

The relationship between difficulties in feeding oneself and loss of weight in nursing-home patients with dementia

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Abstract

Objective: to investigate the cause of unintentional weight loss in demented nursing-home patients.

Design: body weight was measured at 3-month intervals and related to the primary diagnosis, problems in feeding oneself and other factors influencing food intake.

Setting: a Dutch nursing home.

Subjects: 250 resident patients and 264 new and consecutively admitted patients above the age of 65.

Results: for both demented and non-demented nursing-home patients, a strong relationship exists between weight loss and choosing food, bringing it to the mouth and chewing: the greater these difficulties, the lower the body weight. This relationship was more evident in existing residents than in newly admitted patients. Body weight was not well correlated with the diagnosis of dementia but was correlated with poor appetite and immobility.

Conclusion: disabilities resulting from dementia can lead to an inadequate intake of food and thus to weight loss in nursing-home residents.

Keywords: *dementia, disabilities, loss of weight, nursing-home patients*

Introduction

When old people fall ill they run a high risk of undernourishment [1–4]. A low body weight has been found in elderly people with dementia [5–6], including those who reside in nursing homes [7–16]. The average weight of elderly people on admission to a nursing home is lower than that of their healthy counterparts who live at home [16]. Weight gain as well as weight loss occurs in nursing homes [17].

Weight loss in patients with cancer, pressure sores or infections is attributed to the period of illness when food intake was too low or energy expenditure high [4, 12]. Explaining weight loss in patients who suffer from dementia is not as simple. The intake of food often appears to be sufficient [7–10]—although there are some doubts about this [5, 18]—and energy expenditure does not seem to provide an explanation for the amount of weight lost [19]. Patients with Alzheimer's disease (AD) dementia are particularly prone to weight loss [9, 10].

In both AD and vascular dementia, patients may have difficulties feeding themselves [20]. Demented patients therefore may need increasing assistance with feeding.

At home they may get help from one close relative; in a nursing home, however, a number of nurses will be involved. The amount and quality of care available to these patients at mealtimes might influence the intake of food and thus their weight. We postulated that it was not dementia itself but the disabilities resulting from the disorder that cause weight loss, and have therefore carried out a study to investigate the relationship between difficulties in feeding oneself and loss of weight in nursing-home patients with and without dementia.

Patients and methods

The study population consisted of patients in the nursing home at the time the investigation was started (resident patients) and those admitted during the next 2 years (newly admitted patients). Patients under 65 and those who could not be weighed were excluded. The study took place in the De Bieslandhof nursing home in Delft, which serves a population of 120 000.

At 3-month intervals for 2 years, the body weight was measured (to the nearest 100 g) using a balance chair.

The patient was weighed after breakfast, without shoes and jacket, by the same person.

Patients were grouped according to primary diagnosis (the reason listed for admission) into: psychiatric (particularly dementia), neurological (stroke, Parkinson's disease), orthopaedic (fracture, arthrosis), oncological and 'other'.

Patients with dementia had undergone a careful, standardized diagnostic evaluation including history, physical examination, neuropsychological evaluation and laboratory testing [21]. The Hachinski ischaemic score, a selection of 13 signs and symptoms of vascular dementia, was originally developed to aid diagnosis of multi-infarct dementia (MID) [22]. However, it has also been used as an exclusionary criterion in the diagnosis of AD [23]. Using this score, patients with dementia were divided into three groups: those with a probable diagnosis of AD (Hachinski score ≤ 4), those with a probable diagnosis of MID (Hachinski score ≥ 7) and those with a Hachinski score of 5 or 6, who probably had another type of dementia [21-23].

Nurses recorded the most important difficulties in self-feeding—choosing food, bringing food to the mouth, chewing and swallowing—in existing residents at the start of the study and 2 years later and in new patients on admission. 'No feeding disability' meant that the patient was independent in choosing, bringing food to the mouth, chewing or swallowing. 'Partial feeding disability' meant that the patient needed some help from the nursing staff in selecting food for each meal or in bringing food to the mouth, or the patient needed some food to be modified because of a chewing or swallowing disability. 'Total feeding disability' was recorded if the patient needed total care by the nursing staff in selecting food or in bringing food to the mouth or needed all food to be adapted to a chewing disability, or needed tube feeding in case of a swallowing disability.

Those with feeding disabilities were usually given assistance at mealtime by nurses. No assessments of the causes of the feeding disability were made. During the investigation, there were no staff shortages. Staffing levels at mealtimes were not recorded because at every mealtime there was a difference in the amount and quality of help available.

The following factors were also noted by the nursing staff: appetite [normal, decreased (stimulation necessary) or increased (curbing necessary)]; thirst [normal, decreased (stimulation necessary) or increased]; consumption of extra food not supplied by the nursing home (daily, less than daily, never) and mobility (can walk independently, walks with help and does not walk at all). Patients unable to walk were subdivided into those who required a wheelchair and could or could not move about independently and those who were bedridden.

After adjustment for age and sex, variance and covariance analyses were performed to find the

relationship between body weight and the primary diagnosis, type of dementia, disabilities in feeding oneself, appetite, thirst, the consumption of extra food and mobility.

Results

The study group comprised 250 existing residents: 199 women and 51 men with average ages of 83.0 and 80.3 years respectively, and 264 newly admitted patients: 194 women and 70 men with average ages of 81.6 and 79.0 years respectively. In total, 21 patients from the first group and 22 from the second group were excluded for reasons of age (< 65) and 16 were excluded from each group due to weighing problems.

Of the previously resident patients, 50% had a psychiatric disorder (47% dementia), 29% a neurological disorder (16% stroke, 5% Parkinson's disease), 11% an orthopaedic disorder and 1% an oncological disorder as the primary diagnosis; 9% were in the 'other' category. Among the new admitted patients, the proportions were 30% psychiatric (28% dementia), 31% neurological (22% stroke, 6% Parkinson's disease), 22% orthopaedic, 5% oncological and 12% 'other'.

Covariance analysis, after adjustment for age, revealed that the resident women with a psychiatric diagnosis had a significantly lower body weight than the other resident women and also a significantly lower body weight than the new admitted women with a psychiatric diagnosis (Table 1).

After grouping the patients according to dementia type, female residents with MID had a significantly lower body weight than those with AD. There was no difference in body weight between newly admitted women with MID and those with AD (Table 2). The number of male patients was too small to justify analysis.

Covariance analysis, after adjustment for age and sex, revealed a significant relationship between body weight and being able to choose food, bring it to the mouth and chew it (Table 3). The group with no feeding disabilities had the highest body weight, while patients who were totally disabled had the lowest body weight. This relationship was more evident among previously resident patients.

If there was little or no change in feeding disabilities, the average body weight showed little or no change (Table 4). When feeding disabilities improved, body weight increased and when they deteriorated, the body weight fell. This relationship between feeding disabilities and body weight was seen in both psychiatric patients and in patients with other disorders.

Covariance analysis, after adjustment for age and sex, revealed a significant relationship between body weight and appetite ($P < 0.001$), thirst ($P < 0.01$), consumption of extra food ($P < 0.0001$) and mobility ($P < 0.0001$). Patients with a poor appetite or diminished thirst and

Table 1. The average weights of existing residents at the start of the study and of newly admitted patients on admission, according to primary diagnosis

Primary diagnosis	Existing residents						New patients					
	Women			Men			Women			Men		
	<i>n</i>	Weight (kg) ^a	SD	<i>n</i>	Weight (kg)	SD	<i>n</i>	Weight (kg)	SD	<i>n</i>	Weight (kg) ^b	SD
Oncological	2	76.1	7.1	1	71.0	0.0	9	54.8	13.8	5	53.6	15.4
Psychiatric	96	54.9 ^c	11.1	27	63.0	8.5	56	59.3 ^c	11.8	23	69.9	9.9
Neurological	58	59.9	13.8	15	62.8	7.7	58	60.8	14.8	24	64.3	9.0
Orthopaedic	30	63.5	18.1	3	50.3	3.1	51	61.5	15.1	7	58.1	10.9
'Other'	13	58.2	10.3	5	63.9	10.3	20	54.9	11.8	11	63.8	15.9

^a*P* = 0.001 and ^b*P* = 0.005 according to *F*-test (for an approximate difference between the categories after adjustment for age).

^c*P* < 0.05 according to *F*-test (after adjustment for age)

those who consumed few extras were at a disadvantage. Those who took the least physical exercise were also at a disadvantage: the bedridden had the lowest body weight. The independent wheelchair patients were the exception, especially those with an electric wheelchair: this was the group with the highest body weight.

With multivariate analysis, only difficulties in bringing food to the mouth and chewing still had a significant relationship with loss of body weight.

Discussion

Not being able to bring food to the mouth independently and to chew food have the closest correlation with weight loss: the more serious the feeding disability, the lower the patient's weight. Other feeding disabilities, such as inability to make a choice or to eat extras, as well as poor appetite and diminished thirst, have a closer correlation with weight loss than dementia itself. We did not consider secondary

disorders, both temporary and permanent, which might contribute to feeding disabilities. Like others [19], we did not find the expected relationship between physical activity and body weight: patients who could walk independently weighed more than those who needed help or could not walk at all. An exception to this trend was the independent wheelchair patients, especially those with an electric wheelchair, who appeared to have the highest body weight. These patients were able to go independently to the shop in the nursing home.

Nursing-home patients with one or more feeding disabilities depended on nursing assistance. This included assistance in choosing or bringing food to the mouth, an adaptation of the consistency of the food and, less often, an artificial aid. It can be difficult to provide each patient with the assistance that they need because each patient has different disabilities, appetite and food habits, and some, especially those with dementia, find it difficult or even impossible to indicate their needs or preferences. Although a nurse can help feed several patients at a mealtime, the nurses' roster

Table 2. The average weight of demented existing residents at the start of the study and of newly admitted demented patients on admission, according to type of dementia

Type of dementia	Existing residents						New patients					
	Women			Men			Women			Men		
	<i>n</i>	Weight (kg) ^a	SD	<i>n</i>	Weight (kg)	SD	<i>n</i>	Weight (kg)	SD	<i>n</i>	Weight (kg)	SD
AD	34	58.1	10.3	8	65.0	6.5	21	59.4	12.2	9	72.6	12.9
MID	15	50.6	7.3	10	61.5	9.1	5	62.5	10.1	3	65.4	7.2
Other ^b	44	53.8	11.7	6	58.2	7.9	26	59.0	11.4	10	67.4	6.4
Total	93	54.9	10.9	24	61.8	8.1	52	59.5	11.5	22	69.3	9.7

AD, Alzheimer's dementia; MID, multi-infarct dementia;

^a*P* < 0.05 according to *F*-test (for the approximate difference between categories after adjustment for age).

^bOr type unclear.

Table 3. Relationship between feeding difficulties and average weight in the 199 existing female residents at the start of the study and the 194 newly admitted female subjects on admission

Difficulty/group	Extent of disability						F-test
	None		Partial		Total		
	%	Weight (kg)	%	Weight (kg)	%	Weight (kg)	
Choosing							
Existing	30	67.9	38	56.6	32	50.4	<i>P</i> < 0.0001
New	50	62.4	42	57.6	8	56.0	<i>P</i> < 0.05
Bringing to the mouth							
Existing	46	63.9	35	55.1	19	49.3	<i>P</i> < 0.0001
New	69	62.4	23	55.1	8	51.6	<i>P</i> < 0.001
Chewing							
Existing	36	66.6	28	56.5	36	50.8	<i>P</i> < 0.0001
New	59	63.2	16	56.6	25	54.2	<i>P</i> < 0.001
Swallowing							
Existing	94	58.4	6	51.7			NS
New	89	60.3	11	56.0			NS

NS, not significant.

may result in a patient receiving help at mealtimes from another member of staff. Since in a nursing home or other institution this is the rule rather than the exception, a patient who is dependent for feeding may get little food and lose weight. The longer the feeding disabilities have existed, the longer the patient has been dependent and thus the greater the chance of an inadequate intake of food. For those with steadily increasing disabilities (for example in dementia) this chance is even greater.

Differences in the extent of feeding disabilities probably account for the small differences in body weight between demented and non-demented females, between demented females with MID and those with AD and between newly admitted patients and existing residents.

Table 4. Relationship between ability to bring food to the mouth and weight in female residents at the start of the study and 2 years later

Ability/change	n	Weight (kg)	
		At start	2 years later
Unchanged			
No disability	36	69.6	72.1
Partial disability	17	57.5	57.2
Total disability	10	50.9	51.3
Changed ^a			
Improved	5	54.5	61.5
Deteriorated	32	61.7	57.9
Total	100	62.4	62.4

^a*P* < 0.001 according to *t*-test.

This study confirms our hypothesis that it is not the dementia itself, but the disabilities in feeding oneself which result from dementia, which lead to loss of weight. We recommend that nursing-home patients, especially those with dementia, are weighed every 3 months. If unintentional weight loss occurs, the most likely explanations should be considered: first, a decrease in food intake due to feeding disabilities and, secondly, either a decrease in food intake due to lack of appetite or an increase in energy expenditure. It is therefore important to check that the patient is given sufficient food and that this food is being eaten.

Key points

- Nursing-home patients with dementia may need help in choosing food and being fed.
- Weight loss occurs in those who have difficulty feeding themselves.
- In old people in institutional care, weight loss arose from feeding difficulties rather than the dementing process itself.
- Weight loss is related to immobility: those who are most immobile lose most weight.

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