

The background of the lower half of the page is a light blue color with a pattern of horizontal wavy lines. There are several vertical bands of slightly different shades of blue. Scattered throughout are small white circles and larger, faint, light blue circles. The text is centered horizontally in the upper part of this decorative area.

Rosanna Echano Major

Nutritional status among patients living in nursing homes and communal dwellings for people with dementia.

A comparison of the mapping tools MNA, MUST and Nutritional Journal.

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This thesis is worth 30 study points

Summary

Malnutrition among patients living in institutions has been a perennial health issue. Nutritional problems for those with dementia are particularly challenging due to its complexity. Despite focus on nutritional problems among old people, there is still a lack of good data on the prevalence of under- and overnutrition among nursing home patients in Norway. Nutritional status among patients in different stages of dementia is not well documented, and there is no consensus on which assessment tool should be used in this setting.

The purpose of this study is to compare the prevalence of malnutrition, among patients living in nursing homes and communal dwellings for persons with dementia (CDPD), using Mini Nutritional Status (MNA), Malnutrition Universal Screening Tool (MUST), and Nutritional Journal (NJ). It also aimed to explore whether the prevalence of malnutrition varies with severity of dementia.

A cross-sectional design was used to evaluate the nutritional status of 97 patients living in nursing homes and CDPD in the municipalities of Larvik and Sandefjord. MNA, MUST and NJ were applied to assess the nutritional status. CDR was used to determine the severity of dementia.

The result of this study reveals that the prevalence of malnutrition among patients living in institutions vary not only according to the mapping tools applied, but also according to how the result is presented; whether with three or two categories. Although focus is on undernutrition, some cases of overnutrition are also seen in the institutions. The prevalence of undernutrition among patients with dementia increases parallel to the severity of dementia, regardless of the tool, although the result is more apparent with MNA.

In conclusion, the patients' nutritional status vary using different screening tools, and treatment varies thereafter. Thus, the health workers choice of mapping tools when evaluating patients' nutritional status is of uttermost importance.

Keywords:

Nutritional status	Prevalence	Severity
Nursing Homes	Dementia	MNA
MUST	Malnutrition	Nutritional Journal

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Foreword

My gratitude to all the patients who participated in this project, and to all the staff of the following department, for your cooperation, without which this project would not be made possible:

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To my colleagues, former and present department leader, thank you for the support throughout my masteral period.

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It has been an enrichment working with you.

To my boys, thank you for the love and moral support, and for putting up with my shortcomings. I wish this project would be significant enough to make up for the time we have missed.

To Almighty God, for the gift of life and wisdom, thanks and praises to you!

Sandefjord, September 2017

Rosanna Echano Major

Reflection part of the master's thesis

This master thesis is written in an article form in accordance to the guidelines of Food and Nutrition Research. The following essay is presented to elaborate the theoretical and methodological basis for the project.

Number of words: 5456

1 Introduction

1.1 Background for theme selection

In a typical day in a nursing institution, mealtime is one of the highlights in the patients' life. During the meal, health personnel can get insights into the patients' health and quality of life if they are sensitive and observant.

I have been working with people with dementia for the past nine years. Being a witness to these people's daily struggles, and being a cause of their simple joy is special. They are almost like family to me and wish I could do more for them.

For me, dementia is fascinating, and its relationship with nutritional status fascinates me even more. It is not just about the patient, but also about how the health personnel act and intervene. It has been my wish to study the relationship between nutritional status and the different subtypes of dementia, but such a study would require a sample size beyond the scope of master's degree final project only. The relationship between nutritional status and severity of dementia was then chosen as the secondary objective of the study.

1.2 Relevance of the study

Malnutrition among older patients living in institutions has been a perennial health issue being discussed and debated over for decades. Nutritional problems for those with dementia are particularly challenging due to its complexity. Despite this, there is still a lack of good data on the prevalence of under- and overnutrition among nursing home patients in Norway. Nutritional status among patients in different stages of dementia is not well documented, and there is no consensus on which assessment tool should be used in this setting.

Last year I received a call from a colleague from another institution telling me, she have heard that our department is good in nutritional screening. She would like to know which tool we were using. They themselves were using the Mini Nutritional Assessment (MNA) but subjectively did not agree on its results. I replied we were using Nutritional Journal (NJ)¹, and suggested they could also consider the Malnutrition Universal Screening Tool (MUST)².

¹ Ernæringsjournal

² Mini UnderernæringScreeningverkTøy

When planning my master project, I conducted an informal survey to find out which nutritional tool is used in various nursing institutions in my surroundings. According to the information I gathered, MNA is widely used in institutions in the municipality of Oslo, in the municipality of Larvik, where I work, both MNA and NJ are widely used. While MUST is used in all institutions in the municipality of Sandefjord where I live. In the literature, I could not find any papers comparing NJ, as my department uses, to neither MNA nor MUST.

2 Aims of the study

The aim of this study is to compare the prevalence of malnutrition, among patients living in nursing homes and communal dwellings for people with dementia (CDPD)³, using MNA, MUST, and NJ. It also aimed to explore whether the prevalence of malnutrition varies with severity of dementia.

2.1 Objective

How does nutritional status vary by using the three different assessment tools MNA, MUST, and NJ?

2.2 Research Questions

1. What is the prevalence of malnutrition in patients living in nursing homes and CDPD?
2. How is the patients' nutritional status related to severity of dementia?
3. What is the significance of the health staffs choice of nutritional screening tool for patients in nursing homes and CDPD?

³ Bofellesskap for personer med demens

3 Theoretical Framework

In this project, nutritional status and dementia among persons living in nursing care institutions constitute the theoretical framework. This chapter will provide a brief introduction to these topics.

3.1 The patients in nursing care institutions

CDPD is an institution especially developed for persons diagnosed with either dementia or cognitive impairment, or persons under diagnostic investigation. The environment is customized to the needs of the patients. The purpose of the stay is for closer follow-up, for the patients to experience security and for upholding the patients level of functioning by involving them in different activities as long as possible (1).

A nursing home however, have all kinds of patients, mostly those who are afflicted with somatic diseases, and who need practical help in activities of daily living (ADL). Patients from CDPD who have lost their ability to perform ADL, and those who cannot enjoy the benefits of living in CDPD anymore are sometimes transferred to a nursing home.

3.2 Nutritional status and aging

Nutritional status is defined as state of the body in relation to the consumption and utilization of nutrients (2). It is the ratio between the body's need of energy and nutrients, and the actual flow through diet, considered in relation to height, weight, health status, and content of substances in the blood and tissues (3). The most common method of assessing nutritional status is by calculating Body Mass Index (BMI). BMI indicates the ratio between height and weight and is used to define the under- and overweight. BMI is calculated by dividing weight (kg) by the square of height (4):

$BMI = \text{weight (kg)} / (\text{height(m)} \times \text{height(m)})$.

Whereas:

Value for adults	Proposed value for persons aged 65 and older*	
<18,5	<24	Underweight
18,5-24,9	24-29	Normal
25<	>29	Over weight
*BMI values for persons over 65 years are proposed to be higher. Normal value should be between 24-29 (5). E.g. BMI of 22kg / m ² is therefore a sign of malnutrition in the older persons (4).		

Biological changes in the aging process has an important impact on the older people's nutritional status. One of the most important changes is the decrease in muscle mass with increasing age. Relative amount of body fluids also decreases while the amount of fat increases (4-6).

Studies show that height also decreases with age (4, 5). Moreover, the sense of smell and taste, production of digestive enzymes in the stomach, and intestinal peristalsis also decreases with age (4), and may affect appetite.

3.3 Malnutrition

Malnutrition is a medical condition that occurs when the body does not get the right amount of the nutrients necessary to maintain healthy tissues and organ function (7, 8). It is defined as a state of being poorly nourished and refers to both overnutrition and undernutrition (9). The word malnutrition however, is very often used to refer to undernutrition only (8). In this paper, however, the terms overnutrition and undernutrition are described separately.

Overnutrition occurs when the body acquires an excessive amount of nutrients than necessary, which can lead to obesity or overweight (10). It is a condition where there is an excess of body fat relative to what is desired. This increases the risk of numerous diseases as diabetes type 2, cardiovascular diseases, gallstones, some forms of cancer, and an increased risk of stress disease on skeletons, joints, and muscles (11). The location of fat reserves also has a major impact on health. Fat collected around the internal organs, is considered to be more harmful than so-called subcutaneous fat (12).

Undernutrition occurs when the body's need for energy and nutrient over a period of time is not covered by food intake. When energy demand is not covered, the body compensates by breaking down protein and fat reserves. This leads to weight loss, muscle wasting, and

lack of essential nutrients, which in turn contribute to increased morbidity, complications, and mortality (5, 13).

There are various causes of malnutrition among the elderly, and they can be divided into three main types: medical, social, and psychological (4, 9, 14).

- Medical: Chronic diseases, gastrointestinal disorders, oral problems, visual problems, long-term use of some drugs
- Social: Loneliness or isolation
- Psychological/ Mental conditions: Bereavement, anxiety, stress, depression, confusion, and dementia

3.4 Dementia

Dementia is a syndrome characterized by cognitive impairment, behavioral disorders and psychiatric symptoms. Diagnostic investigation of dementia is done in two steps. First, the presence (or absence) of dementia condition is determined by following the criteria for dementia according to ICD-10.⁴ If the patient is found to have dementia, a further diagnosis should be done to reveal the type of dementia. Diagnostic process includes history taking, observation, neuropsychological tests, blood tests, and brain imaging (15-17).

3.4.1 The most common types of dementia

Alzheimer's disease (AD) is the most common dementia condition among persons over 65 years. This represents 50-60% of cases (18). However, 3% of Alzheimer's cases have early onset (below 65 years) (16) . AD is a chronic neurodegenerative disease characterized by gradual and eventually pronounced changes in mental function (18, 19). Motor and sensory function is affected later in the course of the disease. The common symptoms include memory loss, problems with daily activities, orientation, language difficulties, and change in personality (18).

Vascular dementia (VD) is commonly caused by vascular brain injuries and disorders of cerebral artery. Diagnosis is based on a temporal correlation between the occurrence of vascular lesions and dementia, in the absence of other degenerative diseases (16, 20). VD is characterized by memory impairment, language disorders, apraxia and agnosia (16).

⁴ Criteria for dementia according to ICD-10 is listed on appendix 8

Vascular dementia is considered the second most common type of dementia, but can also be the most under-diagnosed type (21).

Lewy body dementia (LBD) represents 10-15% of dementia cases (16) . LBD is a neurodegenerative disease with both motor, cognitive, psychiatric and vegetative symptoms⁵(22). The core symptoms of LBD are fluctuating consciousness, visual hallucinations, and parkinsonism (22). Typical in LBD is the almost simultaneous onset of the motoric and cognitive symptoms, which differentiate it from AD (16) .

Fronto-temporal dementia (FTD) is more common among persons under 65 years, and represents about 10% of the cases (18). IN FTD, there is progressive loss of cells in the frontal and temporal lobes of the brain (23). Clinical features are expressive language disorders and behavioral and personality disorders as lack of initiative, disinhibition, indiscriminate and excessive eating and drinking, inability to planning and impaired self-awareness (16, 18).

3.4.2 Severity of Dementia

Dementia is graded as mild, moderate or severe according to how the cognitive failure affects the patients ADL. Several tools have been developed to measure the severity of dementia, of which the Clinical Dementia Rating (CDR) is one of the most commonly used. The CDR (24) is a validated tool used to assess the severity of cognitive failure and possible dementia. Health personnel are required to have observed the patient minimum four weeks before the assessment. The CDR scale has six categories, with memory as the primary category. Orientation, judgment and problem solving, community affairs, home and hobbies and personal care are secondary categories.

3.5 Nutritional Status in patients with dementia

Research shows that dementia is a risk factor for malnutrition, and that the incidence and type of malnutrition varies between the subtypes of dementia. Studies of eating behavior disorder showed that patients with FTD behavioral variant tend to overeating (hyperphagia), which causes most patients with this condition more likely to be overweight (25, 26). In Alzheimer's disease, however, deterioration in sense of odor and taste can accentuate the decline in nutritional status (27). Moreover, study shows that

⁵ Disturbances of a person's functions necessary to maintain life. For example: weight loss, anorexia, insomnia, fatigue, low energy, and inattention.

more than 80% of patients with AD have eating and swallowing problems (28). Another study assessing the nutritional status of community-dwelling individuals with dementia using MNA, showed that individuals with LBD are more at risk for undernutrition than those with other types of dementia (29). This result is confirmed in another study comparing malnutrition among patients with AD, LBD and FTD using biochemical blood markers (28). Moreover, malnutrition is found to be associated with the severity of dementia and other geriatric syndromes such as sleep disturbances, psychological problems, immobility, and falls, among others (30).

3.6 Assessment of Nutritional Status of the Older Patients

The Norwegian Directorate of Health has published the National Professional Guidelines for Prevention and Treatment of Malnutrition (31). This guideline aims to give instructions on how to both identify and give proper nutritional measures to those who are malnourished or at risk for nutritional problems. The Directorate, through this guideline, recommends that all persons enrolled in the nursing facilities be assessed for nutritional risk at admission and monthly thereafter. The guideline recommends the use of standardized assessment methods, but gives no instructions on which tool is best suited for the elderly. For use in primary care, the guidelines recommend one of the following screening tools:

3.6.1 Mini Nutritional Assessment (MNA)

MNA is a checklist developed to assess the risk for undernutrition for persons older than 65 years. MNA is well supported by international studies and is validated both internationally and locally, for elderly in the hospitals, private homes and nursing homes. The tool has two parts, a screening section and a section for detailed assessment (4, 16, 31-33).

- Part 1 includes survey of patients' current nutritional status, weight changes over time, BMI, patient mobility and possibly neuropsychological disorders. A score of 12 or more means normal and it is not necessary to complete the part 2.
- Part 2 is implemented if a person scores 11 points or less which means possible malnutrition, in order to detect the degree of risk. ⁶

⁶ This part provides a thorough survey of the patient's living situation, number of medicines taken, presence of wounds or skin sores, total number of meals, amount of nutrients and fluids taken daily, independence

Total maximum score is 30 (part 1 = 14, Part 2 = 16), whereas, <17 indicate malnutrition, 17 to 23.5 indicate a risk of malnutrition, and 24-30 indicates normal nutritional status. Recommendation for intervention is as follows: >23.5 - no necessary intervention; <23.5 - refer patient to nutritional therapist, and make necessary steps to improve patients nutritional intake (32) .

3.6.2 Malnutrition Universal Screening Tool (MUST)

MUST is a tool developed to identify malnutrition, whether it concerns under- or overnutrition. MUST is meant to help draw up an action plan for persons who are undernourished, and is suitable in both specialist and primary care (31, 34). It is easily accessible but less detailed than MNA and NJ (33). There are five steps in MUST:

1. BMI score: >20 = 0; 18.5- 20 =1; <18.5 =2
2. Weight loss score for the last three to six months:
5% = 0 5-10% = 1 >10% = 2
3. Score for acute illness (If the patient is suffering from acute illness and has not or probably will not have food intake in five or more days, score is 2)
4. Nutritional risk is graded based on a total score:
0 = low risk 1= middle risk 2 or more = high risk
5. A recommendation for intervention is given according to the score ⁷

3.6.3 Nutritional Journal (NJ)

NJ is a local Norwegian tool developed by Aagård & Roel, in 2004. Unlike MNA and MUST, NJ is currently not known to be validated (35). The purpose of the instrument is mapping of nutritional status of patients in the hospitals, nursing homes, and those receiving nursing care in their own home (33, 36). There are five guidelines in filling out the tool:

1. Height measurement
2. Current weight, and last registered weight. Weight loss or weight gain over the last 2-6 months are also registered.
3. Computation of BMI

or help needed during meal time, the person`s own assessment of nutritional status and the measurement of the upper arm and leg circumference.

⁷ 0 Low risk- routine clinical care, repeat screening in line with the recommendations

1 Medium risk- observe and document patient intake and follow local guidelines

2 High risk- start treatment, involve nutrition team and follow local guidelines for therapy

4. List of other nutritional related data are checked,⁸ and conditions that can affect food intake and nutritional status such as cognitive impairment, fatigue, heavy breathing during mealtime, and clear signs of undernourishment such as leanness, thin or dry skin and dizziness are also noted.
5. Evaluation of nutritional status: good, risk for malnutrition, or severe malnutrition⁹

3.6.4 Nutritional Risk Screening (NRS- 2002) and Subjective Global Assessment (SGA)

NRS is primarily recommended for use in hospital settings because it categorizes patients according to severity of diseases (37). It is suited for older patients because of its age adjustment. SGA is primarily developed to assess surgical patients, but is also applicable in other clinical situations (37). The Directorate of Health recommends both NRS and SGA as alternative tools for use in primary health care (29, 31).

⁸ Decreased appetite, dental problems, chewing or swallowing problems, sore or dry mouth, nausea and vomiting, diarrhea or constipation, edema, grabbing or movement problem, independence during mealtime, and vision problems.

⁹ See NJ (Ernæringsjournal) on appendix 4

4 Methodological Considerations

4.1 Design and Setting

The project has as a cross-sectional design evaluating the nutritional status of patients living in nursing homes and CDPD in the two Norwegian municipalities of Larvik and Sandefjord. The municipality of Larvik has about 44 033 inhabitants (38), with about 358 nursing homes or CDPD slots (39). The municipality of Sandefjord has about 46 112 inhabitants ¹⁰ (40), about whom 328 lives in nursing homes or CDPD (41). Since I am employed in Larvik municipality and live in Sandefjord, these two municipalities were preferred for the setting of the study.

The design was chosen because our aim was to determine the prevalence of malnutrition, and this can only be resolved through quantitative methods.

Participants were chosen by convenience sampling. Patients regardless of age were included as long as they had long-term residence in the institution. Of ethical reasons, patients who were acutely or terminally ill during the time of registration were excluded. Older patients residing in CDPD and in nursing homes are both considered to be in need of a higher level of care than what can be offered in their own homes. All patients in CDPD have either dementia or cognitive impairment, while over 80% in nursing homes suffer the same (42). There are no clear distinctions between these two. Since patients with dementia, are the group I am most interested in, CDPD and nursing homes are then natural choices for the inclusion.

4.2 Recruitment process

The Head of Health Department in both municipalities were informed about the municipalities` participation in the project. Thereafter, written information with brief information about the project was sent to all department heads of the institutions involved. Meetings with the head of each institution were conducted. In Sandefjord, my adviser Maria Krogseth represented the project in the meetings, while I represented the project in the meetings in the municipality of Larvik. In these meetings, the project was presented, and agreement of participation was given. Thereafter, care personnel at each department

¹⁰ The planning of this project was conducted before the municipality of Sandefjord was merged with the municipality of Andebu and Stokke in January 2017. Only institutions in the "old" municipality of Sandefjord were included in this project. The number of inhabitants in the "new" municipality of Sandefjord is 61,218.

agreed to administer the collection of data. These meetings were aimed to create a more personal contact with the health personnel, and to give them a sense of ownership to the project.

4.3 Collection of data

Demographic data such as gender, age category, and length of stay in the institution was initially collected. To protect the anonymity of the patients as required by the NSD, no name, personal number or actual age was collected.

Assessment of nutritional status was performed using MNA (full form), MUST, and NJ. These three tools were chosen among others because these are the most commonly used in Norwegian nursing homes. The participating institutions in Larvik uses NJ. In Sandefjord, MUST is the tool that is commonly used. MNA is widely used in other municipalities like Oslo and used in other nursing homes in Larvik¹¹.

Dementia diagnosis was registered according to the medical records. As dementia was considered a general diagnosis, we were allowed to collect this information with respect to anonymity. Likewise, severity of dementia was assessed using the CDR. The best way of assessing the severity of dementia is through cognitive tests. However, since NSD required anonymity of the patients, it was not possible for us to conduct cognitive tests. The CDR however does not require direct contact with the patients.

4.4 Ethics and Privacy

In June 2016, The Remit Assessment form (Framleggingsvurdering) was sent to Regional Committees for Medical and Health Research Ethics (REC) as we were in doubt about whether the project had to be approved by REC. The answer on this form was that the project had to be approved by REC, and we were required to submit the complete project to the committee for approval due to the possibility that the project may come to acquire new knowledge about health and disease. However, when the evaluation of the project came out on the first week of October REC came up to the decision that the project was a quality assurance of municipal services, and has not intended to generate new knowledge about health and disease. The project therefore fell outside their scope of responsibility. The project was then submitted to the Norwegian Center for Research Data (NSD) for evaluation, which has released its approval on the first week of December. The

¹¹ Information gathered through informal survey.

NSD concluded that the project was not subject to notification, as all data will be collected anonymously. Informed consent was not required as mapping of nutritional status is included in the routines in Norwegian nursing homes. The application process took us a whole semester, causing the delayed start of the project.

As I am a nurse employed in Larvik municipality and works directly with the patients in one of the CDPDs, nutritional assessment of these patients included in the research project was a part of my routine at work. To avoid conflict towards anonymity, and to keep from being subjective, I chose to abstain from collection and registration of data in this particular unit. Other health personnel in the unit did both the data collection and completion of assessment forms.

4.5 Analyses

Analysis of nutritional status was done both as three and two categories. All analysis were done in close collaboration with my adviser, MD PhD Maria Krogseth who also consulted Statistician PhD Ragnhild Sorum Falk, regarding the choice of statistical method when comparing the three nutritional tools. Comparison of the tools was the objective of the study, and Kappa statistic and observed agreement were used. No further calculation was done as to whether the percentage differences between the tools are significant or not. Neither was calculation of risk factors of malnutrition the scope of my project.

5 Main Results

Ninety-seven out of 114 patients who were initially selected were included in the study.

The following outcome concerned these 97 patients:

- The prevalence of risk for undernutrition varied with the tools applied. With three categories, the prevalence was 11.3%, 13.4%, and 15.5% using MUST, MNA, and NJ respectively. With two categories, the prevalence was 68%, 28% and 35% using MNA, MUST and NJ respectively.
- 16.5% of the participants were found to be obese (BMI >30). All 16 were at low risk using NJ. Using MUST, 15 were at low risk while one is at medium risk. Using MNA, five was at low risk, ten at medium risk and one at high risk.
- According to CDR 20.6% of the participants had mild dementia, 33% has moderate dementia, and 32% has severe dementia.
- The association between severity of dementia using the CDR, and nutritional status using the MNA was significant, $p < 0.001$. No significant association was found between severity of dementia and nutritional status using NJ ($p = 0.223$), or MUST ($p = 0.303$)
- Between MNA and MUST, Kappa score was 0.20, which means a slight agreement. Between MNA and NJ, Kappa score was 0.218, which means fair agreement. Between MUST and Nutritional Journal, Kappa score was 0.643 indicating substantial agreement.
- 74 of the 97 (76%) patients were found to have a diagnosis of dementia according to medical record. Of these, the subtype of dementia was diagnosed in 29 (39%), while 45 (61%) patients were not diagnosed further regarding subtype.
- The number of participants registered with no dementia diagnosis based on patients medical records was 23 (24%) and 14 (14%) using CDR. This shows a deviation of 39% between patients with dementia-like syndrome and patients with actual dementia diagnosis.

6 Discussions

6.1 Prevalence of malnutrition

The aim of this study is to determine the prevalence of malnutrition among patients living in nursing homes and CDPD, with the use of MNA, MUST, and NJ. It also aimed to explore whether the prevalence of malnutrition varies with severity of dementia.

We found that the prevalence of malnutrition varies in two ways. First, according to the tools applied in the study, and second, according to how the result is presented; whether in three categories which are low risk, medium risk, and high risk, or two categories which are good nutritional status and risk for nutritional status. With two categories, the medium risk and the high risk are combined together and labelled it as high risk. We found that using the three categories, the prevalence of malnutrition was 11.3%, 13.4%, and 15.5% using MUST, MNA, and NJ respectively. With two categories however, the prevalence was 68%, 28% and 35% using MNA, MUST and NJ respectively.

6.2 Variation in Nutritional Status

Accordingly, patients' nutritional status vary using different screening tools, and treatment varies thereafter. An example of the variation in the result between the tools is presented in a case of one of the participants. This patient suffered from vascular dementia and scored three points on CDR indicating serious dementia. His/her BMI was 32, the nutritional intake was good, but assistance during mealtime was necessary. A month before the registration, the patient was acutely ill and lost 5 kg (5% of body weight), but had recovered during the time of the registration. The patient used several medications, and was mostly confined in bed or wheelchair. The patient's assessment was MNA= high risk, MUST= medium risk, NJ= low risk.

The variation in the results between the tools lie in the different parameters used in each assessment tools. With MNA, severe dementia, weight loss, acute disease/stress, living in nursing facility, use of more than three prescription medicines, and not being able to go outside, contributed to the patient's low score. Moreover, because of the patient's severe dementia, he/she was not able to answer the question on rating of own health and nutritional status. The total score was $15.5/30$ = undernourished or high risk. With this assessment, the patient should be referred to a nutritional therapist, as required intervention according to the guidelines (32).

MUST assessed the patient as medium risk based on the patients BMI ($>30 = 0$) and weight loss over the last 3 to 6 months ($5\% = 1$), and no acute disease (0). Total score was $1 =$ medium risk. With this assessment, the patient should be under observation by documenting nutritional intake and should be reassessment after one month (34).

NJ has based its assessment on normal food intake, BMI >30 (obesity), and no clinical sign of malnutrition at present. Because there is no concrete scoring system, care personnel use their subjective judgement, and this is usually not easy. The patient had weight loss, but was still obese and had no other nutritional related problem (aside from the need for assistance during mealtime and dementia); and although he/she was obese, the tool has no category for obesity in the final assessment. The patient did not fall into any of the three categories, but was closest to good nutritional status or low risk for undernutrition.

The abovementioned patient lives in an institution where NJ is applied; he/she is actually assessed, as low risk for undernutrition, hence receives no nutritional intervention. If he/she was living in Oslo, however, MNA would be used as screening instrument and intervention would be initiated. The choice of assessment tool is therefore paramount in nutritional evaluation, as intervention is highly dependent on its result.

6.3 Classifying Overnutrition

Sixteen of the 97 (16.5%) participants was classified as overweight or obese with BMI >30 . This shows that malnutrition among elderly in care facilities does not only mean undernutrition but also overnutrition, although only undernutrition has been the focus. However, overnutrition as indicated by BMI does not automatically mean low risk for undernutrition by the end of evaluation. NJ classified all with BMI >30 as low risk. MUST classified most as low risk, and one at medium risk. MNA however has distributed them among the three categories, mostly at medium risk.

It might seem paradoxical that obese persons are being classified as medium risk or more so as high risk for undernutrition. However, BMI alone is not a sufficient indicator for nutritional status since BMI does not take into account body composition between fat and muscle mass (16), nor water retention. Some medical conditions that lead to edema like heart failure, kidney disease, and liver diseases can mask weight loss. MNA uses BMI as one of its parameters but has only a small fraction ($3/30$) of its total score. Nevertheless, MUST and NJ bases most of its assessment on BMI, being 1 out of 3 main parameters for both.

6.4 Nutritional status in relation to severity of dementia

The preferred aim of this study was to explore the relationship between nutritional status and the different types of dementia. However, it was not made possible as only few percentages of people who are suffering from dementia are diagnosed with the subtype. Nutritional status in relation to severity of dementia was therefore chosen as a secondary objective of the project. We found that the prevalence of undernutrition among patients' with dementia increases parallel to the severity of dementia, regardless of the tool. However, significant association between severity of dementia was only found with the use of MNA, but not with MUST and NJ.

6.5 Limitations of the study

This is a study involving a small sample of people living in institutions. A bigger sample could have increased the accuracy and reliability of the results.

No facilities actually using MNA was included in this study. We were not certain whether those facilities using MNA use the original form or the short form. In that case, the MNA-SF could have replaced the use of MNA original form in this project. Aside from saving us time and effort, it might also have led to a different result.

6.6 Recommendations for future studies

The purpose of the current study is not to reveal the cause of malnutrition, nor is it designed to uncover which tools are most suitable for the old patients in the institutions, but these are important issues that need further research. A qualitative study regarding nurses' experiences with the use of the various nutritional tools is recommended.

Studies involving bigger population is needed to explore further the relationship between nutritional status and the different subtype of dementia. Knowledge of the correlation between nutritional status and dementia type could make it easier to create individual nutrition plan according to how we anticipate the nutritional status of a person with a certain type of dementia.

6.7 The Health Personnel's Point of View

Most of the health personnel involved were positive about the project. However, some felt the project was an additional burden on their job. Although nutritional screening is a part of the routine in the institutions, we discovered that this is not being done regularly as recommended by the Directorate of Health. Nutritional screening is not being prioritized, as time constraint is a usual challenge for health personnel in primary health care. On the other hand, the health personnel's involvement in the project through measurement taking and interviews could have increased their awareness and interest on their own patients' nutritional status and about nutritional screening.

Feedback from the health personnel were not given in the result section, as this was not a qualitative study regarding their experiences. Most of the health personnel expressed that they are satisfied with the present tool they are using. However, some commented that MNA was not an option for them as this almost automatically categorizes patients with dementia at risk for malnutrition.

7 Conclusion

The prevalence of malnutrition among patients living in institutions vary not only according to the tools applied in the study, but also according to how the result is presented; whether with three or two categories. Although focus is on undernutrition, some cases of overnutrition are also seen in the institutions. The prevalence of undernutrition among patients' with dementia increases parallel to the severity of dementia, regardless of the tool, although the result is more apparent with MNA. As patients' nutritional status vary using different screening tools, treatment also varies thereafter. Thus, the health workers choice of tools when evaluating patients' nutritional status is of utmost importance.

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Appendices

Appendix 1: Remit Assessment (fremleggingsvurdering)

Fra: <post@helseforskning.etikkom.no>

Dato: fredag 24. juni 2016

Emne: Sv: REK sør-øst 2016/1141 Ernæringsstatus i sykehjem

Til: mariakrogseth@gmail.com

Vår [ref.nr.:](#) 2016/1141 B

Hei.

Vi viser til innsendt skjema for fremleggingsvurdering for ovennevnte prosjekt, mottatt 18.06.2016.

I vedlagt prosjektbeskrivelse er formålet med studien beskrevet slik: *Formålet med denne studien er å få oversikt av forekomst av ernæringsmessige problemer hos pasienter som bor i sykehjem generelt, og spesielt blant pasienter med demens. I tillegg ønsker vi å kartlegge om forekomsten varierer mellom de ulike subtyper av demens.*

Ut fra det som kommer frem i skjema og vedlegg mener vi at prosjektet må fremlegges for komité som komplett prosjektsøknad. Dette fordi prosjektet kan komme til å skaffe til veie ny kunnskap om helse og sykdom, jf. helseforskningslovens § 2, jf. helseforskningslovens § 4.

Neste frist for å søke om forhåndsgodkjenning av forskningsprosjekt er 09.08.2016.

Prosjektsøknader sendes inn via SPREK: <http://helseforskning.etikkom.no>. Vi gjør for øvrig oppmerksom på at konklusjonen er å anse som veiledende jfr. forvaltningsloven §11, og at komiteens behandling av prosjektet er uavhengig av vurderingen knyttet til fremleggelsesplikt.

Med vennlig hilsen

Hege Holde Andersson
rådgiver/ komitésekretær

post@helseforskning.etikkom.no

T: 22845514

Regional komité for medisinsk og helsefaglig
forskningsetikk REK sør-øst-Norge (REK sør-øst)
<http://helseforskning.etikkom.no>



Appendix 2: Decision from REC



Region: REK sør-øst	Saksbehandler: Claus Henning Thorsen	Telefon: 22845515	Vår dato: 07.10.2016	Vår referanse: 2016/1483/REK sør-øst
			Deres dato: 09.08.2016	Deres referanse: C

Vår referanse må oppgis ved alle henvendelser

Maria Krogseth
Oslo universitetssykehus HF
Postboks 4950 Nydalen
0424 Oslo

2016/1483 Ernæringsstatus blant personer bosatt i sykehjem

Vi viser til søknad om forhåndsgodkjenning av ovennevnte forskningsprosjekt. Søknaden ble behandlet av Regional komité for medisinsk og helsefaglig forskningsetikk (REK sør-øst) i møtet 15.09.2016. Vurderingen er gjort med hjemmel i helseforskningsloven § 10, jf. forskningsetikkloven § 4.

Forskningsansvarlig: Høgskolen i Sørøst-Norge **Prosjektleder:**
Maria Krogseth

Prosjektomtale (original):

Formål: Kartlegge ernæringsstatus hos pasienter i sykehjem og bofellesskap for personer med demens ved bruk av tre ulike verktøy for ernæringscreening. De tre verktøyene sin grad av samstemthet vil registreres, samt hvorvidt de har ulik evne til å predikere negativ vektutvikling etter 6 og 12 mnd. Videre vil vi avdekke hvorvidt risiko for underernæring varierer med alvorlighetsgrad av demens, og evt subtype av demens. Design: Prospektiv studie av personer bosatt i sykehjem og bofellesskap for personer med demens i Sandefjord kommune, og ved ett sykehjem i Larvik kommune. Deltakernes ernæring vil kartlegges ved bruk av tre validerte verktøy for ernæringscreening; MNA, MUST og ernæringsjournal. I tillegg vil alvorlighetsgrad av eventuell demenssykdom registreres ved bruk av skjemaet Klinisk Demensvurdering. Demenssubtype registreres der dette er kjent. Vektutvikling etter 6 og 12 måneder registreres.

Vurdering

Dette er et masterprosjekt i geriatrisk helsearbeid, og man skal kartlegge ernæringsstatus hos pasienter i

sykehjem og bofellesskap for personer med demens ved bruk av tre ulike verktøy for ernæringscreening. Kartleggingen inngår som en del av kommunens ordinære arbeid, men kartleggingen vil denne høsten være utvidet ved at man benytter tre ulike kartleggingsverktøy.

Komiteen oppfatter dette som kvalitetssikring av kommunale tjenester, og prosjektet har dermed ikke som formål å generere ny kunnskap om helse og sykdom, slik dette forstås i helseforskningsloven §§ 2 og 4.

Komiteen viser for øvrig til hvordan kvalitetssikring forstås i Helse- og omsorgsdepartementets veileder til helseforskningsloven:

”Kvalitetssikring kan defineres som prosjekter, undersøkelser, evalueringer o.l. som har som formål å kontrollere at diagnostikk og behandling faktisk gir de intenderte resultater. Nasjonale tiltak for å sikre og

forbedre kvaliteten i tjenestene inkluderer utvikling av nasjonale kvalitetsindikatorer, samordning og styrking av medisinske kvalitetsregistre og å utarbeide gode faglige retningslinjer. Kvalitetsarbeidet må baseres på systematisk dokumentasjon.”

Etter komiteens vurdering faller prosjektet utenfor helseforskningslovens virkeområde, jf. helseforskningsloven § 2, jf. § 4 første ledd bokstav a.

Prosjektet kan gjennomføres uten godkjenning av REK innenfor de ordinære ordninger for helsetjenesten med hensyn til for eksempel regler for taushetsplikt og personvern. Søker bør derfor ta kontakt med enten forskerstøtteavdeling eller personvernombud for å avklare hvilke retningslinjer som er gjeldende.

Vedtak

Etter søknaden fremstår prosjektet som kvalitetssikring, og faller derfor utenfor helseforskningslovens virkeområde, jf. helseforskningsloven § 2.

Komiteens avgjørelse var enstemmig.

Komiteens vedtak kan påklages til Den nasjonale forskningsetiske komité for medisin og helsefag, jfr. helseforskningsloven § 10, tredje ledd og forvaltningsloven § 28. En eventuell klage sendes til REK sør-øst C. Klagefristen er tre uker fra mottak av dette brevet, jfr. forvaltningsloven § 29.

Med vennlig hilsen

Britt-Ingjerd Nesheim
prof.dr.med. leder REK
sør-øst C

Claus Henning Thorsen
Rådgiver

Kopi til: Høgskolen i Sørøst-Norge ved øverste administrative ledelse: postmottak@usn.no

Appendix 3: Decision from NSD

Maria Krogseth
Institutt for sykepleie- og helsevitenskap Høgskolen i Sørøst-Norge

3603 KONGSBERG

Vår dato: 06.12.2016

Vår ref: 50699 / 3 / AGL

Deres dato:

Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 21.10.2016. All nødvendig informasjon om prosjektet forelå i sin helhet 05.12.2016. Meldingen gjelder prosjektet:

<i>50699</i>	<i>Ernæringsstatus hos pasientene bosatt i sykehjem</i>
<i>Behandlingsansvarlig</i>	<i>Høgskolen i Sørøst-Norge, ved institusjonens øverste leder</i>
<i>Daglig ansvarlig</i>	<i>Maria Krogseth</i>
<i>Student</i>	<i>Rosanna Major</i>

Etter gjennomgang av opplysninger gitt i meldeskjemaet og øvrig dokumentasjon, finner vi at prosjektet ikke medfører meldeplikt eller konsesjonsplikt etter personopplysningslovens §§ 31 og 33.

Dersom prosjektopplegget endres i forhold til de opplysninger som ligger til grunn for vår vurdering, skal prosjektet meldes på nytt. Endringsmeldinger gis via et eget skjema, <http://www.nsd.uib.no/personvern/meldeplikt/skjema.html>.

Vedlagt følger vår begrunnelse for hvorfor prosjektet ikke er meldepliktig.

Vennlig hilsen

Kjersti Haugstvedt

Audun Løvlie

Kontaktperson: Audun Løvlie tlf: 55 58 23 07

Vedlegg: Prosjektvurdering

Kopi: Rosanna Major annechano@yahoo.com



Personvernombudet for forskning

Prosjektvurdering - Kommentar

Prosjektnr: 50699

I korrespondanse med student (02.12, 04.12 og 05.12 2016) kommer det frem at de fem skjemaer som skal anvendes i prosjektet skal fylles ut anonymt av annet helsepersonell. Student skal med andre ord ikke ha innsyn i journaler eller tilgang til noen personopplysninger om pasientene. At datamaterialet skal fylles ut anonymt vil si at det ikke skal inneholde noe av følgende: navn, spesifikke datoer for innleggelse eller utskrivning, spesifikk alder eller pasient-id som samsvarer med sykehuset sine systemer.

Ombudet legger til grunn at sykehjemmenes personell har anledning og lov til å hente ut opplysninger på denne måten.

I lys av det over kan vi ikke se at det behandles personopplysninger med elektroniske hjelpemidler, eller at det opprettes manuelt personregister som inneholder sensitive personopplysninger. Prosjektet vil dermed ikke omfattes av meldeplikten etter personopplysningsloven.

Det ligger til grunn for vår vurdering at alle opplysninger som behandles elektronisk i forbindelse med prosjektet er anonyme.

Med anonyme opplysninger forstås opplysninger som ikke på noe vis kan identifisere enkeltpersoner i et datamateriale, verken:

- direkte via personentydige kjennetegn (som navn, personnummer, epostadresse el.)
- indirekte via kombinasjon av bakgrunnsvariabler (som bosted/institusjon, kjønn, alder osv.)
- via kode og koblingsnøkkel som viser til personopplysninger (f.eks. en navneliste) -eller via gjenkjennelige ansikter e.l. på bilde eller videoopptak.

Appendix 4: Mini Nutritional Assessment

Etternavn:		Fornavn:		
Kjønn:	Alder:	Vekt, kg:	Høyde, cm:	Dato:

Besvar undersøkelsen (screeningen) ved å fylle inn de riktige poengsifrene. Bruk tallene fra hvert enkelt spørsmål og summer. Hvis oppnådd sum er 11 eller mindre, fortsett med del II for å få en samlet vurdering av ernæringsstilstanden.

Screening, del I		J Hvor mange fullstendige måltider spiser pasienten pr dag? 0 = 1 måltid 1 = 2 måltider 2 = 3 måltider	<input type="checkbox"/>
A Har matinntaket gått ned i løpet av de 3 siste månedene pga nedsatt appetitt, fordøyelsesproblemer, vanskeligheter med å tygge eller svelge? 0 = betydelig redusert matinntak 1 = noe redusert matinntak 2 = ingen endring i matinntaket	<input type="checkbox"/>	K Utvalgte markører for proteininntak	
B Vekttap i løpet av de 3 siste månedene 0 = vekttap over 3 kg 1 = vet ikke 2 = vekttap mellom 1 og 3 kg 3 = ikke vekttap	<input type="checkbox"/>	<ul style="list-style-type: none"> Minst en porsjon melkeprodukter (melk, ost, yoghurt) pr dag ja <input type="checkbox"/> nei <input type="checkbox"/> To eller flere porsjoner belgfrukter eller egg pr uke ja <input type="checkbox"/> nei <input type="checkbox"/> Kjøtt, fisk eller kylling/ kalkun hver dag ja <input type="checkbox"/> nei <input type="checkbox"/> 0.0 = hvis 0 eller 1 ja 0.5 = hvis 2 ja 1.0 = hvis 3 ja	<input type="checkbox"/>
C Mobilitet 0 = sengeliggende / sitter i stol 1 = i stand til å gå ut av seng / stol, men går ikke ute 2 = går ute	<input type="checkbox"/>	L Spiser to eller flere porsjoner frukt eller grønnsaker pr dag? 0 = nei 1 = ja	<input type="checkbox"/>
D Har opplevd psykologisk stress eller akutt sykdom i løpet av de 3 siste månedene? 0 = ja 2 = nei	<input type="checkbox"/>	M Hvor mye væske (vann, juice, kaffe, te, melk...) inntas pr dag? 0.0 = mindre enn 3 kopper 0.5 = 3 til 5 kopper 1.0 = mer enn 5 kopper	<input type="checkbox"/>
E Neuropsykologiske problemer 0 = alvorlig demens eller depresjon 1 = mild demens 2 = ingen psykologiske lidelser	<input type="checkbox"/>	N Matinntak 0 = ikke i stand til å spise uten hjelp 1 = spiser selv med noe vanskeligheter 2 = spiser selv uten vanskeligheter	<input type="checkbox"/>
F Body Mass Index (BMI) (vekt kg) / (høyde x høyde) 0 = BMI mindre enn 19 1 = BMI 19 til mindre enn 21 2 = BMI 21 til mindre enn 23 3 = BMI 23 eller større	<input type="checkbox"/>	O Eget syn på ernæringsmessig status 0 = ser på seg selv som underernært 1 = er usikker på ernæringsmessig tilstand 2 = ser ikke på seg selv som underernært	<input type="checkbox"/>
Screeningresultat, del I (sumtotal maks. 14 poeng) 12-14 poeng: Normal ernæringsstatus 8-11 poeng: Risiko for underernæring 0-7 poeng: Underernært For en mer dyptgående vurdering, fortsett med spørsmål G-R	<input type="checkbox"/>	P Hvordan vurderer pasienten sin egen helsetilstand sammenlignet med mennesker på samme alder? 0.0 = ikke like bra 0.5 = vet ikke 1.0 = like bra 2.0 = bedre	<input type="checkbox"/>
Screening, del II		Q Overarmens omkrets (OO) i cm 0.0 = OO mindre enn 21 cm 0.5 = OO 21 til 22 cm 1.0 = OO mer enn 22 cm	<input type="checkbox"/>
G Bor i egen bolig (ikke på alders/sykehjem eller sykehus) 1 = ja 0 = nei	<input type="checkbox"/>	R Leggomkrets (LO) i cm 0 = LO mindre en 31 cm 1 = LO 31cm eller større	<input type="checkbox"/>
H Bruker mer enn tre typer reseptbelagte medisiner pr dag 0 = ja 1 = nei	<input type="checkbox"/>	Screening, del II (maks. 16 poeng)	<input type="checkbox"/>
I Trykksår eller hudsår 0 = ja 1 = nei	<input type="checkbox"/>	Screening, del I	<input type="checkbox"/>
Ref. Vellas B, Villars H, Abellan G, et al. <i>Overview of MNA[®] - Its History and Challenges.</i> J Nutr Health Aging 2006; 10: 456-465. Rubenstein LZ, Harker JO, Salvo A, Guigoz Y, Vellas B. <i>Screening for Undernutrition in Geriatric Practice: Developing the Short-Form Mini Nutritional Assessment (MNA-SF).</i> J. Geront 2001; 56A: M366-377. Guigoz Y. <i>The Mini-Nutritional Assessment (MNA[®]). Review of the Literature - What does it tell us?</i> J Nutr Health Aging 2006; 10: 466-487. © Société des Produits Nestlé, S.A., Vevey, Switzerland, Trademark Owners © Nestlé, 1984, Revision 2006. N67200 12/99 10M Se mer info på: www.mna-elderly.com		Samlet vurdering, del I + del II (maks. 30 poeng)	<input type="checkbox"/>
MNA resultat		24 til 30 poeng <input type="checkbox"/> Normal ernæringsstatus 17 til 23.5 poeng <input type="checkbox"/> Risiko for underernæring Mindre enn 17 poeng <input type="checkbox"/> Underernært	

Appendix 5: Malnutrition Universal Screening Tool



Step 1

BMI score

BMI kg/m ²	Score
>20 (>30 Obese)	= 0
18.5-20	= 1
<18.5	= 2

+

Step 2

Weight loss score

Unplanned weight loss in past 3-6 months	
%	Score
<5	= 0
5-10	= 1
>10	= 2

+

Step 3

Acute disease effect score

If patient is acutely ill and there has been or is likely to be no nutritional intake for >5 days
Score 2

If unable to obtain height and weight, see 'MUST' Explanatory Booklet for alternative measurements and use of subjective criteria

Acute disease effect is unlikely to apply outside hospital. See 'MUST' Explanatory Booklet for further information

Step 4

Overall risk of malnutrition

Add Scores together to calculate overall risk of malnutrition
Score 0 Low Risk Score 1 Medium Risk Score 2 or more High Risk

Step 5

Management guidelines

0 Low Risk
Routine clinical care

- Repeat screening
Hospital – weekly
Care Homes – monthly
Community – annually for special groups e.g. those >75 yrs

1 Medium Risk
Observe

- Document dietary intake for 3 days
- If adequate – little concern and repeat screening
 - Hospital – weekly
 - Care Home – at least monthly
 - Community – at least every 2-3 months
- If inadequate – clinical concern – follow local policy, set goals, improve and increase overall nutritional intake, monitor and review care plan regularly

2 or more High Risk
Treat*

- Refer to dietitian, Nutritional Support Team or implement local policy
- Set goals, improve and increase overall nutritional intake
- Monitor and review care plan
Hospital – weekly
Care Home – monthly
Community – monthly

* Unless detrimental or no benefit is expected from nutritional support e.g. imminent death.

All risk categories:

- Treat underlying condition and provide help and advice on food choices, eating and drinking when necessary.
- Record malnutrition risk category.
- Record need for special diets and follow local policy.

Obesity:

- Record presence of obesity. For those with underlying conditions, these are generally controlled before the treatment of obesity.

Re-assess subjects identified at risk as they move through care settings

See The 'MUST' Explanatory Booklet for further details and The 'MUST' Report for supporting evidence.

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Appendix 6: Ernæringsjournal (Nutritional Journal)

Pasientdata
Navn
Alder

Ernæringsjournal

1. Høyde
målt liggende målt stående m dato:

2. Vekt og vektutvikling
• Tidligere vekt:kg mnd/år:
• Vekt ved innleggelse:kg dato:
• Vekt ved registrering:kg dato:

• Vekttap/vektøkningkg% over antall mndr/år
(se nærmere veiledning på baksiden)

Vekt skal videre kontrolleres 1 g/uke i sykehus og 1g/mnd i sykehjem, og vektendringer skal bedømmes.
Pasienter i sykehjem som har ernæringsproblemer /dårlig ernæringsstatus skal veies 1g/uke.

3. Kroppsmasseindex KMI (=BMI)
(se veiledning for utregning på baksiden)

4. Andre ernæringsrelaterte data (kryss av og skriv anmerkninger)

• Nedsatt matlyst	ja <input type="checkbox"/>	nei <input type="checkbox"/>
• Tannproblemer	ja <input type="checkbox"/>	nei <input type="checkbox"/>
• Tygge/svelgeproblemer	ja <input type="checkbox"/>	nei <input type="checkbox"/>
• Munnsårhet/munntørret	ja <input type="checkbox"/>	nei <input type="checkbox"/>
• Kvalme/oppkast	ja <input type="checkbox"/>	nei <input type="checkbox"/>
• Forstoppelse/diaré	ja <input type="checkbox"/>	nei <input type="checkbox"/>
• Ødemer	ja <input type="checkbox"/>	nei <input type="checkbox"/>
• Gripe/bevegelsesproblemer	ja <input type="checkbox"/>	nei <input type="checkbox"/>
• Trenger hjelp til å spise	ja <input type="checkbox"/>	nei <input type="checkbox"/>
• Synsproblemer	ja <input type="checkbox"/>	nei <input type="checkbox"/>

Anmerkninger (se baksiden)
.....
.....
.....

5. Vurdering (se baksiden):
.....
.....
.....
.....

Veiledning til utfylling av Ernæringsjournalen

1. **Høyde** måles inntil en vegg eller med målebånd i seng langs ryggraden. Vær oppmerksom på at aldringsprosessen medfører lengdereduksjon.

2. **Vekt** skal alltid registreres ved innleggelse.

Spør også om tidligere vekt og om mulig kartlegg evt vekttap siste 2 – 6 mnd før innleggelse. Vektregistrering skal foretas før frokost, fortrinnsvis uten tøy (kun undertøy/nattøy) og etter at blæren er tømt. Pålitelige data forutsetter standardiserte betingelser og evt. avvik må anmerkes.

Vekttap i forhold til siste vektregistrering angis i %.

Prosentberegning av vektendring:

$$\frac{\text{Vektendring i kg (mellom siste og tidligere/siste veiing)} \times 100}{\text{Tidligere vekt (kg)}} = \% \text{ vekttap/ vektøkning}$$

3. **KMI (=BMI)** er et relativt mål for forholdet mellom høyde og vekt. Bruk kalkulator. Utregning av KMI:

$$\frac{\text{Vekt (kg)}}{\text{Høyde}^2 \text{ (angitt i meter)}} = \text{KMI}$$

$$\frac{60 \text{ kg}}{1,68 \text{ m} \times 1,68 \text{ m}} = \text{KMI ca 21}$$

WHO's referanseverdier for KMI hos voksne (15 – 65 år)

undervekt:	Under 18,5
normalvekt:	Mellom 18,5 – 24,9
overvekt:	Mellom 25,0 – 29,9
fedme:	Over 30

Når det gjelder personer over 65 år, har vi i Norge ingen andre referanseverdier. Studier viser imidlertid at KMI-verdien for eldre personer bør være høyere, og det er foreslått at normalverdien på KMI bør være 24 – 29, og at KMI under 22 som tegn på undervekt. (Mowe M. 2002, Beck A.M., Ovesen L, 1998)

4. **Andre ernæringsrelaterte data.** Under anmerkninger tilføyes tilleggsopplysninger som kan ha innvirkning på matinntak / ernæringsstilstand som for eksempel kognitiv svikt, feber, tretthet, slapphet eller tungpustethet under måltider, tydelige tegn på underernæring som magerhet, tynn/tørr hud, svimmelhet.

5. Vurdering

De registrerte opplysninger må vurderes og ende i en bedømmelse av ernæringsstatus:

- **God ernæringsstatus** forutsetter indikatorer som vanlig matinntak, normal KMI, manglende vekttap og ingen kliniske tegn på over- / underernæring.
- **Risiko for underernæring** kan være til stede ved en eller flere av følgende indikatorer: redusert matinntak, KMI under 18,5 hos voksne / under 22 hos eldre, vekttap på inntil 5% siste 2 måneder eller inntil 10% de siste 6 måneder, ett eller flere ernæringsrelaterte problemer, se pkt 4.
- **Alvorlig underernæring** forutsetter redusert matinntak, KMI under 18,5 hos voksne / under 22 hos eldre, vekttap over 5% de siste 2 måneder eller over 10% de siste 6 måneder og synlige kliniske tegn på underernæring.

Appendix 7: Clinical Dementia Rating Scale

nsvurdering%20(KDV).pdf

Klinisk demensvurdering (KDV)

Hughes et al 1982

KDV vurderer kognitiv svikt og mulig demens samt eventuell grad av demens. Det er en betingelse at pleiepersonalet har observert pasienten i minimum 4 uker. Ved vurdering skal det kun tas hensyn til pasientens mentale evner. Det vil si at dersom annen funksjonssvikt er årsaken til at pasienten ikke fungerer tilfredsstillende på et eller flere områder, skal man prøve å korrigere for dette ved utfylling av skjemaet. Hvis det er vanskelig å avgjøre hvilken kategori pasienten tilhører, skal den høyeste kategorien velges. Begrepet eget hjem, vil si sykehjem.

Hukommelse

- 0 Ingen tap av hukommelse eller lett vekslende glemsomhet
- 0,5 Lett, men permanent glemsomhet, begrenset gjenkalling av hendelser, mild glemsomhet
- 1 Moderat hukommelsestap, mer uttalt for nylig inntrufne hendelser. Svekkelsen påvirker dagliglivets aktiviteter
- 2 Alvorlig hukommelsestap. Bare meget godt innlært materiale huskes, nytt materiale tapes raskt
- 3 Alvorlig hukommelsestap. Bare fragmenter igjen

Orienteringsevne

- 0 Helt orientert
- 0,5 Helt orientert, bortsett fra lette vanskeligheter med tidsforhold
- 1 Moderate vansker med tidsorientering, ved undersøkelse orientert for sted, geografisk desorientert andre steder
- 2 Alvorlige vansker med tidsforhold, vanligvis desorientert for tid, ofte for sted
- 3 Kun orientert for person

Vurderingsevne

- 0 Løser dagliglivets problemer og håndterer ærender og økonomi bra, vurderingsevne god sammenlignet med tidligere
- 0,5 Lett nedsatt evne til å løse problemer, likheter og forskjeller
- 1 Moderate vansker med å håndtere oppgaver, likheter og forskjeller, sosial vurderingsevne vanligvis bevart
- 2 Svært svekket evne til å håndtere oppgaver, likheter og forskjeller, sosial vurderingsevne vanligvis svekket
- 3 Ute av stand til å bedømme eller løse problemer

Hukommelse er primærkategori, og alle de andre er sekundære kategorier (SK). KDV = Hukommelse (H), hvis minst tre andre kategorier har samme skår som hukommelse. Hvis tre eller flere SK har en høyere eller lavere skår enn H, så er KDV = flertallet av de sekundære kategoriene, uansett på hvilken side av H det er flest SK. Hvis tre SK skåres på den ene siden av H og to sekundære kategorier skåres på den andre siden av H, så er KDV = H.

Samfunnsaktiviteter

- 0 Fungerer selvstendig i sitt vanlige arbeid, ved innkjøp, i frivillig arbeid og sosiale grupper
- 0,5 Lett svekkelse i disse aktivitetene
- 1 Ikke i stand til å fungere selvstendig i disse aktivitetene, men vil fortsatt kunne delta i noen, synes å fungere normalt ved tilfeldig møte
- 2 Vil ikke forvente selvstendig fungering utenfor hjemmet. Fremstår som bra nok til å bli tatt med på aktiviteter utenfor eget hjem
- 3 Vil ikke forvente selvstendig fungering utenfor hjemmet. Fremstår som for dårlig til å bli tatt med på aktiviteter utenfor eget hjem

Hjem og fritidsinteresser

- 0 Hjemmeliv, fritidsinteresser og intellektuelle interesser er godt bevart
- 0,5 Hjemmeliv, fritidsinteresser og intellektuelle interesser er lett svekket
- 1 Lett, men avgjort svikt i evnen til å fungere hjemme, vanskeligere husarbeid er oppgitt, mer kompliserte hobbyer og interesser er oppgitt
- 2 Kun enklere husarbeid er opprettholdt, svært begrensede interesser. Interessene er dårlig opprettholdt
- 3 Ingen fungering av betydning i hjemmet

Egenomsorg

- 0 Helt selvhjulpen med egenomsorg
- 0,5 Helt selvhjulpen med egenomsorg
- 1 Trenger påminning om å stelle seg selv
- 2 Trenger hjelp til personlig hygiene, påkledning og til å ta vare på personlige eiendeler
- 3 Trenger mye hjelp til personlig omsorg, ofte inkontinens

Vurdering – Følgende skala benyttes:

- 0 = ingen demens
0,5 = usikker eller lett svikt
1 = lett demens
2 = moderat demens
3 = alvorlig demens

Appendix 8: Table i. Diagnostic Criteria for Dementia According to ICD-10

I	<ol style="list-style-type: none"> 1. decline in memory, especially learning new information; both verbal and nonverbal material 2. decline in other cognitive abilities; deterioration in judgment and thinking
II	Preserved awareness of environment
III	<p>Decline in emotional control or motivation, or change in social behavior with 1 or more of the following:</p> <ol style="list-style-type: none"> 1. emotional lability 2. irritability 3. apathy 4. coarsening of social behaviour
IV	Duration of at least 6 months

(16, 17, 43)

Article Part of the Master's Thesis

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