Factors Associated With the Use of Meals-On-Wheels among Home Care Clients: The Nutormed Study

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Abstract

Background: The risk of malnutrition is quite common among home care clients. To aim of this study were to describe nutritional status of Meals-on-Wheels (MOW) clients and factors associated with use of MOW among home care clients.

Methods: This cross-sectional study was conducted as part of the Nutrition, Oral health and Medication (NutOrMed) study. The study population consisted of 266 home care clients in the year 2013. MOW clients (n=153) and non-MOW clients (n=113). The data contained information on socio demographic factors, nutritional status, functional ability, depressive symptoms, comorbidities, dementia diagnosis and drug use.

Results: The mean (SD) age of the home care clients was 84.4 (5.3) years and 73% (n = 196) of them were female. 90% (n=139) of MOW clients were at risk of malnutrition or malnourished, compared to 80% (n=90) of non-MOW clients. MOW clients were more likely to be living alone, impairments in the activities of daily living (ADL) and have diagnosis of a dementive disorder. Clients who were unsatisfied with MOW were more likely to be at risk of malnutrition or malnutrition and depressive (GDS-15).

Conclusion: Using MOW is common among home care clients and MOW clients were more likely to be at risk of malnutrition, living alone, have a decline in the performance of activities of daily living and diagnosed dementia. Unsatisfied with the quality of MOW were more likely to be at risk of malnutrition or malnourished and depressive.

Keywords: Home Care Clients; Meals-on-Wheels; MNA; Older People;

their nutritional status and may help increase older peoples' independence while encouraging autonomy [2]. Using MOW services improves older people's nutritional intake [3, 4]. A previous study among community-dwelling older people showed that use of coupled with individual nutritional counselling can improve nutritional status [5]. The main ideas of MOW are to provide not only a portion of the daily required nutritional intake [4, 7], but also meals that clients can consume fully [8].

Nowadays, the objective is to facilitate living at home as long as possible and to provide home care services. To provide adequate treatment and care according also to the individual needs of these home care clients, health care and nursing care providers need to know more about this group. It is important to identify MOW clients among the vulnerable population so that the service can be improved. We also need understand better how MOW are used. The aims of this study were to describe nutritional status of MOW clients and factors associated with use of.

Methods

This cross-sectional study was conducted as part of the Nutrition, Oral health and Medication (NutOrMed) study [9]. The study sample comprised (n=266) home care clients aged 75 years or over living in three cities in Eastern and Central Finland. Home care clients were interviewed and examined at home by a nutritionist, trained nurses and a pharmacist between February and December 2013. If the participant had a cognitive impairment, the data were supplemented by a caregiver.

Nutritional status and meal service usage were evaluated by a nutritionist. She measured weight and height and computed BMI as the ratio of weight to the square of height (kg/m²). Nutritional screening was performed using the Mini Nutritional Assessment (MNA) [10]. Meal service assessment included questions about how many times MOW were used per week. The participants who received MOW ≥ 3 times per week were included in MOW clients.

Introduction

Meals-on-Wheels (MOW) is an ancillary service that deliver meals to individuals at home who are unable to purchase or prepare their own meals. This is taking place in Finland and nowadays about 25% of Finns aged above 80 years use MOW [1]. MOW helps home care clients maintain and improve

The quality of MOW was assessed on a 3-point scale: 1 = good quality, 2 = acceptable quality, 3 = poor quality. Plasma albumin levels were measured according to standard protocols at the regional laboratory, ISLAB [11]. Body Mass Index (BMI) was computed as the ratio of weight to the square of height (kg/m²).

Performance in Activities of Daily Living (ADL) was assessed with the 10-item Barthel ADL Index [12] and performance in instrumental activity (IADL) [13], with the 8-item Lawton and Brody Scale. The scoring for ADL is 0–100 and for IADL, 0–8, with higher scores indicating better functioning. Depressive symptoms were evaluated on the 15-item Geriatric Depression Scale (GDS-15) [14]. Comorbidity was computed using a modified version of the Functional Comorbidity Index (FCI) [15]. Diagnosis of 13 diseases were collected from electronic medical records by a geriatrician. Each condition was given one point, and a higher FCI sum score represents greater comorbidity. Also dementia diagnosis was collected by a geriatrician and was based on electronic medical records of health care. A pharmacist interviewed the participants at the baseline and recorded each prescription and over-the-counter drug used regularly and as needed on the basis of the interview, medication lists and medication packages.

In statistical analyses the participants were categorized into users and non-users of MOW (Table 1). Statistical comparisons between the groups were done using a chi-square or t-test with ≤ 0.05 considered significant. Univariate and multivariate (stepwise, forward selection) regression analyses were performed to identify demographical, clinical and functional factors associated with using MOW (Table 2). The MOW users were categorized into good and weak of quality of MOW and statistical comparisons between the groups were done using a chi-square or t-test (Table 3). The analyses were done using SPSS version 21.0 (SPSS, Inc., Chicago, IL).

All the participants or their proxies gave written informed consent to participate in the study. The study protocol was approved by the Research Ethics Committee of the Northern Savo Hospital District, Kuopio, Finland.

Results

The mean (SD) age of the home care clients was 84.4 (5.3) years and 73% (n = 196) of them were female. In the group of MOW clients, 90% (n = 139) were at risk of malnutrition or malnourished, compared to 80% (n = 90) of non-MOW clients (Table 1). In the multivariate analysis, MOW clients 77 were more likely to be living alone (OR = 5.20, 95% confidence interval CI: 2.54–10.80), impairments in the Activities of Daily Living (ADL) (OR = 1.11, 95% CI: 1.02–1.19) and diagnosis of a dementive disorder (OR = 2.38, 95% CI: 1.33–4.25) (Table 2). In the group of unsatisfied quality of MOW, 94.5% (n = 86) were at risk of malnutrition or malnourished and 57% (n = 51) have depressive symptoms, compared to 50% (n = 31), 34 % (n = 21) respectively of satisfied the quality of MOW (Table 3).

Discussion

Home care clients receiving MOW were more frequently at risk of malnutrition or malnutrition, lived alone, had decline in

activities of daily living and were demented. Also in an earlier cross-sectional study among MOW clients, the prevalence of malnutrition risk or malnutrition was higher than non-MOW clients [16]. The reason for MOW client's poorer nutritional status is unclear according to our study because we did not have earlier information about them. However, in one Swedish study the participants who used MOW were more likely to be at risk of malnutrition [17]. It is reasonable to assume that malnutrition leads to increased need for help from the community, including meal services.

Table 1: Characteristics of clients and non-clients of Meals on Wheels (MOW)

	MOW n=153 (57.7)	non-MOW n=113 (42.3)	P value
Women, n (%)	119 (77.3)	77 (68.1)	0.095
Age, mean $\pm$ SD	84.7 $\pm$ 5.2	83.9 $\pm$ 5.6	0.244
Living alone, n (%)	109 (73.6)	59 (53.6)	0.001
MNA <24.0, n (%)	139 (90.3)	90 (79.6)	0.014
BMI, mean $\pm$ SD	27.3 $\pm$ 6.4	27.0 $\pm$ 4.2	0.635
P-alb, mean $\pm$ SD	36.3 $\pm$ 3.4	36.9 $\pm$ 4.0	0.341
ADL Barthel Index, mean $\pm$ SD	80.9 $\pm$ 20.6	87.0 $\pm$ 17.4	0.012
IADL, mean $\pm$ SD	4.1 $\pm$ 2.1	5.2 $\pm$ 2.5	0.001
GDS-15 $\geq$ 5, n (%)	71 (47.4)	41 (38.0)	0.122
FCI, mean $\pm$ SD	2.8 $\pm$ 1.7	2.9 $\pm$ 1.9	0.081
Dementia diagnosis, n (%)	72 (46.8)	38 (34.2)	0.041
Excessive polypharmacy, n (%)	133 (88.1)	98 (88.3)	0.959
SD, Standard Deviation; MNA, Mini Nutritional Assessment; BMI, Body Mass Index; P-alb, Plasma albumin; ADL, activities of daily living; IADL, Instrumental Activities of Daily Living; GDS-15, Geriatric Depression Scale-15; FCI, Functional Comorbidity Index			

Table 2: Univariate and multivariate associations between characteristics of home care clients and using of Meals on Wheels

	Univariate OR (95% CI)	Multivariate^a OR (95% CI)
Sex (female)	1.60 (0.92-2.76)	
Age	1.02 (0.98-1.07)	
Living alone	2.43 (1.44-4.11)	3.37 (1.88-6.05)
MNA, < 24	2.38 (1.18-4.81)	
ADL Barthel Index	1.08 (1.02-1.16)	1.11 (1.02-1.19)
GDS-15, $\geq$ 5	1.48 (0.89-2.46)	
FCI	1.26 (1.09-1.47)	
Dementia diagnosis	1.68 (1.02-2.79)	2.38 (1.33-4.25)
Excessive polypharmacy	1.02 (0.47-2.18)	
a: Forward Wald selection. Only variables that entered the model are shown.		
OR, odds ratio; MNA, ADL, activities of daily living; Mini Nutritional Assessment; FCI, Functional Comorbidity Index; GDS-15, Geriatric Depression Scale		

In accordance with previous studies, MOW clients are more likely to be aged 75 or older, female, living alone, less mobile and widowed than non-MOW clients [18-21]. Older women living alone tended to simplify cooking and eating and had fewer cooked meals, whereas among older men, poor cooking skills were a barrier to maintaining healthy eating and a good appetite [22]. It is reasonable to suggest that older people living alone eat more poorly, which affects their nutritional status [18], and this results in them using MOW. Many of the MOW clients were at a low level of economic resources, so meals were often split into two. Perhaps MOW clients split their delivered, midday meal between lunch and dinner because they had poor appetite or if portion size of meal was too big to eat all at once.

We found that clients of MOW with dementia and declining performance in activities of daily living were unable to or had difficulty preparing meals on their own. This is in accordance with previous findings that persons with a cognitive and/or functional impairment are unable to prepare nutritionally adequate meals [22]. In addition, at a later stage of dementia, persons have difficulty recognizing hunger and thirst and may forget to eat, or they are unable to recognize items of food [23].

In the present study, the clients of unsatisfied of MOW were at risk of malnutrition or malnourished and depressive more often than the clients of satisfied of MOW. Earlier studies have documented rates of depression among older adults currently receiving in-home services [24]. Lack of appetite, loss of interest in self-care, apathy and physical weakness can be used early warning signals not only the risk of malnutrition or malnutrition, also depression [25].

Table 3: Characteristics of clients of Meals on Wheels (MOW) based on the quality of MOW

	Good n=62 (40.4)	Weak n=91 (59.6)	P value
Women, n (%)	46 (74.2)	72 (79.1)	0.476
Age, mean $\pm$ SD	85.1 $\pm$ 5.1	84.5 $\pm$ 5.2	0.470
MNA <24.0, n (%)	31 (50.0)	86 (94.5)	0.001
BMI, mean $\pm$ SD	27.1 $\pm$ 5.8	27.5 $\pm$ 6.8	0.715
P-alb, mean $\pm$ SD	36.2 $\pm$ 3.3	36.6 $\pm$ 3.4	0.886
ADL, Barthel Index, mean $\pm$ SD	83.4 $\pm$ 16.7	79.0 $\pm$ 22.9	0.173
IADL, mean $\pm$ SD	4.2 $\pm$ 2.0	4.2 $\pm$ 2.2	0.965
GDS-15, > 5, n (%)	21 (33.9)	51 (57.3)	0.040
MMSE, mean $\pm$ SD	23.0 $\pm$ 4.4	21.9 $\pm$ 5.5	0.191
FCI, mean $\pm$ SD	3.4 $\pm$ 1.9	3.1 $\pm$ 2.0	0.338
Dementia diagnosis, n (%)	32 (51.6)	39 (43.3)	0.315
Excessive polypharmacy, n (%)	41 (41.1)	38 (58.9)	0.384

SD, Standard Deviation; MNA, Mini Nutritional Assessment; BMI, Body Mass Index; P-alb, Plasma albumin; ADL, activities of daily living; IADL, Instrumental Activities of Daily Living; GDS-15, Geriatric Depression Scale-15; FCI, Functional Comorbidity Index

Our study results are especially important now, when the number of home care clients is rapidly growing because of the decrease in residential care. In addition, the prevalence of malnutrition or risk of malnutrition is very high among this vulnerable population. The MOW service is based on the assumption that all of the food is actually consumed, which leads to an overly positive picture of the nutritional value of the meals. Looking to the future, it is essential that MOW is able to adapt to consumer needs and preferences and respond to challenges in MOW production and delivery.

Conclusion

Using MOW is common among home care clients and MOW clients were more likely to be at risk of malnutrition, living alone, have a decline in the performance of activities of daily living and diagnosed dementia. Unsatisfied with the quality of MOW were more likely to be at risk of malnutrition or malnourished and depressive.

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Declarations

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Trial registration

ClinicalTrials.gov: NCT02214758

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