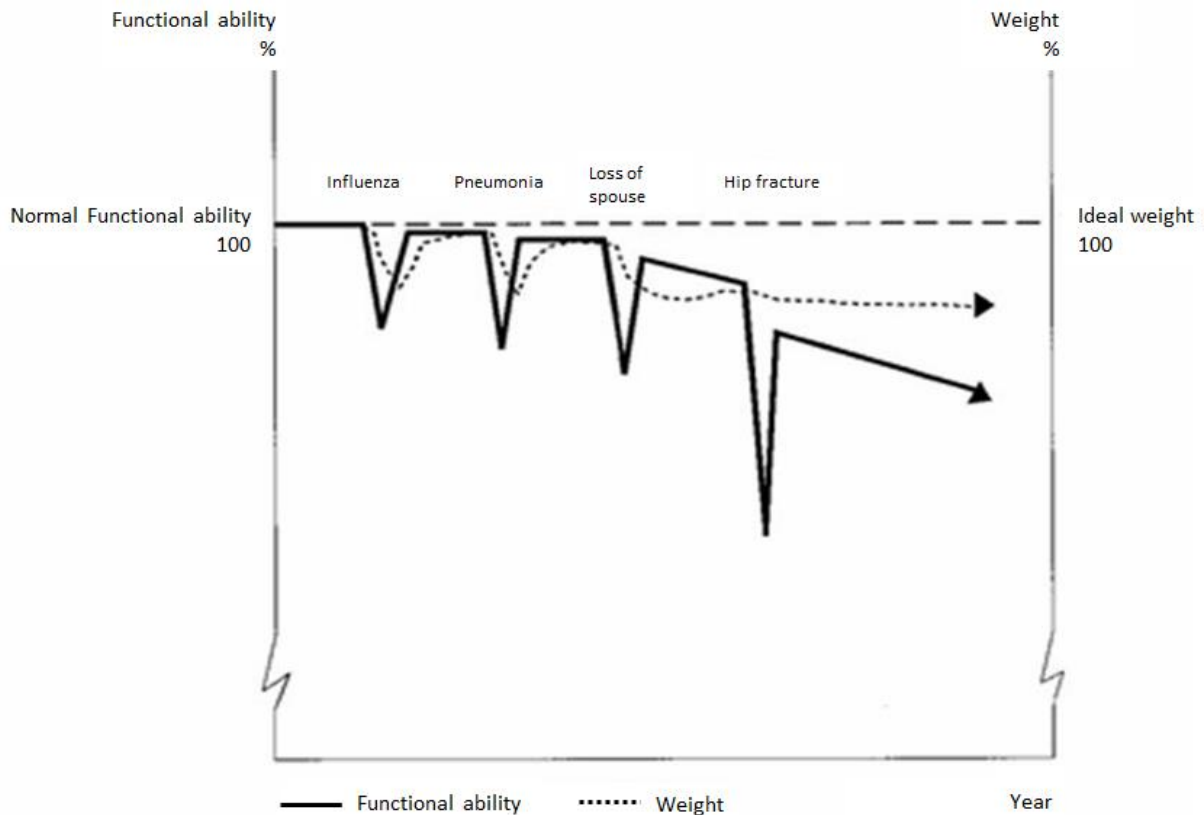


Figure 7.1. Example of the interaction between illness, social event and loss of weight and function (from Ingerslev et al. Danish Nutrition Council 2002).

7.1.3 Interventions to improve the intake of food and liquids as well as physical function

All three settings

A systematic review of the literature on the prevalence of sarcopenia and the impact of interventions found that there is a high prevalence of sarcopenia among older people – especially in nursing homes – and that physical training seems to have a positive effect, but it is difficult to assess whether a simultaneous nutritional intervention can have an additional effect (Cruz-Jentoft et al. 2014). One of the intervention studies included in the review involved a clinical dietician, but none of the studies focused specifically on optimising the food itself.

A systematic literature review that included several meta-analyses focused on whether protein supplements (mainly whey or casein powder) can contribute to the positive effect of physical training (Cermak et al. 2012). This seems to be the case for healthy “younger older” (> 50-72

years of age), but there is a lack of studies among the frail “oldest older”. None of the intervention studies included in the review focused on optimising the food itself.

In nursing homes and home care

In connection with its work on drawing up recommendations for helping older people with unplanned weight loss, the National Board of Social Services carried out a systematic literature review to identify randomised controlled studies among different groups of older people whose physical function has been assessed (National Board of Social Services 2015). The target audience included older people discharged from hospital with or without a rehabilitation plan, older people being assessed for municipal rehabilitation, and older people in nursing homes and home care. Only a few of the identified studies among older people in nursing homes and home care used a multidisciplinary approach that included improving the food.

The first study involved 121 residents in Danish nursing homes and lasted 11 weeks (Beck et al. 2008; Beck et al. 2010). The intervention consisted of the following:

- 25 g of chocolate per day
- 450 ml of hot chocolate per week
- 600 ml of homemade energy and protein drinks per week
- Chewing- and swallowing-friendly diet
- Group exercises (moderate intensity) 45-60 min. twice a week led by physiotherapist
- 150 ml calorie-rich drinks (chocolate milk and whipped cream) twice a week after exercising
- Dental care once or twice a week by dental hygienist

The intervention had a positive effect on the residents’ strength, balance and social function.

The second study included 95 Danish older people in nursing homes or home care with two points on the nutritional assessment form (National Board of Social Services) and lasted 11 weeks. Before the start of the study, key personnel were given skills training. The aim was to determine whether the intervention group gained better physical function, nutrition and quality of life and whether the intervention was therefore financially viable. The investigated method was a new model for interdisciplinary nutritional intervention, independent of an initial assessment. It involved a clinical dietician and a formalised interdisciplinary collaboration between a clinical dietician, occupational therapist and physiotherapist; see Figure 7.2 (National Board of Social Services 2014).

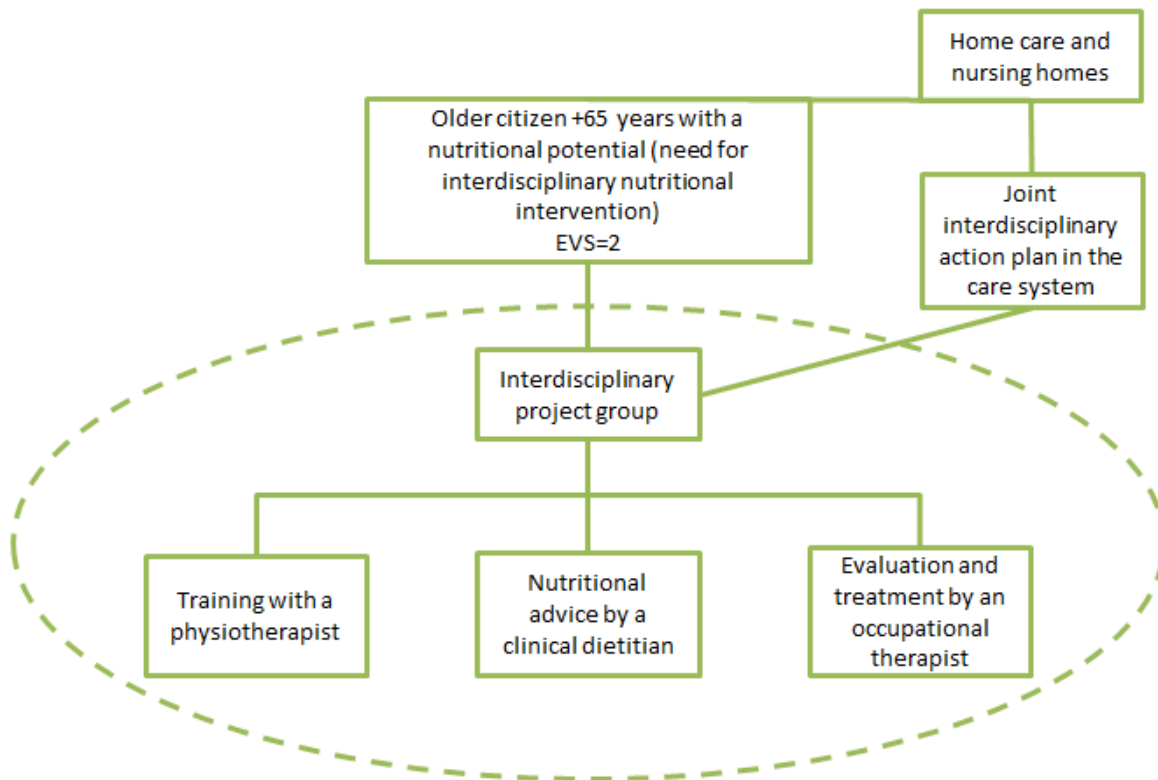


Figure 7.2. New model for interdisciplinary nutritional intervention. The different professional groups associated with the study are responsible for the intervention. The dashed line symbolises an ongoing interdisciplinary collaboration between the different offers for each person (National Board of Social Services 2014).

The new model for nutritional intervention had a very high level of compliance, and the results showed that:

- The intervention group experienced a positive effect on physical function.
- The intervention group in home care experienced a positive effect on quality of life.
- Weight gain was closely linked with an increase in quality of life.

The financial analyses show that the nutritional intervention was cost-effective and thus clearly acceptable as a new intervention (National Board of Social Services 2014).

A targeted rehabilitation effort for frail older people can improve physical function, and rehabilitation has therefore become widely used in the care system in recent years. The rate adjustment pool agreement (2012-2013) allocates funds to prepare and disseminate a rehabilitation model in the municipalities that is focused on social, physical and mental function and is based on the latest research. In this connection, the National Board of Social Services has carried out a systematic literature review to determine whether there is evidence of the efficacy of rehabilitation for older people with reduced physical function.

Unfortunately, nutrition was not among the applied search criteria, and it is therefore not possible to make any conclusions about its importance for rehabilitation (National Board of Social Services 2013a).

7.1.4 Good examples

Figure 7.3 is from the National Board of Social Services. National Action Plan for Meals and Nutrition for Older People in Nursing Homes and Home Care 2013 and from Copenhagen Municipality. More about food vouchers can be found here <http://www.preprod.kk.dk/da/borger/omsorgogsaerligstoette/hjemmehjaelp/mad-og-maaltider-til-aeldre> (in Danish).

■ The Good Kitchen – Holstebro municipality

In the central kitchen of the municipality of Holstebro, called “The Good Kitchen”, they work with accommodating the older people’s wish for food, meals and nutrition. All older people associated with home care that receive meal service, gets a visit from The Good Kitchen in order to support the older people in preparing their own meals, as far as possible. It is the municipal dietitians who visit the citizen. In cooperation with the citizen, his nutritional status, needs and wishes are described. Thereafter, the offers in the menu catalog are organized in the knowledge that the older in home care often do not have the opportunity to go grocery shopping. This means that the offers cover all of the day’s needs. Social and health care staff will also visit the kitchens and get the chance to taste the food and learn how it should be handled in everyday life. In this way, the caregivers are made more aware of what they are serving the citizen. Supporting the preparation of own meals is part of everyday rehabilitation.

MADKLIPPEKORT



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Figure 7.3

7.1.5 Official Danish recommendations

The National Action Plan for Meals and Nutrition for Older People in Nursing Homes and Home Care states that nutritional interventions should be integrated into the preventive and rehabilitative work (National Board of Social Services 2013c):

Since a large proportion of older people in nursing homes and home care etc. are malnourished, they can benefit from a nutrition screening and a subsequent nutritional intervention that can help them retain or regain their physical function and quality of life. It is important to incorporate nutritional interventions in preventive and rehabilitative work, as this can improve the person's quality of life and self-reliance. With the strong focus on physical training in connection with rehabilitation interventions and with awareness of the importance of the composition of nutrients in rebuilding and preserving muscle mass, it is important to focus on food, nutrition and mealtimes when it comes to preventive and rehabilitative work. When muscle mass is rebuilt, physical function improves. It is therefore highly likely that beneficial effects can be achieved by integrating nutritional interventions into rehabilitation interventions. In addition, there is much to suggest that the greatest effect is achieved through interdisciplinary nutritional efforts, e.g. interventions that also focus on exercise and improving the meal ambience, the social framework and dental health. This has a beneficial effect even on very frail residents. The National Food Institute recommends that residents are encouraged to take part in the cooking in order to maintain their skills.

The National Board of Social Services is preparing its “Recommendations for Nutritional Interventions for Older People with Unplanned Weight Loss”, which partly focus on nutritional interventions for older people with reduced physical function (National Board of Social Services 2015, in consultation).

7.1.6 Barriers

The study involving 121 nursing home residents showed good compliance with the intervention when the foods were actually offered to the older. The main cause of lack of compliance was that the nursing staff sometimes did not serve chocolate and homemade energy and protein drinks despite having agreed to (Beck et al. 2009). However, there was a lot of variation between the seven participating nursing homes, which may be due to different levels of interest in nutrition.

In its initial phase, the National Board of Social Services' study involving older people who received meal services found a problem with the existing meal service: it was provided by a private supplier who was obliged to follow certain requirements and standards for meal services, which meant that it was not possible to optimise the meal service (National Board of Social Services 2014). This was an unexpected barrier, but exemplifies the real-world challenges that may be encountered. Other municipalities that want to improve their meal services should be aware that changes can result in new requirements.

According to various regulations, the municipalities are obliged to:

- Initiate a short-term rehabilitation effort before assessing the person's need for home care. The effort is initiated if it is likely to improve the person's physical function and thus reduce the need for home care.

- Offer people with reduced function rehabilitation therapy to achieve the same level of physical function as before, or the best possible level.
- The municipalities are responsible for all rehabilitation that does not take place during hospital stays.
- Offer citizens maintenance training, i.e. training activities designed to prevent loss of physical function and maintain existing skills.

However, the regulations do not specify whether the rehabilitation and training activities must be combined with a nutritional intervention.

In connection with the above-mentioned rate adjustment pool agreement (2012-2013), the National Board of Social Services has reviewed the municipalities' experiences with rehabilitation in the older care sector. This review shows that only a few municipalities have integrated meal optimisation in their rehabilitation activities (National Board of Social Services 2013b).

7.1.7 Areas where more research is needed

A systematic review is needed of what improving food and mealtimes means for the rehabilitation process. As described above, a number of intervention studies have been carried out to improve both physical function and nutrition. Though only a few have focused on optimising food and mealtimes, they can provide inspiration for future studies in this area.

It may be beneficial to integrate the meals-on-wheels into the rehabilitation processes, for example by finding out whether the meals-on-wheels can support the municipalities' work on rehabilitation in the care of the older by delivering the daily meals in different components, so the resident can prepare them together with the carer, and the preparation of the meal thereby becomes part of the rehabilitation service (National Board of Social Services 2014b).

The National Board of Social Services' report states that "to follow up, it would be relevant to carry out a health-technology assessment, which is a good tool to provide a basis for decision-making by managers and politicians in the municipalities. Carrying out a health-technology assessment requires knowledge of the technology, the users' experiences, and the organisation and finances behind the intervention. The current CES study has provided information about the technology (i.e. a new model for nutritional intervention), the user aspect (i.e. compliance with the new model) and finances.

A model that involves appointing and training key nutritional staff in nursing homes is also suitable for nutritional interventions. As regards a similar model for home care, knowledge is still needed about what an optimal organisation of nutritional interventions would look like. Furthermore, although the results suggest that the new model for nutritional intervention is effective, the number of participants was relatively low, and there still appears to be very few studies on the effect of nutritional interventions among older people receiving home care" (National Board of Social Services 2014).

7.1.8 Next steps

The above section describes a number of issues that researchers may want to cover in future.

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7.2 DEMENTIA IN OLDER PEOPLE IN NURSING HOMES, HOME CARE AND HOSPITALS

7.2.1 Why it is important

Older people with dementia can develop a reluctance to eat, which can have serious implications for their nutritional status and may have a negative effect on their own and their fellow eaters' meal experience.

In addition to dementia, older people with poor nutrition are at risk of a number of other chronic diseases, including depression, Parkinson's disease, strokes, cancer, chronic obstructive pulmonary disease, chronic heart disease, rheumatoid arthritis, gastrointestinal problems and osteoporosis. The nutritional issues related to these conditions will not be described here, but more information can be found in part two of the Danish Veterinary and Food Administration's publication "Without Food and Drink" from 2002 (Danish Veterinary and Food Administration 2002).

7.2.2 The significance of dementia for food intake and mealtimes

All three settings

Weight loss is very common among older people with dementia. Often the weight loss begins even before the diagnosis, and worsens as the disease develops. The consequences are just as serious as with other conditions (ADI 2014). The problem is aggravated by the fact that, as the disease advances, unwillingness to eat occurs both as a direct and indirect effect of the disease.

The indirect effect can take the form of a reflexive physical resistance to eating and drinking: the person with dementia may hold their hands in front of their mouth, push food and liquids away, refuse assistance, etc. Another indirect effect is apraxia, which causes a loss of ability to use cutlery, cut food out, etc. Apraxia can also cause older people with dementia to mess with the food and liquids without eating anything, talk during the meal, leave the dining room table repeatedly, and eat things that are not meant to be eaten.

The direct impact of dementia, due to chewing and swallowing problems, can take the form of selective choices: the older person may prefer drinks rather than food, or special food that they nevertheless end up not eating. Another direct impact is that even the physical ability to eat and drink becomes compromised due to lack of coordination between the muscular and nervous systems. Persons with dementia may not open their mouth when they are assisted with eating and drinking, or their tongue and mouth may move constantly, so that food and liquids are dropped out of the mouth. The older person with dementia may want to eat and drink, but have difficulty swallowing, bite the cutlery so the food cannot get into their mouths, or take in the food and liquids only to spit them out. These symptoms occur primarily

in the late stages of dementia, so the necessary interventions will vary greatly (ADI 2014; Danish Veterinary and Food Administration 2002).

The Nutrition Council's report "Nutrition and Ageing" states that "tube feeding in the final stages of the disease serves no purpose. The (major) remaining problem is thus to find the right time to stop nutritional supervision and intervention in each individual situation" (Ingerslev et al. 2002).

7.2.3 Interventions with food and liquid in older people with dementia

All three settings

A systematic review of studies on the efficacy of various interventions among dementia patients' unwillingness to eat has been performed (Liu et al. 2013). The review comprised 22 intervention studies, nine of which were randomised controlled studies, involving six different types of interventions: industrially produced energy and protein drinks; training of the older people and the staff; improving the meal ambience (use of music, colours, serving food on serving dishes); eating assistance; and miscellaneous (eating assistance and meal ambience; training and meal ambience, etc.). In general, there were problems with the quality of the studies. The only intervention that seems to have had a positive effect on nutrition was the one involving industrially produced energy and protein drinks, while training/education seems to have had a positive effect on need for eating assistance. In general, there was limited evidence of an effect on the patient-relevant endpoints of mental and physical function.

When dementia progresses and the person's energy intake become insufficient despite various efforts, tube feeding is usually the next step. A Cochrane review found no randomised studies, but seven observational studies, and concluded that there was no positive effect on survival (Sampson et al. 2009). None of the studies examined quality of life, there was no evidence of a positive effect on nutrition or the prevalence of pressure ulcers, and there was no data about the possible negative effects of the intervention.

In nursing homes

A systematic literature review concerning the effect of mealtime interventions on dementia patients' unwillingness to eat found 11 studies with four different kinds of interventions: music; changing the food and drinks; meal ambience; and group conversations (Whear et al. 2014). None of the studies were randomised, and generally there were problems with their quality, which made it difficult to draw an overall conclusion despite the fact that all the interventions appeared to have a positive effect on the older people's willingness to eat.

7.2.4 Official Danish recommendations

The national clinical guidelines for assessing and treating dementia recommend that the nutritional condition of people with dementia is preserved as long as possible (National Board of Health, 2013). The following factors are assumed to have a positive effect on weight and nutrition despite sparse evidence: education of relatives; weight and nutritional screening in nursing homes and home care; individualised diet planning; and individually tailored support and eating assistance.

The National Board of Social Services' idea catalogue offers suggestions for interventions in relation to dementia (National Board of Social Services 2009), as does part two of the Danish Veterinary and Food Administration's publication "Without Food and Drink" (Danish Veterinary and Food Administration 2002).

7.2.5 Barriers

The reasons for dementia patients' reluctance to eat are complex. Therefore what is needed is individualised interventions and close cooperation between different personnel groups, such as kitchen staff, clinical dieticians, occupational therapists and physiotherapists. However, formalised cooperation is not always possible in practice.

7.2.6 Areas where more research is needed

A number of studies on optimising food and mealtimes have been carried out in all three settings. Although the various interventions seem to have had a positive effect, the studies are often of poor quality, making it difficult to draw any real conclusions. There is therefore a need to test whether the positive trends can be confirmed in actual randomised controlled studies.

7.2.7 Moving forward

A systematic review of the literature, including meta-analyses, have shown that despite the fact that dementia is a serious disease in which the nutritional condition deteriorates as the disease progresses, industrially produced energy and protein drinks can have a beneficial effect on weight, mental physical function, and survival (Allen et al. 2013). It is therefore very worthwhile to seek to improve poor nutritional status. However, there is a lack of information about whether the same positive effect can be achieved by optimising food and mealtimes, and research in this area is therefore needed.

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7.3 REDUCED INTAKE OF FOOD AND LIQUIDS DURING HOSPITALISATION

7.3.1 Why it is important

Many older people have reduced appetite due to age-related anorexia, which is further exacerbated by diseases. Many older patients are already in poor nutritional conditions when they are admitted to hospital, often as a result of recent weight loss, which typically worsens during the hospital stay with accompanying loss of physical function (Ayoub et al. 2002). Put simplistically, 30 days in a hospital bed can equal a loss of 30 years in physical function if no action is taken (McGuire et al. 2010).

7.3.2 Intake of food and liquids during hospitalisation

Data on older patients' food intake is not being compiled systematically. The following is therefore based on information compiled in connection with various research projects.

One Danish study have shown that older people's dietary intake during hospital stays is often insufficient (Hansen et al. 2008). In a Danish intervention study whose target group was not specifically older patients, but where the average age was around 75, protein intake in particular was too low in the control group, as only 30% had their protein requirements met, while 70% had their energy requirements met (Monk et al. 2014).

In time, low dietary intake inevitably leads to critical weight loss. Figures from the database on geriatric patients show that 42% of older people hospitalised in Denmark lose weight during their hospital stays (national database on geriatrics 2012). Many older people suffer from sarcopenia and are therefore particularly vulnerable to loss of muscle mass resulting from bed rest, and at the same time do not get enough to eat and drink. The many hours of bed rest combined with metabolic stress during disease accelerates the loss of muscle mass and thereby the loss of strength and physical function; see Figure 7.4 (English and Paddon-Jones 2010).

Figure 1 Proposed model of age-related muscle loss punctuated by episodes of acute illness or injury and characterized by accelerated muscle loss and incomplete recovery

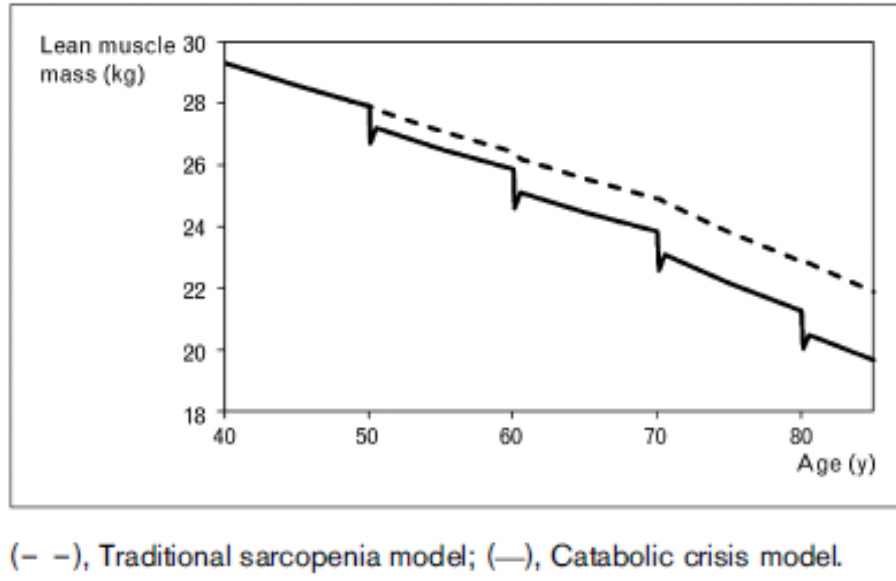


Figure 7.4 Hypothetical model of how age-related muscle loss is affected by accelerated muscle loss related to repeated episodes of acute illness or injury when the patient does not fully recover (from English and Paddon-Jones 2010).

Even short hospital stays thus increase older people's risk of losing physical function and no longer being able to perform everyday activities after they are discharged (Alley et al. 2010).

The challenge is that older patients typically do not take the initiative to talk with the staff about their lack of appetite and reduced food intake. Only after significant weight loss will patients tend to become aware of the problem (Haddad et al. 2011). Low calorie intake and resulting weight loss often continue after discharge, as shown by two recent Danish studies among older patients in poor nutritional status who were monitored for three months after discharge (Beck et al. 2013; Beck et al. 2014). Many never recover their former functional level (Alley et al. 2010; Miller et al. 2006). A high proportion is in poor nutritional condition when they start rehabilitation processes (Kaur et al. 2008). It is therefore important that the nutritional interventions continue after discharge (Ingerslev et al. 2002).

A recently published Danish study documented a number of barriers in this area through interviews with staff in hospitals and the primary sector (Holst et al. 2013). In general, it was agreed that many more patients and citizens should be offered nutritional interventions. This did not happen due to lack of time, training, knowledge and division of responsibilities, which are barriers that have been identified for a number of years (Beck et al. 2006).

An audit of two Copenhagen hospitals in the summer of 2013 found that no care plans contained nutrition plans (Thal-Jantzen 2014). In a 2012 Danish survey of 925 participants, only 20% indicated that they were automatically given nutritional information when they were discharged (Haddad et al. 2014).

7.3.3 Interventions to increase intake of food and liquids during hospitalisation

Two major systematic literature reviews, including meta-analyses, found that offering industrially produced energy and protein drinks to older patients in hospital had a beneficial effect. A positive effect was observed on the older patients' energy and protein intake, weight, complication frequency, risk of re-admissions and survival (Milne et al. 2009; Cawood et al. 2012). The studies in the review included older patients who were malnourished and had acute illnesses or suffered from worsening of chronic diseases, i.e. patients at nutritional risk.

We are not aware of any systematic literature reviews of nutritional intervention studies focused on energy and protein enrichment of food for older hospitalised patients. However, one literature review on different methods for optimising older people's energy and protein intake also includes energy and protein enrichment of food (Nieuwenhuisen et al. 2010). In a randomised controlled trial among older patients admitted to medical or orthopaedic surgical wards, the intervention group was offered foods in addition to the normal menus, such as whipped cream with their desserts, cakes or cheese sandwiches as snacks, milk powder in soups, etc. (Gall et al. 1998). This had a positive impact on energy intake, but not on protein intake. Patient-relevant endpoints were not assessed.

In a Danish randomised controlled study of the effect of an energy- and protein-rich menu on patients at risk of undernourishment, the target group was not specifically older patients, but the average age of the participants was 75 (Monk et al. 2014). In this study, the intervention group was offered an à la carte menu consisting of small energy- and protein-enriched dishes in addition to the normal food. This had a positive effect on energy and protein intake, but no difference was seen in weight, hand-grip strength and the length of hospital stays.

When the National Board of Social Services prepared its "Recommendations for Nutritional Interventions for Older People with Unplanned Weight Loss", it conducted a systematic literature review to identify randomised controlled studies of the effect on physical function. The target group included older people during and after hospital stays (National Board of Social Services 2015). No studies on optimising the food were found.

One systematic review of the literature included meta-analyses of the effect of interventions on the prevention and treatment of malnutrition in older people who move onto a rehabilitation stay after hospitalisation (Collins and Porter 2014). One of these studies was a randomised controlled study in which the intervention group was offered small energy-enriched meals, mainly in the form of extra butter, cream, cheese and maltodextrin (Barton et al. 2000). This had a positive impact on energy intake, but not on protein intake. Patient-relevant endpoints were not assessed.

As regards multidisciplinary interventions, a systematic review by Thorne and Baldwin did not find any studies carried out during and after hospitalisation that focused on optimisation of the food combined with other interventions (Thorne and Baldwin 2014).

7.3.4 Good examples

At Herlev Hospital patients at risk of malnutrition are offered a specifically designed energy- and protein-rich menu for people with low appetite. So far the menu is being offered on four of the hospital's wards.

7.3.5 Official recommendations

As mentioned, there are official Danish recommendations for food and liquids for hospitalised older people. These are described in the "Recommendations for Danish Institutional Diets" (Pedersen and Ovesen 2009) and in The Complete National Diet Handbook (<http://www.kostforum.dk>).

The national action plan for meals and nutrition for older people in nursing homes and home care (National Board of Social Services 2013) recommends that the cross-sectoral cooperation on nutritional interventions for older people be strengthened through a clear division of responsibilities and guidelines for action.

The National Board of Social Services is preparing its "Recommendations for Nutritional Interventions for Older People with Unplanned Weight Loss", which partly focuses on nutritional interventions for older people who have been discharged from hospital (National Board of Social Services 2015, in consultation).

7.3.6 Barriers

The Danish quality model includes a standard for nutritional screening, planning and following up. In practice this has meant that far more patients have received nutrition screenings on admission, namely 75%. Half of them are also given nutrition plans, which are followed up on. Still, many are not helped in this way, and the main reason is lack of knowledge in this area (Hackney et al. 2014).

Short hospital stays are often given as a reason for the lack of interventions. However, malnourished patients are often hospitalised longer than other patients (Arla Foods and the Danish Diet and Nutrition Association 2014), which should provide enough time to start a nutritional intervention, which can then continue after discharge.

The existing DRG system does not provide funding for nutritional interventions, so there is no financial incentive for the ward or hospital. This option is available in other countries, where it has been financially beneficial (Boltong et al. 2013).

The patients indicate that they are satisfied with the food in the hospitals, but they still lose weight (Centre for Patient Experience and Evaluation 2014). Therefore it is important that the patients' intake of food and liquids is closely monitored, even if they say they are satisfied.

Plans for extra nutritional interventions for the older are not included in the Danish Healthcare Act or the current official healthcare agreements (2011-2014). In addition, there are no standardised fields for nutritional conditions and nutritional interventions in MedCom's municipal standards for hospitalisation, care pathways, discharge and rehabilitation. This makes it difficult to continue nutritional interventions across sectors.

7.3.7 Areas where more research is needed

There are only a few studies of the effects of optimising the food offered to older patients during and after hospitalisation. The results have been positive with regard to increasing energy intake and, in a single case, protein intake. However, information is needed about the significance of this for patient-relevant endpoints.

7.3.8 Next steps

Studies, as pointed out above.

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7.4 THE IMPORTANCE OF LIFE SKILLS FOR OLDER PEOPLE'S DESIRE TO EAT

Retaining or regaining life skills affects older people's desire to eat. It gives them more scope and control over their own lives, and is often mentioned in connection with rehabilitation, since rehabilitation is a targeted and time-limited cooperation between the care receiver, caregivers and other professionals designed to help the person overcome limitations in their physical, mental and/or social function and lead an independent and meaningful life. Rehabilitation that is based on a holistic view of the person's living situation and decisions requires a coordinated, coherent and knowledge-based effort (Marselisborg Centre 2004).

Rehabilitation in this sense can involve both prevention and retraining. Life-skill training depends on a number of factors, including the older person's understanding of ageing and old age, food and mealtimes, the everyday skills that are important for them to master in relation to food and mealtimes, whether they can get the necessary assistance to live and eat independently, whether there is adequate communication between the older person and the professionals, and the role of the relatives.

7.4.1 Why it is important

Life skills appear to be very important in relation to older people's desire to eat and how they approach mealtimes, be it meals in their own home, in nursing homes, or in hospitals. Ideally the older people should be in a position where they are able to independently choose what, with whom and when to eat.

Meals in all three settings are prepared, consumed and cleared away as important set routines throughout the day. Being involved in the meal and its related chores can help older people eat more and improve or retain their quality of life and their physical, social and mental well-being. We believe that having independence and being given a say in their everyday lives can be beneficial to older people.

Being able to handle everyday tasks independently within the scope of one's ability enhances quality of life. Since meals are a big part of daily routines, it is natural that the chores associated with them contribute to maintaining older people's skills in all settings. These chores include shopping, peeling potatoes, folding napkins and setting the table.

7.4.2 General comments on life skills and rehabilitation

Rehabilitation is a big part of the municipalities' strategies for older people in nursing homes and home care, because helping the older to become more self-reliant can both save resources and potentially enhance their quality of life. One important question is whether the care system can increase preventive efforts and how such efforts might help the older people become more independent in the long term.

Rehabilitation is partly focused on food and mealtimes, and the chores around the meal can be included in the rehabilitation process. “Rehabilitation focuses on the resident’s everyday activities and participation in social life, and is about finding holistic individual solutions based on the resources of the older person and their dependants. The process should be carried out in a coordinated and coherent way based on the resident’s circumstances” (Marselisborg Centre 2004).

The resident should decide the framework for the life-skill training based on the areas where he or she needs most help (Marselisborg Centre 2004). To promote health and rehabilitation, the interventions must be useful in daily life.

One common factor for older people in all three settings – home, nursing home, and hospital – is that they face a transition process in which they have to accept that they need or will need assistance in the short or long term. They may experience dependence on professional care and home care as a form of institutionalisation that prevents them from expressing their own identity (Grøn and Andersen 2014).

It can be hard to accept becoming weaker or being at risk of getting weaker due to the physiological consequences of ageing. The transition from independence to short-term or permanent dependence on help can mean a loss of identity and a consequent late-life crisis. “A rehabilitation process often means that residents need to reorient themselves, reorganise their everyday lives and find their feet in a new way of life that may involve a change in their understanding of themselves and others” (Marselisborg Centre 2004).

To manage what and how much they eat, the older need to understand their own needs for food and liquids and be able to handle their own day-to-day meals. Physiological and mental changes can reduce appetite, and as a result the older may not eat enough energy and protein to meet their needs. This is significant in terms of the foods and meals that are ideal to eat. It is usually necessary to eat more protein-rich and fatty foods, which can be a challenge to prepare and make appetising if the person has so far preferred low-fat food.

In home care

Older people living at home make up a diverse group. Some are clear-minded and resourceful and can continue to actively maintain good physical and mental health. Others need some assistance, while a third group have extensive and complex care needs (Home Care Commission 2013).

In relation to the daily food and mealtime situation, it is relevant to look at life-skill training in everything from planning the meal and shopping for groceries to preparing the food, setting the table, clearing the table and doing the dishes. Life skills regarding food and mealtimes can also involve social needs, such as eating some meals with others, for instance in dining clubs. After a meal-service assessment, the meal can be delivered in parts, from which the older person can then create a warm tasty meal with assistance. The older person, the residential carers and the families all have a role to play in ensuring that the older person retains or regains their life skills.

In nursing homes

Older people in nursing homes are often in a weakened status and dependent on the help of others, but can still make decisions about their everyday life, e.g. about their clothing, food, bed times, etc.

(Commission on Quality of Life and Self-Determination in Care Homes and Nursing Homes 2012). An example of a good experience is a meal with an atmosphere of homeliness and comfort, where the resident can participate in the cooking, if there is a kitchen. Other ways to involve residents in the food and mealtimes are menu planning, table settings and conversations around the table.

In hospitals

Hospitalised older people are often malnourished (Beck et al. 2013) and in addition have been taken outside of their normal environment. In one interview survey, older people stated that the hospital stay was something they needed “to get over with” and that they spent a lot of energy thinking “thoughts about illness”. A typical hospital day was described as follows: “First I eat breakfast, then I wait for the ward round. Then there are examinations, and of course you have to wait for the examination when you’ve been moved down there. When you’re back in the ward you wait for lunch, then for coffee and finally for a visit and dinner” (Kofod 2000). The opportunity for self-determination and retention of skills is limited to choosing the food at the buffet, and whether one wants to eat with someone.

7.4.3 Assessing older people for municipal care services

According to Section 83 of the Danish Act on Social Services, the purpose of care and assistance is to help the citizen to help themselves, facilitate their everyday lives, and improve their health and quality of life (see Table 7.1).

Table 7.1 Based on an overall assessment of the person’s life circumstances, level of function and everyday life, he or she is offered an intervention in the form of personal and practical assistance with everyday life, food and mealtimes.

Nursing and care services regarding food, liquids and meals. Residents aged 65+			
Status of health	Type of residence	The individual resident’s life skills/care needs regarding food, liquids and meals	E.g. in home care and care interventions relating to everyday life, food and mealtimes – according to Section 83 of the Act on Social Services Interventions/services are allocated based on assessments of the resident’s training potential, home, network and family circumstances ²
Healthy resident	Own home	No need for professional care. The resident and any relatives take care of all necessary tasks when it comes to personal care.	No home care services.
Frail resident	Own home. Assessed for home care	Partial need for professional help with practical and personal tasks relating to food, liquids and mealtimes.	Practical tasks Shopping: writing shopping list, picking up shopping list, shopping using shopping scheme, shopping via staff. Food

			<p>Meal service with delivery</p> <p>Eating, drinking, bathing, washing, caring for the body, dressing and undressing, using the toilet, moving around in one's own home, getting everyday goods, cooking, cleaning, washing clothes and linen, going out, using public transport, moving around, preventing deterioration of illness/loss of physical function</p> <p>Clearing up and washing dishes after meal</p> <p>Personal activities</p> <p>Personal hygiene:</p> <p>Oral hygiene</p> <p>Cleaning feeding tubes</p> <p>Preparing and serving food and drink</p> <p>Help with eating and drinking</p>
Frail resident	Nursing home	Increased need for professional assistance with practical and personal tasks and with the resident's everyday life at the nursing home, often including socialising and meaningful activity.	<p>Practical and personal tasks and assistance with everyday life in nursing homes, e.g.:</p> <p>Socialising</p> <p>Daily chores and activities</p> <p>Walks inside and outdoors</p> <p>Decorating for holidays and anniversaries</p> <p>Cooking and baking</p> <p>Music, movies and reading aloud</p> <p>Games</p> <p>Daytrips</p>
Frail resident in rehabilitation	Own home/nursing home	Periodic need for professional care and nursing	Periodic home care if needed
Very frail/sick resident	Place in nursing home	Need for professional care 24 hours a day	24-hour care
<p>² Eating, drinking, bathing, washing, caring for the body, dressing and undressing, using the toilet, moving around in one's own home, getting everyday goods, cooking, cleaning, washing clothes and linen, going out, using public transport, moving around, preventing deterioration of illness/loss of physical function.</p>			

7.4.4 The significance of life skills for older people's desire to eat and prioritise meals

In home care

For older people in their own home, preparing and eating meals often make up a big part of the day (Kofod 2000). A Swedish study from 2013 focused on older women living at home, some of whom were healthy while others were weakened by arthritis, Parkinson's disease or strokes (Gustafsson et al. 2003). The study showed that the subjects had a strong need for independence when it came to cooking and mealtimes. For some women, cooking has traditionally been a central part of everyday life, while for others it has just been one of their obligations. For many, cooking is a source of joy, especially cooking for others. Eating regularly and with the family is also regarded as valuable.

Preparing one's own food is a way of expressing one's identity, and the wish for independence is a way of maintaining or rethinking that identity. Healthy older married women considered cooking essential and often made traditional dishes (Gustafsson et al. 2003). Healthy older single women saw meals more as an obligation and simplified the work with cooking, though they still made their own meals. Among other things, they said it was boring only to cook for themselves. Older women with Parkinson's disease still found it important to make homemade food, but had simplified the cooking, with some combining it with meal services. The women who were no longer able to cook for themselves, for example because they had suffered a stroke, still felt independent because they could go to the supermarket, buy readymade meals and decide when to eat them.

The Swedish study (Gustafsson et al. 2003) identified three life-skill or coping strategies that older women living at home used to stay independent: municipal support, self-help and adaptation.

Municipal support included medication, assistive devices and transport services. Self-help involved, for example, reorganising kitchen cupboards to make things easier to reach, purchasing a microwave, boiling carrots instead of grating them, shopping several times a week in small quantities that the women could carry, eating with a spoon, or cutting food up and eating it with their hand. The women's adaptation was sometimes part of the acceptance of their disease, so that they lowered their ambitions for their cooking and did things in accordance with their mood and illness. Simplifying the meal was another way to adapt and might for instance involve buying sliced bread or readymade meatballs. Social withdrawal was a third adaptation option, which meant that the older person no longer had the desire to eat with others, or did not want to go out from fear of meeting other people and having to explain their illness.

Another Swedish study similarly found that cooking and maintaining the skills associated with cooking are experienced as important to expressing one's own identity (Sidenvall 2001). Another Swedish study showed that many of the oldest women (80+) and single older women

were affected by their bodies' dwindling strength and changes in the family such as the loss of a spouse. Such factors may mean that they do not get enough to eat (Sidenvall 2001).

In yet another Swedish study (Medin et al. 2010) of older people's experience and ability to cope with the meal situation, two out of three still had disabilities six months after suffering a stroke. The most frequent challenges to eating were that many only ate three quarters or less of the food on the plate and had problems handling the food on the plate and leading the food up to their mouths. This despite the fact that eating can be improved through the right training, even after several years of difficulties with eating.

In one study involving 104 participants living in their own home, all the participants expressed the desire to be able to eat normally again (Medin et al. 2010). Those who needed eating assistance either saw the people around them as facilitators or as people who made it more difficult to eat. Strangers in particular were seen as obstacles to eating. In general it can be hard to ask for help and eat with others when you are not in full control of your ability to eat.

In nursing homes

For older people in nursing homes with reduced physical function, it is important that they are able to add their own touches to their food, for example by sprinkling herbs or spices onto a meal or putting extra cream in the sauce (Kofod 2000).

As regards involving older people in cooking in nursing homes, questionnaire surveys among the kitchens in Danish nursing homes in 2006 found that the residents' involvement in meals was limited (Beck et al. 2006). In one in four nursing homes, residents were not involved; often the comment was that "they do not function well enough". Experiences from various projects during the same period suggested that the staff found it hard to involve the older. "It was mainly minor things that the older residents participated in, such as coming up with ideas for menus, setting the table or helping with some of the cooking, such as frying fish fillets or pork chops" (Beck et al. 2006). The projects also found significant differences between how the staff approached this task. In some homes, a resident stirring a pot was not seen as an activity, while in other homes a resident being in the kitchen and being able to smell the food was seen as an activity. In other places the residents peeled potatoes and chopped vegetables. Frail older people sat and observed, and according to the staff thereby took part in the experience. It is not clear whether all this was discussed with the residents, but the staff did consider how the residents could benefit from being involved.

In hospitals

A project called "Project Mealtime Hosts" (with mealtime hosts affiliated with the Department of Infectious Diseases and the Respiratory Ward in Herlev Hospital) was designed to help older patients feel more independent when it came to meals and eating. One older patient who had been fed by tubes for a long time and was at risk of malnutrition now began to eat soup, and a few weeks later had visibly improved. "They [the meal hosts] ask me what I feel like eating all the time, and that makes me feel like eating" (Søgaard Lund 2012).

7.4.5 Interventions to give older people better life skills and more desire to eat and prioritise meals

In hospitals

Another study in Herlev Hospital shows that three home visits by a dietician during three months after discharge had a positive effect on the physical function (mobility) and nutritional condition (weight, energy and protein intake) of older patients at risk of malnutrition. However, they had no effect on the risk of re-admissions and mortality (Beck et al. 2013). In relation to coping with food and mealtimes, the patients who received catering services were part of the intervention group, and with the help of the dietician, the male participants in particular found that they could cook themselves.

An earlier Danish study showed that involving the older patients in the nutritional interventions increased their intake of food and liquids (Pedersen 2005).

In nursing homes and home care

No intervention studies among older people in nursing homes and home care were found.

7.4.6 Good examples

In 2013, Roskilde Municipality tested “food workshops” among older residents in four daycare and community centres. Food workshops offer an integrated course of activities with the aim of maintaining and strengthening residents’ cooking skills to give them more desire to make food in their own homes. Food workshops also give the older the chance to have good and meaningful experiences with others.

The course consisted of six food workshops in which up to five residents made food and ate together, with guidance from a culinary adviser and the centre’s staff. Residents with different needs and backgrounds, such as people with diabetes or dementia, took part in the pilot project (Madkulturen 2014).

Among other things, the experiences from the food workshops show that:

- Food and mealtimes can create a basis for strong communities.
- Even minor kitchen skills can be seen as a major contribution to a communal meal.
- Food brings back memories.
- Everyone has the desire to learn.
- Meals help people talk about other topics, such as over- and underweight, loneliness and old age.
- Practising improves skills in the kitchen, regardless of age.

In 2015, food workshops will be carried out in all day centres and community centres in Roskilde Municipality with a focus on enabling the staff to conduct workshops on their own.

7.4.7 Official Danish recommendations

The report “Recommendations for Developing Attractive Meal Services for the Older”, published by the Danish Institute for Food and Veterinary Research, recommends that residents be encouraged to participate in cooking meals to maintain their skills (Beck et al. 2006). The National Action Plan for Meals and Nutrition for Older People in Nursing Homes and Home Care recommends that food, nutrition and meals be organised based on the individual older person’s own wishes and needs (National Board of Social Services 2013).

7.4.8 Barriers

- There is a lack of understanding of how food and meals can be used to rehabilitate older people who live at home or in nursing homes or are hospitalised, and to help them maintain their life skills.
- There is a lack of focus on making food and mealtimes focus areas for rehabilitation. Older people should be actively involved in the care activities. For example, they can help set the table, peel potatoes and butter bread.
- In general, meal services for older people living at home do not use differentiated solutions, which mean that all recipients of meal services are offered the same meals, even though there is a big difference between what they can physically manage.

7.4.9 Areas where more research is needed

- How do the municipalities use food and mealtimes to help rehabilitate older people in the three settings?
- What effect does involving older people in activities related to food and mealtimes have on their quality of life, life skills and rehabilitation?
- There is a lack of case studies and recommendations regarding how working with food and mealtimes can be applied in individualised rehabilitative efforts for older people. For example, older people who have been assessed as being eligible for meal services can be encouraged to do some of the cooking themselves, such as boiling potatoes.
- There is a lack of understanding of whether social interventions and non-food-related activities indirectly boost appetite and weight retention among the older who do not want to participate in the nursing home’s communal meals.

7.4.10 Next step

Identifying which activities and offers already exist and what effect they have on life skills and quality of life.

Conducting research into the impact of various activities, tools, routines, etc. on life skills, physical function, morbidity and quality of life.

Developing appropriate guidelines for refurbishment of homes for the older and nursing homes that stimulate residents to do as much as possible for themselves.

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8. THE STAFF'S SKILLS

This chapter concerns the importance of the professional skills of the nursing and kitchen staff in prioritising and providing meals.

8.1 THE SIGNIFICANCE OF THE STAFF'S SKILLS FOR PRIORITISING AND PROVIDING MEALS

Some of the key questions in this area are: What do the nursing and kitchen staff know about the nutritional and mealtime needs of older people? Is there a dialogue and interdisciplinary collaboration between the staff when it comes to meals and mealtime settings? How does the management prioritise meals in relation to the rest of the care? Is there a policy that can ensure coherence and direction in this area?

8.1.1 Why it is important

To prioritise and provide meals to the older, it is crucial that the staff have the necessary skills to support and enhance the residents' existing capabilities. And the skills of the staff should in turn be supported by the management by making a clear division between the responsibilities of the kitchen staff and the carers in all three settings. The professional staff must ensure that the older's nutritional and quality of life needs are met.

A specific example of the need for interdisciplinary dialogue between kitchen staff and care staff concerns the food's texture and consistency. "Serving food and liquids with the wrong consistency will often result in residents with chewing and swallowing problems, storing up food in the mouth, slobbering, coughing, having pain, spitting out the food and throwing up. The result is a bad food experience for both the older themselves and the people they share the table with" (Kofod 2000).

Another example concerns the nursing staff's skills in helping older people with various disabilities socialise around the meal. "In nursing homes, older people with, for example, dementia, Parkinson's disease and strokes can have trouble communicating. They can therefore find it difficult to take active part in the social community around mealtimes in nursing homes" (Kofod 2000).

8.1.2 The significance of the staff's skills for prioritising and providing meals

All three settings

The staff have a role in adjusting any negative or positive expectations the older residents may have regarding the meal (Beck et al. 2006). This applies to all three settings: in their own homes, the older may have a negative expectation of the food, because it is delivered and because they have to eat it alone, which is why many do not consider it a real meal (Kofod 2000). In hospitals, the older patient may have negative expectations of the food because it is “hospital food”.

In home care

No studies were found on the importance of the nursing staff’s professional competences in relation to food and mealtimes for older people living at home.

In nursing homes

A Danish study concluded that although many carers in nursing homes have received training concerning food, mealtimes and nutrition for the older, more training is needed regarding food and mealtimes, the carer’s role before and during the meal (Beck et al. 2006; Kofod. 2012), as well as screening off and caring for vulnerable individuals with special needs (Sidenvall et al. 1994; Sidenvall et al. 1996).

An interview study of 136 staff employed at 15 randomly selected nursing homes in Aarhus County found that the staff had limited understanding of older people’s nutrition, and that the nurses did not know more than staff with shorter basic training. At the same time, the researchers’ impression was that the older’s nutrition was a low priority (Beck et al. 2006).

There is also a mismatch between the role of the nursing homes’ staff and their tools and approach to the actual meal. Kofod’s observations and interviews showed that the intentions of politicians and nursing home managers to create the conditions for good, cosy meals for the residents were far from being realised. “A number of residents said they felt embarrassed at the communal table and sometimes left it as fast as they could after finishing the meal. Why? Many employees spoke of the frustration they felt when they failed to get residents to take part in conversations during the meal” (Kofod 2012). Kofod suggests that care assistants lack the necessary pedagogical skills for this.

The staff handling the meal also plays a role as fellow diners, which is particularly important in relation to residents with dementia, who mirror other people’s behaviour in the meal situation (Beck et al. 2006).

Staff must furthermore be able to screen off individuals who eat messily, both for the sake of the individual and the other diners. The residents’ awareness that they eat messily can make them eat less and weaken their nutritional status, and there is also a risk that the other diners lose their appetite (Beck et al. 2006).

In hospitals

Disease-related undernourishment is a major problem among older hospital patients. In 2002, the Council of Europe identified five key barriers to ensuring good nutritional care in European hospitals (Council of Europe 2002):

- Lack of clearly defined responsibilities in planning and managing nutritional care
- Lack of sufficient education with regard to nutrition among all staff groups
- Lack of influence and knowledge among the patients
- Lack of cooperation between different staff groups
- Lack of involvement by the hospital management.

In addition to the managerial barriers, the training of all the staff groups does not focus enough on meals and nutrition, and there is not enough cooperation between the staff groups. The staff must become better at involving the patients and informing them about the importance of meals and nutrition. All the staff need more on-the-job nutritional training, and much closer cooperation and dialogue is needed between the various staff groups, including doctors, nurses, dieticians and meal services staff, in order to optimise the nutritional care.

Studies indicate that staff is not good enough at identifying and acknowledging disease-related undernourishment among older patients (Suominen et al. 2009; Ross et al. 2011). In a Finnish study, only 15% of older patients were assessed as undernourished using the mini nutritional assessment (MNA) tool, although more than 60% were in fact undernourished (Suominen et al. (2007a). An Australian study concluded that there was a lack of a coordinated approach to and knowledge of nutritional interventions, as well as a lack of interdisciplinary communication and perception of a shared responsibility. Employees felt that the desired focus on nutrition competed with many other activities (Ross et al. 2011).

The Danish quality model, in which nutrition is one of the indicators, has put more focus on nutrition during hospitalisation, mainly through greater nutrition screening of patients, but follow-up action is still lacking (Haddad et al. 2014). In addition, a recent Danish study showed that there are a number of barriers to continuing nutritional interventions after the patients are discharged from hospital (Haddad et al. 2013), such as lack of time, training, knowledge, and allocation of responsibilities.

8.1.3 Interventions regarding the staff's skills

In home care

No intervention studies focusing specifically on the training of home care staff were found.

In nursing homes

A systematic review focusing on the impact of food interventions on the nutrition of nursing home residents included studies on the training of nursing staff (Abbott et al. 2013), no

randomised controlled studies were included in the review. However, the results indicate that educating the staff on nutrition has a positive impact on the nutrition of the residents.

A scoping review of studies on meal interventions in nursing homes in general found no randomised controlled studies (Vucea et al. 2014). The conclusion was that training the nursing staff seemed to have some effect on detecting older people at risk of undernourishment and making efforts to improve their nutrition.

In connection with a Danish initiative called “Good Food, Good Life”, funded by rate adjustment pools and carried out by the National Board of Social Services, a literature review of three studies (including one randomised controlled study) concluded that on-the-job training that combines nutritional theory and practice has a positive spill-over effect on older residents’ nutritional status (National Board of Social Services, 2010).

In hospitals

A scoping review assessed nutritional interventions for hospitalised patients (Cheung et al. 2013), none of the identified studies focused exclusively on staff training.

8.1.4 Good examples

In nursing homes

In 2006, superintendent Bo Pedersen of Bryggergårdens nursing home in Copenhagen started a collaboration with kitchen manager Jytte Jensen on changing the food and mealtimes in the nursing home. This resulted in a significant improvement in the culinary quality, more focus on improving the social interaction, and more targeted interdisciplinary activities around the work with food and mealtimes. The process was very hands-on and has helped to change the working culture regarding food and mealtimes in Bryggergården (Madkulturen 2013).

In hospitals

In 2010-2012, nutrition assistants were brought into Herlev Hospital’s central kitchen as part of the Meal Hosts project, which assigned meal hosts to hospital departments to support the daily work on the wards (Lund 2012). The meal hosts took over some of the kitchen and nursing staff’s tasks, including helping with menu selection and presenting and serving meals. The project concluded that, as a result of the project:

- The staff was relieved in a working area they did not have time to prioritise.
- There was more focus on the individual patient’s dietary intake.
- There was more focus on the patients’ food and mealtime experience.
- The patients had more desire to eat.
- The meal hosts experienced their function in the wards as meaningful.

- There was greater cooperation between the kitchen and food staff and the rest of the staff.
- Food waste was reduced.
- It was a challenge for the meal hosts (the nutrition assistants) to find a platform in the departments for a professional hosting role.
- The staff’s focus on work relief was seen as more important than the patients’ satisfaction and improved intake of food and drink.

8.1.5 Official Danish recommendations

The National Board of Social Services’ National Action Plan for Meals and Nutrition for Older People in Nursing Homes and Home Care (2013) recommends that:

- All staff groups around the older should be aware of the importance of food, mealtimes and nutrition to the quality of life and physical function of older people.
- Interdisciplinary cooperation between staff groups should be promoted.

The National Board of Social Services’ project “Good Food, Good Life” (2011) recommends skills development of managers, kitchen staff and carers. The National Board of Social Services has developed the implementation model “Roads to Good Food and a Good Life for Older Residents – An implementation guide to interventions regarding food and mealtimes” for three professional groups: local government employees, carers and kitchen staff. The guide offers advice for each group on focus areas such as proper nutrition, good ingredients, and a good meal setting (see Figure 8.1 below).

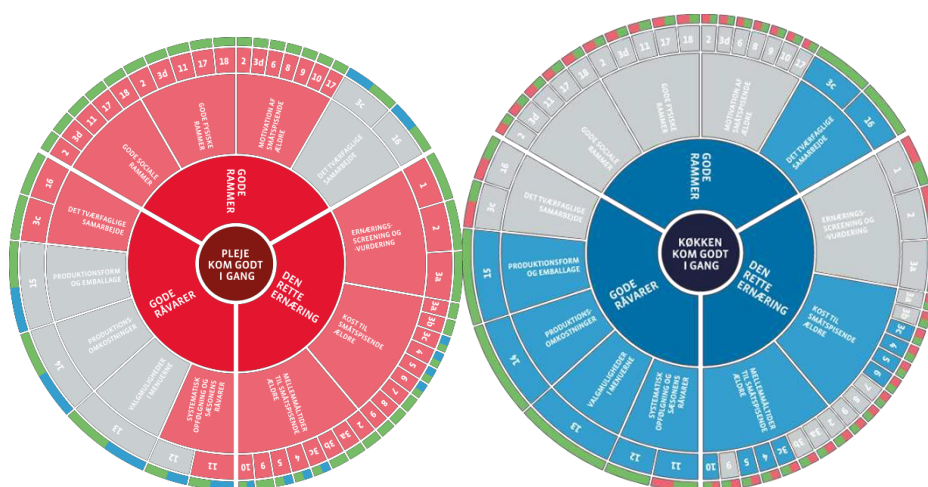


Figure 8.1. In connection with the National Board of Social Services’ project “Good Food, Good Life” (2011), on-the-job training courses have been developed to train social and health assistants and nutrition staff.

8.1.6 Barriers

The Council of Europe's report from 2002 suggested that none of the staff groups received adequate nutrition training and that there was poor cooperation between individual staff groups (Council of Europe, 2002)

8.1.7 Areas where more research is needed

How are students taught about food and mealtimes in the various programmes that train them to care for the older?

How does the staff's level of training affect the older's nutrition, physical function and quality of life in the three settings?

Studies should be conducted in these areas before and after offering the necessary courses in the vocational training programmes.

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9. POLICY (GOVERNMENT)

This chapter consists of two sections. The first describes the importance of the financial and organisational framework. The second deals with the importance of a food and mealtime policy.

9.1 THE SIGNIFICANCE OF THE FINANCIAL AND ORGANISATIONAL FRAMEWORK FOR FOOD AND MEALTIMES

The issue of finances in relation to meal services for the older has to do partly with the overall financial framework for this area of older care and partly with how the available financial resources are used. The following deals mainly with the latter.

Two financial aspects related to meal services for the older seem to be particularly significant:

1. The importance of older people's nutritional status to the cost of older care.
2. The importance of the municipalities' use of the available financial resources to provide food to the older.

These two points are dealt with separately below.

9.2 THE IMPORTANCE OF OLDER PEOPLE'S NUTRITIONAL STATUS TO THE COSTS OF OLDER CARE

The financial consequences of the nutritional status of the older are mainly indirect. Apart from the fact that good nutrition is important to the health and physical and mental well-being of older people, an increase in the number of older people in good health also reduces the costs of medical care and often they can handle many daily tasks themselves, such as personal care, cleaning services, etc. This results in public savings on home care, nursing, etc.

9.2.1 Why it is important

The financial gains that can potentially be derived from good nutrition among the older do not directly benefit the providers of the meal services. This unclear relationship between the costs and benefits of good meal services for the older presents a potential barrier to delivering meals with adequate nutritional and gastronomic quality. A clearer link between the costs of meals and the financial benefits of improved nutrition could potentially strengthen the financial incentives to enhance the quality of the meals and ultimately improve the physical function, nutrition and quality of life of older people.

9.2.2 The significance of inadequate intake of food and liquids for the costs of older services

All three settings

A Dutch systematic review looked at costs associated with illness-related undernourishment (Freijer et al. 2013). The target group was people over 18 in poor nutritional condition, including older people in nursing homes, home care and hospitals. The conclusion was that in 2011 these costs represented an extra expenditure of EUR 1.9 billion, or 5% of the total expenses of the Dutch healthcare system. The largest costs were associated with people over 60.

In nursing homes

Another Dutch study estimated the cost of improving the poor nutrition of older residents in nursing homes (Meijers et al. 2012). There was an extra expenditure of EUR 10,000 a year per older resident with poor nutrition due to the efforts required to improve their condition, including employing clinical dieticians, offering industrially produced energy and protein drinks, and the time spent weighing the residents and following up on their health.

In home care

Livingston et al. (1997) examined the costs of caring for older people in Greater London with various disorders (dementia, depression, limitations on physical activity and anxiety diagnoses), as well as different types of care costs. Their analysis found that the average monthly cost of personal care and practical help was 150-500% higher for older people with these disorders than for healthy older people. A substantial part of the costs of personal care was directly associated with these specific disorders, but on average the costs of practical assistance were also higher (200-300%, and up to 700% for people with dementia) than for healthy older people. The difference was mainly due to the fact that healthy older people use these services far less than older people with these disorders. The study thus suggests that there is a considerable difference between the costs of bringing out meals to older living at home and the costs of helping them to eat the food – a difference that may be useful to examine in the Danish context as well.

These significant differences between the costs of meal services for healthy older people and, for example, for depressed or frail older people may also indicate a potential for long-term savings, in so far as a higher quality of food and mealtimes can help prevent or postpone depression and physical impairment.

9.2.3 Interventions to increase the intake of food and drink, and their significance in terms of the costs for older care and services

All three settings

A systematic Dutch review looked at the financial significance of a nutritional intervention among hospital patients over 18 and older people in nursing homes and home care (Freijer et al. 2014). The nutritional interventions typically involved providing industrially produced drinks, sometimes in collaboration with a clinical dietician. The results, which were based on academically sound studies, were that the nutritional efforts either led to financial savings (three studies), were cost-neutral (one study), or were more expensive than the standard nutritional services, but still within an acceptable level compared to other expenditures in the healthcare system (four studies).

An earlier Dutch study looked specifically at the financial significance of a nutritional intervention involving providing industrially manufactured nutritional drinks to older people (Freijer et al. 2012). The focus was on older patients, but these were also defined as including older people in care homes and home care. The conclusion was that the intervention was financially viable, especially because it resulted in fewer hospital admissions. This reduction in hospital admissions was also seen in three studies involving providing nutritional drinks to older patients being discharged from hospital.

In nursing homes and home care

Sahyoun and Vaudin (2014) provided an overview of the scientific literature relating to the nutritional and health-related effects of meal services delivered to older people in the United States and found that they improved the users' nutrition and reduced the need to move into care homes.

A recent Danish study (National Board of Social Services 2014) also showed that it is possible to organise a cost-effective nutritional intervention for frail and undernourished older people. This study examined an intervention based on a formalised cooperation between clinical dietitians, occupational therapists and physiotherapists. The intervention had positive effects on the participants' physical function and quality of life. The results also showed that weight gain was closely linked to improved quality of life. The study suggests that the formalised cooperation between the different areas of expertise was a significant reason for the intervention's effectiveness. The study calculated that the cost of the intervention was DKK 64,000 per QALY (quality-adjusted life year), which is low compared to the cost of achieving similar results in other parts of the healthcare system, where the report indicates DKK 200,000 per QALY as a relevant benchmark.

Kretser et al. (2003) investigated the difference between the effects of two alternative concepts of delivered food on the users' degree of self-reliance: either one meal a day five days a week (USD 5.50 per day including transport, delivered warm and recommended for eating immediately), or a full week's menu (three meals and two snacks per day for USD 11

per day, delivered frozen once a week). The recipients of the full week's menu gained more weight and were in better nutritional condition than those who received a single daily meal. But the residents' degree of self-reliance was linked more to their BMIs than to whether they received one or the other type of delivered food. Of those who received the full-week diet, 52% said they did not finish the food every day because there was too much. However, the users were satisfied with the scheme, for example with their ability to select meals, the taste of the food and the weekly delivery, which gave them more flexibility to choose their meal times. The users consumed more ready-to-drink beverages than drinks that needed preparing. Frozen dishes specifically prepared for the target group received the highest rating.

In hospitals

Calculations by Lassen et al. (2005) and Pedersen (2009) suggest that undernourishment among medical patients costs the Danish hospital sector around DKK 144 million annually (calculated in 2003 prices).

Based on a Dutch study (Freijer et al. 2013), a report prepared by Arla Foods and the Danish Diet and Nutrition Association (2014) tried to calculate the socioeconomic consequences of undernourishment among the older.

In addition to more hospitalisation days for undernourished older medical patients, the report's calculations also included increased care costs in nursing homes, home care and in GP's surgeries. The calculations suggest that undernourishment costs the Danish public sector around DKK 6 billion a year, that DKK 1.5-2 billion could be saved through targeted treatment of these patients' undernourishment, and that this saving would be more than sufficient to cover the cost of such a treatment intervention. These calculations also suggest that there may be socioeconomic benefits to be gained by focusing more actively on diet and nutrition during the treatment of undernourished hospital patients (within the provisions of the Healthcare Act), rather than "consigning" them to the normal older care and meal services too early.

Allison (1995) studied the importance of diet for the rehabilitation of hospitalised older people. He found that encouraging the older to eat and offering them diets with high energy content promotes rehabilitation. He also calculated the costs of different types of diet: standard hospital food cost GBP 20 per week, and high-energy hospital food could be delivered at a limited additional cost. The addition of snacks or energy and protein drinks for oral ingestion (1 MJ per day) increased the daily cost by 12-18%.

Tube/enteral feeding and intravenous/parenteral feeding (8 MJ per day) were, respectively, 3-4 and 15-25 times as expensive as standard hospital food. These figures suggest that an early intervention in relation to undernourishment could be cost-effective if it reduced the need for enteral or parenteral nutrition.

9.2.4 Good examples

In Denmark, Herlev Hospital has experimented with restructuring its central kitchen to provide healthy and delicious Nordic cuisine with menus composed by a gourmet chef. Reportedly, the food costs the same to make as regular hospital food (Munk T., Politiken, 31 March 2014).

9.2.5 Barriers

According to section 83 of the Act on Social Services, municipal councils must offer “personal care and assistance, assistance or support for necessary practical activities in the home and meals services” to “persons who are unable to carry out the said activities due to temporary or permanent impairment of physical or mental function or special social problems”. However, for patients who have diseases or are undergoing rehabilitation after disease, the Healthcare Act’s provisions apply. According to these provisions, the benefits should be provided by authorised healthcare staffs that are independently responsible for ensuring that the treatment conforms to generally accepted professional standards.

If patients who have diseases or are undergoing rehabilitation after disease receive meal service in accordance with the Health Act’s provisions, they have access to the health service’s appeal and compensation schemes, which entail greater obligations for service providers than for meal services in normal older care. Such obligations could give providers more incentive to provide nutritious meals. However, the cost of providing meals for patients in a treatment context is likely to be somewhat higher than regular meal services pursuant to the Social Services Act, which may be a barrier to prescribing special diets in accordance with the healthcare legislation.

There may also be a financial incentive problem for individual agencies – for example between the health sector and the individual municipalities – if one agency reaps the financial benefits of improving the older’s diet while another has to bear the cost. Such incentive problems can affect the agencies’ mutual coordination of the effort to include nutritional interventions in the rehabilitation of undernourished older patients.

9.2.6 Areas where more research is needed

As mentioned, more attractive food offers and mealtime situations can help improve the nutritional status – and thus the general status of health and the degree of independent living – of many older people, which is likely to lead to financial gains for the public sector and for society as a whole. However, there is a need for scientific studies of how big these financial gains will be in the areas of residential care, home care and hospital care.

In addition, there is a need for more research into the incentive structures for ensuring the quality of meals for the older to ensure that the providers of meal services have enough financial incentives to supply meals that the users want to eat.

9.2.7 Moving forward

We propose a systematic collection of existing data on the direct and indirect costs associated with older people's diet and nutrition in nursing homes, home care and hospitals. This will help determine the financial incentives of the various actors.

It should also enable a preliminary assessment of the financial potentials of improving meals for the older.

New research can then be initiated with a view to examining the actual cost factors and determinants in a Danish context.

9.2.8 References

See section 9.3.8

9.3 THE SIGNIFICANCE OF HOW THE MUNICIPALITIES USE THEIR BUDGETS FOR OLDER MEAL SERVICES

The administration of the food production in the individual municipalities reflects the overriding financial, organisational and political conditions. This section highlights the municipalities' and hospitals' options for producing food for the older under these conditions and within the framework of specific organisational units with independent budgets.

9.3.1 Why it is important

Costs are seen as a significant barrier to delivering nutritious and appetising meals to the older. At the same time, there are considerable differences in the costs of producing and distributing the food, for example between municipalities. A better understanding of these cost differences is key to reducing the financial barriers to providing good meal services to the older.

9.3.2 The financial significance of the organisation

In nursing homes

Meals for older people in nursing homes can be supplied in three forms: frozen food, chilled/vacuum-packed food and hot food. Chilled/vacuum-packed food is the most expensive, with DKK 4,090 in monthly production costs, compared to DKK 3,615 per month for hot food and DKK 3,866 per month for frozen food, according to Local Government Denmark and Ministry of Welfare, 2008. Hot food is thus cheapest.

A study carried out by the Danish Broadcasting Corporation (www.dr.dk, published 30 September 2014) indicated that approximately 40% of municipal nursing homes cook each day's hot main meal from scratch, and that approximately 25% of nursing homes have stopped cooking hot food themselves over the past 10 years. The trend towards a more centralised production of meals for the older could indicate that financial economies of scale are being exploited in food production.

In home care

Among 88 Danish municipalities in 2008, frozen food was provided to the older in 16 municipalities, 67 municipalities used chilled/vacuum-packed food and 58 municipalities provided food that was kept warm (see Table 1). 37 of the municipalities only used one of these three forms of production, and among these, the average costs were DKK 1,589 per month for frozen food, DKK 1,773 per month for chilled/vacuum-packed food and DKK 2,041 per month for food that was kept warm. While the meal services in nursing homes usually consist of full-day meal plans, the meal services in home care as a starting point only

provide one warm meal a day (Local Government Denmark and the Ministry of Welfare 2008).

Quality control and optimising sensory quality

As Table 1 shows, most meals are delivered chilled/vacuum-packed or kept warm. This despite the fact that there is a great deal of understanding of the chemical and physical changes in the quality of food that is reheated or kept warm for a long time. In particular, cooked and fried chicken and turkey quickly change or lose their flavour (Byrne and Bredie 2002). In addition, many flavours will tend to diffuse across the meal’s ingredients if meals are assembled before delivery. It is not always clear whether there is a systematic quality control of the food’s flavour either when it is produced or when it is eaten with the older in nursing homes. But relatively large differences between the desired sensory quality and the sensory quality on the “customer’s” table should be expected.

It should also be noted that delivered food that is kept warm gives the user relatively little flexibility when it comes to choosing eating times. The times when it is practical for the suppliers to bring out the food (and help the older to eat, if appropriate) may be inconvenient for some users or may not be times when they are hungry.

Table 9.1 Distribution of food production forms in the municipalities

Distribution of	Frozen	Chilled/vacuum-	Kept warm
	----- No. of municipalities -----		
	-		
100%	3	24	12
75-99%	0	6	20
50-74%	3		14
25-49%	1	13	9
1-24%	9	17	3
0%	72	21	30
Total	88	88	88

Source: Local Government Denmark and the Ministry of Welfare 2008

Despite the fact that frozen food is the cheapest, the municipalities only use this form of production to a relatively limited extent to provide food for the older. Approximately 40% of municipalities use chilled/vacuum-packed food in more than half of their delivered servings, and 35 % of municipalities do not deliver warm food; see Table 9.1 (Local Government Denmark and the Ministry of Welfare 2008).

As a starting point, meal services consist of a warm meal with a starter or dessert. Not all users choose to use the meal service every day. There is a lack of systematic research into where these users receive the rest of their food from and what they eat, e.g. whether they cook for themselves, whether they get food from family and friends, whether they are part of meal groups, etc. In other words, there is no solid knowledge about their overall diets.

Mindel et al. (1986) investigated the use of personal services by older Americans living at home (Ohio), distributed across formalised/professional providers (public sector, organisations, etc.) and informal providers (family, neighbours, etc.). This study measured users of a variety of services, including food-related services such as meal services or help with shopping, but also home care, transport assistance, personal care and healthcare in monetary units, which allows for some comparisons across services. The study also broke down the users according to race (white/black) and income level. According to the study, 20-30% of the older received food-related services, though the majority received these from non-formalised “suppliers” such as family and friends, and about as many received help with grocery shopping. Black Americans received more food-related services than white Americans, but they also received more non-formalised help. The study thus suggests that non-formalised services such as cooking by relatives may be quite significant – and also that there may be considerable variation between different population groups in this area. Here, of course, it is important to be aware of the institutional differences between the US and Denmark, where presumably there are more formal social services for the older.

In hospitals

In the summer of 2014, the auditing and consultancy firm BDO produced a relatively detailed financial account of hospital kitchens in the Capital Region of Denmark (BDO 2014). The report shows that the total costs per meal unit (a normal menu consisting of three main meals and three snacks makes up a total of 1.6 meal units per day) in the hospitals where the highest and the lowest costs vary by up to 65%. The price varies from around DKK 55 per day to around DKK 90 per day (BDO 2014). These cost differences can be attributed to a number of factors, including diet concepts, levels of service, production methods and production efficiency. For example, when providing 24-hour meal plans to patients, the hospital kitchens supplement their meals with ready-processed food to varying degrees, which helps reduce costs per meal unit. But even taking this into account, the report finds quite significant differences between the cost levels at the different hospitals.

9.3.3 Interventions for cost-efficient food ordering and meal services

In home care

Aberg (2006) outlines a meal-planning system for the older that allows them to plan their own diets taking into account taste, price, cooking requirements, dietary variation, dietary restrictions, nutritional needs and food availability. The system seems to be primarily intended for older people who cook for themselves, but might also serve as a basis for more flexible meal delivery schemes and thus enable more targeted and cost-efficient meal services that respond better to the users’ needs and wishes.

Siira and Häikiö (2007) described an IT-based ordering system for meals for the older (Near-Field Communication). However, their system appears to have been developed before the proliferation of smartphones, ipads, etc., so may not be altogether appropriate for Denmark.

Various studies, including several from the Nordic countries, have tried to develop concepts to solve some of the logistical challenges of delivering meals for the older. Bräysy et al. (2009a, 2009b) developed an optimisation model for minimising the costs of meal services for the older and applied it to a municipality in Finland. In 2005, the municipality had 827 users and delivered an average of 262 meals per day, or 95,625 meals per year. The price of a meal was EUR 8. The deliveries were organised into nine delivery lines, and in 2006 the total delivery cost was EUR 174,999. As a starting point the food was delivered warm, but it could also be delivered cold, though this did not make a difference in delivery costs, since warm and cold meals were delivered at the same time. The authors developed an optimisation model to determine the cheapest delivery routes in terms of labour costs and transport distance. The analyses suggest that optimising the transport routes can result in savings of between 20% and 50% of the transport costs. Since warm meals have to be delivered within two hours for food safety reasons (according to the Finnish authorities), the biggest savings are made if the food is delivered cold and is then heated in the user's home, since this allows for more route flexibility and thus makes it easier to organise the deliveries. In addition, there are the costs of the carers' meal assistance for the older, when needed.

The above three intervention types represent different technological and organisational ("bottom-up") solutions to increase cost-efficiency in food production and delivery. There have also been experiments with more "top-down" interventions designed to create increased efficiency by regulating the financial or political production frameworks. Putting public meal services out to tender or regulating the prices of meal services are examples of such "top-down" interventions.

In the 2009 Finance Act, the Danish Parliament adopted an upper limit on the price of food in nursing homes and home care. In 2010, the upper limit was DKK 3,000 per month for food in nursing homes and DKK 45 for one delivered main course. The upper limit is adjusted annually and in 2014 the rates were DKK 3,324 and DKK 49 respectively. In addition, municipalities may not charge more than it costs to produce the food. According to the municipal figures of the Ministry of Economic Affairs and the Interior, these price limits have meant that a number of municipalities, which before 2010 charged prices above the limits, have reduced their prices for meal service. At the same time, there have been speculations that other municipalities, which used to operate with rates that were lower than the upper limits, have used them to raise their rates (Jyllandsposten 17.10.2014). However, a preliminary study of the Ministry of Economic Affairs and the Interior's municipal figures does not suggest that this tendency to raise rates has been particularly widespread. Admittedly, from 2009 to 2010, the municipal charges for food in nursing homes increased in half of the country's municipalities (and in 10-12 municipalities for meal services in the older's own homes), but given the general wage and price developments in society, this increase has been

modest in most of these municipalities. The number of municipalities with rates below the upper limits has remained relatively stable since their introduction.

The price limit for delivered food only applies to a main course; no price limits have been set for starters, desserts or snacks. The structure of the price limits thus means that separate prices have to be specified for main dishes and the other courses. As a result, people with low appetites may be inclined to opt out of the other courses to save money. On the one hand, the separate pricing of the different dishes gives the user the flexibility to choose between side courses from the meal service provider and other sources, e.g. family visitors, that is if the user has access to such sources. On the other hand, since the meals are often composed based on the nutritional value of the combination of a main course and a starter or dessert, these opt-outs can be disadvantageous, especially for frail and undernourished older users. For example, a dessert could provide a valuable calorie boost for an underweight user with a low appetite.

According to a survey by Local Government Denmark and the Ministry of Welfare (2008), the type of contract behind the meal delivery service can affect costs. For instance, when the contract states that the user can choose one of the suppliers approved by the municipality within a set price range, the monthly costs are about 3% lower (user fee plus subsidy) than average and about 4% lower than the type of contract where the municipality chooses the suppliers. However, it should be pointed out that not many municipalities used the former contracts, so these cost differences are very uncertain.

There are different challenges associated with delivered food, both as regards keeping delivery costs down (which makes demands on the organisation of deliveries), and supplying food that lives up to the users' wishes and expectations (which makes demands on the communication between users and suppliers and the organisation of deliveries). Putting meal services out to tender appears to be a means to create a better relationship between price and quality in some municipalities. So far, tendering seems mainly to have resulted in lower costs without a significant lowering of quality (according to the municipalities), but it remains to be seen whether tendering could also be used to enhance meal quality within the given cost frames.

Food safety is also an important factor in meal deliveries. A high level of food safety is essential, especially for underweight older people and those with low appetites and weakened immune systems, for whom infections from food-borne pathogens can be very serious, even life-threatening. Food safety also plays a role in relation to the trade-off between costs and the quality of the meal solutions – perhaps especially when it comes to the costs of delivered food. Ensuring food safety places financial and logistical demands on the transport facilities, and may thus affect the types of meal solutions that are offered (warm, chilled, frozen).

In nursing homes

The auditing and consultancy firm Deloitte investigated the financial rationalisation potentials of centralising or outsourcing the food production in large production centres, and found that such measures could result in cost savings of 20-45% compared to the average cost level at the

time of the report (Deloitte, 2013). The report focuses mainly on the costs of food production and only to a limited extent on the quality of the food and the users' influence on the food. Increased centralisation of food production would likely mean more meals delivered chilled/vacuum-packed or frozen and fewer meals delivered warm and ready to eat. The Deloitte study focuses mainly on how to save money in the municipalities, but the identified potential for saving 20-45% of the current production costs might alternatively be used to improve the quality of the food, for example by choosing different ingredients or cooking methods.

Kristensen (2014) provides an overview of experiences of providing services for the older based on data from the tenders portal www.udbudsportalen.dk. This overview gives a mixed picture of the experiences. In most of the case studies, the municipalities indicate that they saved money as a result of putting the services out to tender. Some municipalities (e.g. Høje-Taastrup, Ballerup) have completely or partially phased out warm food in favour of chilled food; others (e.g. Fredericia) have achieved savings after the tendering without changing their delivery forms.

Most of the municipalities included in the study indicate that the quality and delivery of the food have been at least as good after the tendering process as before.

In hospitals

According to the above-mentioned report by the Capital Region of Denmark (2014), a number of the region's hospital kitchens are focusing on improving the quality and cost-effectiveness of food production. In terms of costs, this report mentions the reduction of food waste as a focus area in 2014 in the hospitals in Gentofte, Glostrup, Herlev, and as an indirect focus area through optimised allocation in other hospitals. "Efficiency" or "optimised operation" is also mentioned as a focus area at two hospitals, and "more cooking from scratch" was a focus area in 2014 in several of the capital region's hospitals – though it is not clear from the report whether this is based on financial motives. There is no available follow-up information on the effects of the measures taken within these focus areas.

General financial challenges regarding interventions

Food waste is a recognised problem when it comes to meals for the older. A certain amount of food waste cannot be avoided. However, some factors in the meal services can contribute to increasing food waste, and interventions in these areas could help reduce waste. Firstly, if the food does not live up to what the users expect in terms of taste, consistency, appearance, temperature, etc., they may not want to eat as much of it as they would if there were a better match between their requirements and expectations and the actual meals.

It is essential, wherever possible, to apply general knowledge about the physiological and sensory aspects of older people's food experience, and at the same time develop delivery systems that take individual preferences into account as much as possible.

The system of user fees per meal probably also contributes to the relatively large amounts of food waste. When users pay for a meal, they will usually expect to become satiated and get value for money. To avoid such problems and resulting dissatisfaction and bad reputations while at the same time keeping management costs low, providers presumably have an incentive to offer “one size fits all” portions, which are large for the average user.

9.3.4 Good examples

Given that the quality of meals for the older is to some degree subject to budgetary constraints, improving the quality will probably entail additional costs for ingredients and preparation. Studies carried out as part of the OPUS project (funded by a grant from the Nordea Foundation) suggest that the costs of ingredients for a New Nordic Diet, based on Nordic, organically produced ingredients and meeting the Nordic Nutrition Recommendations for adults, are around 15% higher than ingredients for an average Danish diet (Jensen, Poulsen 2013). Although the nutritional recommendations for the older may differ from the general nutritional recommendations, 15% is considered a slight overestimate of the additional cost of ingredients for a full diet, since a large proportion of these additional costs can be attributed to the choice of organic rather than conventional ingredients.

In addition, improving the nutritional and culinary quality of the meals will require modified cooking methods and working patterns, and taking into account the individual needs and desires of the users will require more work. However, lessons learned from the Copenhagen House of Food and Herlev Hospital suggest that large kitchens can be reorganised to make more meals from scratch without increasing costs dramatically.

9.3.5 Barriers

Warm food is more expensive to produce and deliver than chilled/vacuum-packed or frozen food, probably because keeping the food warm requires insulating packaging, which takes up more space in the vans and thus requires more trips, and because warm food has to be delivered at certain times every day, unlike chilled or frozen food, which does not have to be delivered daily.

Thus, the delivery of food to the older seems to be a significant barrier, especially if the food has to be delivered close to the users’ desired eating time.

Even if the delivery logistics are optimised, the capacity costs in connection with warm meal services are likely to be higher.

Food safety is likely to be less of a challenge as regards distributing chilled/vacuum-packed or frozen food than distributing warm food, provided that it is delivered without interrupting the cold chain. The delivery costs for chilled/frozen food are presumably also lower, because it does not have to be delivered on a daily basis. However, delivering chilled/vacuum-packed or frozen meals with low frequency (e.g. once a week) may involve food safety challenges if

the users do not eat them before the use-by dates. There is a need for more research into the relationship between delivery costs and food safety for alternative types of meals and delivery.

9.3.6 Areas where more research is needed

Questions are sometimes asked about the nutritional, culinary and sensory quality of the meals offered to the older. However, there is a need for real analyses of the link between the production costs and the quality, variation and individualisation of meal services for the older. In addition, there is a need to develop quality assurance systems to improve the meals' freshness and taste throughout the distribution chain, from the production unit to the "customer's" plate.

A key challenge in relation to the problem of food waste is the trade-off between the advantages of greater flexibility in the payment and delivery systems (in relation to individual appetite and preferences) and the extra costs. For example, a changed payment structure whereby the user does not pay the full price in user fees might make it more legitimate to differentiate between portion sizes, because users would not "pay for something they don't get".

Informal meal services for the older, e.g. help with shopping and cooking from family, neighbours or friends, might be used to develop new concepts to improve food and mealtime quality (e.g. by providing grants for shopping to both the older and their family in return for helping with the cooking). In this connection, we need to know more about the extent and cost of these kinds of informal meal services for older people in Denmark, both currently and in the future. We also need to know more about the development of the societal conditions for such models, including retail developments and the local shopping facilities in the areas where the older live.

There is a need for more up-to-date and systematic knowledge about the costs of meal services for older people in Denmark. More knowledge is needed about costs, cost factors (raw ingredients, kitchen staff wages, delivery costs, premises, equipment, means of transport, etc.) in connection with alternative production and delivery models for food deliveries to the older; for example, models based on a more centralised production, more food preparation by the users, alternative diet types, organic food, alternative delivery models (warm, chilled or frozen), transport of older people to communal dining rooms, etc.

There is a need for more research into the strengths and weaknesses of alternative models for the management and financial governance of food production and delivery, such as trust-based models, incentive-based models, retail management models, etc.

There is a need for more research into the diet of the older who are assessed for meal service but who apparently are partially able to do without it. There is also a need for knowledge

about what motivates these users not to use meal services fully, e.g. whether it is due to the price; the food's quality; portion sizes (for example, they may divide one day's portion and make it last several days); practical circumstances such as not needing food on certain days of the week due to activities; attractive alternatives (e.g. ready-meals from supermarkets); the desire to decide on one's own menu once in a while; and so on.

As a starting point, meal services only provide one warm meal a day, so users need to arrange for their cold meals in other ways, either by shopping for themselves or getting help with the shopping. The older are likely to shop in various ways, e.g. depending on whether they live in a town with grocery stores or in rural areas. However, there is a need for more research in this area.

There is also a need for more research into the options and habits of older people who are too self-reliant to be assessed for meal services, but who live in sparsely populated areas and do not drive, and therefore have limited opportunities to shop.

9.3.7 Moving forward

Above, we have suggested a number of alternative solutions to the cost-related issues related to the quality of meal services for older people. These alternative solutions include:

- Rationalising the production in a more targeted way to achieve quality improvements rather than just savings, by changing workflows, organisation, etc.
- Developing new mechanisms for the public financing of meal services for the older so that, for example, the financial gains achieved by improving the older's nutritional status are channelled back to the meal service providers.
- Developing new and more flexible concepts for producing food for the older, e.g. making it more financially attractive for neighbours, friends and family to help with cooking and eat with the older.
- Developing quality control systems for meal delivery. These kinds of tools should be used to monitor the quality of the food made in large kitchens before it is brought out, as well as the sensory quality of the food when it is eaten by the older in their homes, in order to create a basis for ensuring optimal quality throughout the distribution chain.

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9.4 FOOD AND MEALTIME POLICY

9.4.1 Why it is important

A food and mealtime policy can form the basis for a municipality's initiatives to ensure high-quality meal services for its older residents. The benefits of establishing a food and mealtime policy are:

- Having a clear framework for food and mealtimes for the older
- Defining standards for the quality of meal services.
- Creating coherence between political aims, quality standards and agreements with suppliers.

By prioritising food, mealtimes and nutritional interventions, municipalities can create the right framework to ensure that older people who need meal services have their nutritional needs met.

By setting out key targets for food, mealtime and nutrition interventions for the older who need meal services, municipalities can achieve a consensus on the direction they need to take.

This reduces the risk of decisions being taken based on individual views. In addition, a policy creates more clarity among the various staff groups about the general framework for the interventions. It can also result in the area being given political priority (National Board of Social Services 2013).

9.4.2 The importance of a food and mealtime policy for older people's nutrition

All three settings

In 2002, the Council of Europe described five main barriers to ensuring nutritional care in European hospitals (Council of Europe 2002):

- Lack of clearly defined responsibilities in planning and managing nutritional care
- Lack of sufficient education with regard to nutrition among all staff groups
- Lack of influence and knowledge among the patients
- Lack of cooperation between different staff groups
- Lack of involvement by the hospital management

In 2009 the Council of Europe pointed out the same barriers to ensuring nutritional care for older people in nursing homes and home care (Arvanitakis et al. 2009).

All of these areas are better dealt with by formulating a food and mealtime policy.

In hospitals

In a Danish health-technology assessment of older patients' nutritional care, various staff groups and management representatives in three wards in a university hospital, a hospital under the Copenhagen Hospital Corporation and a local hospital were interviewed about their work with nutritional care. To provide a background for the interviews, information was gathered about the hospital owners' and managements' nutritional initiatives and about the operation of the wards and kitchens. The starting point of the data collection was to compare the nutritional care practices in the three hospitals with the official recommendations for diets for sick people. The organisational analysis identified circumstances that both promoted and impaired nutritional care. The results are shown in table 9.1 below (Lassen et al. 2005).

Table 9.1 Facilitating versus inhibiting factors for optimal nutritional care from the perspective of the hospital management, ward staff and kitchen staff (Lassen et al. 2005).

Facilitating factors	Inhibiting factors
Hospital management's perspective	
Clear indication from management about the importance of optimal nutritional care	Weak or deficient communication from management about the importance of nutritional care
Access to management tools for quality assurance, support and assessment of nutritional care	Lack of management tools for obtaining information to assess nutritional care at department level
Resources to follow up on and support implementation of nutritional guidelines	
Ward's perspective	
A professionally trained person actively works with nutritional care and has time to take on the practical work	Lack of time for nutritional care and a resulting lower priority
Presence of key/engaged staff	The responsibility for the practical nutritional care is collective, but few are committed
The bed ward offers food 24 hours a day and the staff serve it to the patients	The overall responsibility is formally placed with the physicians, who rarely get involved in nutritional issues
Multidisciplinary guidelines for detecting patients at risk of undernourishment and providing nutritional care for different types of patients	The competence of the clinical dieticians is only used to a limited extent
	The nursing staff are unable to offer food to patients outside of the set mealtimes
The kitchen's perspective	
Frequent contact with the nursing staff	Lack of contact with the nursing staff

and patients	
Monitor and check the supplied food right up until it is served to the patients	No knowledge or influence on how the food is served
Increased visibility in the organisation of the kitchen staff's work and thus the possibility of more awareness and respect from other staff groups	Not visible in the organisation and therefore lack of awareness among other staff about their work
	Lack of financial room for manoeuvre

In nursing homes and home care

In a 2014 cost-effectiveness study, the National Board of Social Services conducted interviews with the nursing staff and management to assess the nutritional interventions by the participating home carers and nursing homes.

Based on these interviews and the rest of the study's results, the Board made the following conclusions on ensuring effective nutritional screening and subsequent nutritional interventions (National Board of Social Services 2014):

- It is an advantage to have key nutritional staff who have taken skills development courses on using the nutritional assessment form, and who can supervise and guide others on how to complete it.
- It is also an advantage to include relevant interdisciplinary collaborators in the on-the-job training courses, e.g. a clinical dietician, physiotherapist, occupational therapist and dental hygienist.
- The carers can benefit from the assistance of a nutritional expert such as a clinical dietician, e.g. when preparing action plans.
- When implementing these, a responsible person with an overview should take the initiative and follow up on whether the relevant residents are screened and weighed as prescribed. In general, then, it is a prerequisite for a systematic nutritional screening of residents that there is a coordinator with the necessary influence who takes the initiative and monitors nutritional screenings and follow-up measures.
- When carrying out systematic nutritional screenings and regular weighing of residents, it is helpful if the carers understand that these measures will benefit everyone. Making sure that the staff has enough time to perform the tasks is another significant factor for the success of the implementation.

The project "Developing a Tool for the Nutritional Assessment and Treatment of the Older" (National Food Institute and National Board of Social Services 2011) focused partly on the importance of the organisation of the nutritional interventions. Table 9.2 below compares the degree of compliance with the recommendations for nutritional interventions in various "Development of Better Care for the Older" projects (UBÆP) to the percentage of older people with positive results in terms of weight gain. By comparison, the table shows the

percentage of older people who gained weight without a special effort (National Food Institute and National Board of Social Services 2011).

Table 9.2 The degree of compliance with the recommendations for nutritional interventions in various “Development of Better Care for the Older” (UBÆP) projects compared to the proportion (percentage with weight gain) of older people with positive results in terms of weight gain. “Standard” is the percentage of people who gained weight without a special effort (National Food Institute and National Board of Social Services 2011).

Project/municipality	Intervention	Effect (percentage)
Fåborg Midtfyn	On-the-job training (all), snacks, nurse with nutritional expertise	53
Egedal	On-the-job training (all, key staff), diet for people with low appetites, screening, individual treatment plans, nutritional expertise (in the kitchen)	66
Gladsaxe	On-the-job training (carers), diet for people with low appetites, screening, individual treatment plans, nutritional expertise (in the department)	71
Køge	On-the-job training (key staff), diet for people with low appetites, screening, individual treatment plans, nurse with nutritional expertise	73
Copenhagen II	On-the-job training (key staff), snacks, screening, individual treatment plans, focus on meal ambience, clinical dietician (in the department)	90
Copenhagen I	On-the-job training (all), snacks, nutritional expertise – part-time (in the kitchen)	50
Morsø	Diet for people with low appetites, individual treatment plans, clinical dietician (in the kitchen)	43
Vejle	On-the-job training (care), diet for people with low appetites	31
Standard		30

Table 9.2 shows that an individually targeted intervention in the form of energy- and protein-rich meals and snacks is the most effective way to ensure weight gain in older people who are assessed as undernourished or at risk of undernourishment through nutritional screening. It also shows that the recommended cooperation with a clinical dietician is most effective when the dietician is involved in the care (National Food Institute and National Board of Social Services 2011).

9.4.3 Interventions regarding food and mealtime policies

All three settings

No actual randomised controlled intervention studies were found that focused on measuring the effect of implementing a food and mealtime policy on older people's physical function and quality of life.

In hospitals

However, when the above-mentioned health-technology assessment was prepared, an organisational model was assessed which involved a professionally trained person who was employed to be exclusively responsible for nutrition-related tasks in the ward and promote the four facilitating factors set out in Table 9.1. This person's working hours were spent on individual nutritional care; they were very engaged in and knowledgeable about nutrition; they were aware of the food that was made in the kitchen; and they were able to make snacks etc. in the ward (Lassen et al. 2005). After five months, interviews with the staff showed that problems such as lack of time and passing responsibilities onto others had largely been eliminated. The organisational model also meant that collaboration was established with the rest of the caregivers based on accepting and understanding the importance of nutrition in the care and treatment. At the same time the ward saw a significant reduction of food waste (Lassen et al. 2008).

In nursing homes and home care

The aim of the National Board of Social Services' background material for a food policy was to identify the areas that should be included in the policy and examine the documented significance of these areas for the nutrition of older people (National Board of Social Services 2010).

9.4.4 Official Danish recommendations

The "Recommendations for Developing Attractive Meal Services for Older People" states that a food policy should be formulated on the political level; that responsibilities should be identified and defined; and that measures to ensure and develop the quality of nutritional practice should be put in place (Beck et al. 2006).

The national action plan for meals and nutrition recommends that every municipality council establishes a policy on food and mealtimes. The policy should be focused on older people who need meal services and should contain clear, measurable targets and guidelines for regular follow-ups on interventions (National Board of Social Services 2013).

The National Board of Social Services has prepared a template for how to prepare a food and mealtime policy for the older. This template and the related guide can give the municipalities inspiration for developing their policies.

The template offers suggestions for how the municipalities can carry out the process from the decision-making basis to content, action plans and implementation of a good food and mealtime policy. The guide sets out a number of problem areas for which the municipalities may want to formulate policy objectives (National Board of Social Services 2011).

9.4.5 Good examples

Copenhagen Municipality has learned various lessons from its work on introducing a food and mealtime policy for the older. Political support has helped create coherence between its various nutritional interventions. This has meant that more resources have been allocated to the area. The municipality's experience also shows that the continuous involvement of senior management in the daily operation is essential to ensure implementation in practice. The implementation of the policy has led to the development of methods that have helped to change practice. A key lesson is that the policy must be linked up with other political efforts and aims in the organisation (e.g. policies on healthcare, inclusion, organic food and care for the older). The purpose of this is to ensure that food, mealtime and nutritional interventions become integral parts of the social services for the older (National Board of Social Services 2013).

The Danish Veterinary and Food Administration has compiled various institutions' experiences of introducing food and mealtime policies for children and young people. The experiences show that a policy can help to clarify and maintain the attention of staff and parents on the institutions' practices in this area. One significant experience has been the municipalities' help and support from the Danish Veterinary and Food Administration's own travelling team, which has the expertise to give the pedagogical staff the knowledge, influence and tools to convert municipal policies into daily pedagogical practices with the children. The Danish Veterinary and Food Administration's experiences are partly based on the latest nationwide evaluation of the municipalities' progress with food and mealtime policies. These experiences are supplemented by studies showing that day care centres with food and mealtime policies tend to serve more varied diets than centres without such policies. It is likely that a similar effect can be achieved in older care (National Board of Social Services 2013).

9.4.6 Barriers

The barriers identified by the Council of Europe in 2001 and 2009 probably still exist.

9.4.7 Areas where more research is needed

There is a lack of systematic data on the effect of introducing a food and mealtime policy concerning older people's physical function and quality of life.

There is also a lack of systematically collected data on the effect of the barriers among staff and management when it comes to ensuring optimal nutritional interventions for older people in nursing homes, home care and hospitals.

9.4.8 Moving forward

Studies in the areas where more information is needed, as pointed out above.

9.4.9 References

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10. CONCLUSION

More and more older people are becoming dependent on meal services. There are many factors that need to be taken into consideration to ensure that the older are given good meal experiences, good quality food, good meal access and good dining and social interactions. A high proportion of older people in nursing homes, home care and hospitals experiences decreased appetite and weight loss.

This whitepaper's working group has studied the scientific literature on food and mealtimes for the older with a focus on randomised controlled studies on the effect of interventions on the physical function and quality of life of the older. On this basis we have provided an overview of the current research, current and future challenges, barriers and proposals for solutions and further research.

Current knowledge

Unplanned weight loss can have serious consequences for older people's physical, mental and social function. Unplanned weight loss and underweight increase the need for home care and home nursing, as well as the risk of decreased quality of life, life skills, acute illness, hospitalisations, long-term rehabilitation, increased expenses and premature death. Unplanned weight loss is particularly common among hospitalised older people, but also among older people who receive home care or live in nursing homes. All three groups receive meal services, which are very important in improving their nutritional status. Currently the potential of the meal services does not seem to be optimally exploited by the hospitals or municipalities.

Current and future challenges

Despite official recommendations, idea catalogues and action plans designed to give the older good meal experiences, many older people who receive meal services are in poor nutritional condition. Given the increasing numbers of older people, the challenge now and in the future will be to put these recommendations into practice.

Barriers

The working group has identified many barriers to giving the older good meal experiences. The main barriers are a lack of staff skills, management support, interdisciplinary collaboration, sharing of responsibility, financial incentives and the involvement of the older themselves in improving their life skills.

Solutions and further research

The working group has provided recommendations for how to improve the quality, access and experience of meals for the older, the skills of care staff, as well as the financial and political aspects.

Food quality

The quality of the food has an effect on the older's appetite and eating pleasure and thus on their food intake. With age, appetite tends to decrease, the senses of taste and smell change, sensory memory fades and the reluctance to try new foods increases. There is a lack of understanding of what these factors mean, including:

- The significance of taste and smell when it comes to taking pleasure in meals and eating.
- The significance of the weakening of sensory memory for older people's food choices and quality of life, and what can be done to promote them.
- The reasons for the older person's changed perception of food, and what can stimulate their food intake.
- What factors create preferences for new foods and products and whether they can be used to promote food intake.
- How the appetite can be stimulated through appetising gourmet meals and food-nudging.

Meal access

Problems with food intake, swallowing, dental health or other difficulties with eating and drinking (dysphagia) are associated with weight loss, high morbidity and increased mortality, and have major social and personal consequences. These problems are often overlooked, and there is a lack of understanding of how interventions targeting these functions can reduce weight loss, morbidity and mortality. For example, interventions focused on:

- The taste experiences that are most important for older people with eating problems.
- Whether meals adapted to older people's reduced chewing and swallowing ability have a positive effect on relevant endpoints.
- The necessary tools to enable staff to identify dysphagia and start interventions.
- The importance of oral and dental care and whether it results in better health.
- Whether staff training and optimal use of eating aids can improve food intake among older people who need assistance with eating.

The mealtime experience

One parameter for good mealtime experiences is that the residents enjoy the social setting of the meal. The older thrive better when the meal ambience and the social framework of the meal are in focus, whether it is in their own home, in nursing homes or during hospitalisation. A good mealtime experience can probably stimulate appetite and food intake and thus reduce morbidity and mortality. However, documentation is lacking in a number of areas, including:

- Whether optimising the food for older people in nursing homes and home care has a positive effect on their well-being, quality of life and physical and social function, and on the national economy as a whole.
- The importance of the social interaction and meal ambience for physical function, quality of life, etc., especially using randomised, controlled studies.
- The importance of the staff in creating a good meal ambience and social interaction.
- The importance of involving older residents in activities related to the meal, such as shopping, cooking and setting the table.
- The importance of mealtimes for physical function and quality of life, and of integrating them with preventive and rehabilitative care.

The resident

A good nutritional status helps maintain physical function and reduce the need for help. Sarcopenia (loss of muscle mass) and dementia occur frequently among the older. In addition, even short hospital stays can increase the risk of loss of physical function and thus make everyday chores more difficult after discharge. There is still a lack of understanding in a number of areas, including:

- Whether a combined nutritional intervention focused on food, mealtimes and physical exercise can have an added positive effect on counteracting sarcopenia.
- Whether, like industrially produced energy and protein drinks, an optimised diet has a beneficial effect on physical and mental function.
- The effect of optimising food and mealtimes on the rehabilitation process, e.g. after discharge from hospital.
- The effect of involving older people in activities related to food and mealtimes on their life skills, quality of life and physical, mental and social rehabilitation.
- Whether preparing the meal oneself increases food intake and the pleasure of eating.
- Whether social initiatives and non-food-related activities stimulate appetite and weight retention among the older.

Staff skills

It is crucial to providing better meals for the older that the staff have the necessary skills to help maintain and build up the older people's life skills.

Preliminary studies suggest that providing the staff with nutritional training has a positive impact on the health of older residents and on detecting those at risk of undernourishment. More knowledge is required in several areas, including:

- How food and mealtimes are included in the various programmes that train staff to care of the older.
- The effect on older people's nutritional status, physical function and quality of life of giving staff in the three settings the necessary training/continuing education.

Finances

Costs are seen as a significant barrier to delivering nutritious and appetising meals to the older. But there is considerable variation between the municipalities.

A better understanding of these cost differences can reduce the financial barriers to providing good meal services to the older. More attractive food offers and meal environments can contribute to improving the nutritional status of older people, which can in turn result in financial benefits for the public sector and society as a whole. There is a need for scientific studies in various areas, including:

- The size of the financial benefits of improving the nutrition of older people in nursing homes, home care and hospitals
- How to create the necessary financial incentives to ensure that providers of meal services supply meals the users want to eat
- The connection between delivery costs, food safety and alternative types of meals and delivery
- The actual costs of meal services for older people in Denmark. More knowledge is needed about costs, cost factors (raw ingredients, kitchen staff wages, delivery costs, premises, equipment, means of transport, etc.) in connection with alternative production and delivery models for food deliveries to the older; for example, models based on a more centralised production, more food preparation by the users, alternative diet types, organic food, alternative delivery models (warm, chilled or frozen), transport of older people to communal dining rooms, etc.
- What makes older people who are assessed for meal services choose not to fully use those meal services.
- What options older people have to supplement the meal services, i.e. opportunities for shopping for themselves.

Policy

A food and mealtime policy can form the basis for a municipality's initiatives to ensure high-quality meal services for its older residents. This reduces the risk of decisions being taken based on individual views.

In addition, a policy creates more clarity among the various staff groups about the general framework for the interventions. It can also result in the area being given political priority. However, there is a lack of systematic data on:

- The effect of introducing a food and mealtime policy on the function and quality of life of older people.
- The effect on the barriers among staff and management when it comes to ensuring optimal nutritional interventions for older people in nursing homes, home care and hospitals.