ORIGINAL RESEARCH

The presence of malnutrition in community-living older adults receiving home nursing services

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Abstract

Aim: To determine the extent of malnutrition and malnutrition risk among community-living older people (aged 65 years and over) who are receiving care from a metropolitan home nursing service in Victoria, Australia.

Method: Over a 3-month period (May–July 2009), 235 clients aged 65 years and over from a community nursing service providing home nursing care were assessed for malnutrition using the Mini Nutritional Assessment (MNA®, Nestle, Vevey, Switzerland).

Results: Thirty-four per cent (34.5%) of clients were identified as being at risk of malnutrition, while 8.1% were found to be malnourished. There was no significant relationship between nutrition risk and gender, country of birth or living arrangements.

Conclusion: Malnutrition and nutrition risk was found to be an issue among this sample of community-living older adults who were receiving home nursing care in Victoria, Australia. In this study, just over 40% of the participants were either at risk of malnutrition or malnourished, which highlights the vulnerability of this group of older people and the need for routine nutrition screening and a targeted intervention program to address nutrition issues.

Key words: ageing, community health, malnutrition, nutrition screening, nutritional status.

Introduction

Malnutrition is a significant clinical and public health issue throughout the world and may be particularly prevalent in elderly people living in the community.[1–3] Although the extent of malnutrition in the community, including Australia, is not well known, it is widely accepted among health professionals that malnutrition has significant health, social and economic implications.[1,4–9]

In a recent review of 21 studies in which malnutrition in community-living older adults was assessed using the Mini Nutritional Assessment tool (MNA®), prevalence rates that ranged from 0 to 8% and from 8 to 76% of older adults were deemed to be at risk of malnutrition.[10] A further 25 studies using samples of elderly people receiving outpatient and home-based health-care services detected malnutrition prevalence rates ranging from 0 to 30% with risk of malnutrition being 8–65%. Studies conducted in Australia using the MNA® reported that 20–30% of elderly clients living in the community were malnourished.[7,11] In a study using a sample of older people receiving domiciliary care, a prevalence rate of 4.8% was found while 38.4% of this population was at risk of malnutrition.[5]

A knowledge of the prevalence of malnutrition in the community is important as research has shown that the health complications associated with malnutrition lead to increased general practitioner visits, admissions to hospital, prolonged hospital stays, early admission to nursing home and a 30% increase in the incidence of mortality within 1 year.[1,4–12] Malnutrition in older people is also associated with increased health-care costs.[4] Although there is little research on the cost of malnutrition to the community, Lipski stated at a presentation at the 2005 Committee on Nutrition for Older Australian conference, that for 'every dollar spent on better nutrition for the elderly, $5 is saved in health care costs'.[6]

A large metropolitan community nursing service in Victoria, Australia was interested in identifying the malnutrition rate among its client group to determine whether any further action is needed to be undertaken to improve the quality of nursing care in relation to nutrition. Therefore, a study was conducted to determine the extent of malnutrition and nutrition risk using the MNA®[13] among a sample of community-living older adults receiving home nursing services in Victoria, Australia.

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Method

This exploratory study of malnutrition rates employed a descriptive cross-sectional design. Ethical approval was obtained for this study from the Royal District Nursing Service Research Ethics Committee.

Study participants were from a community nursing service located in metropolitan Melbourne in Victoria, Australia. This service predominately provides care to older people in the community that fits the profile of nutritionally vulnerable older adults susceptible to fluctuations in nutrition status.

Sixty per cent of clients admitted to this service were aged over 60 years and had a number of comorbidities. Their living arrangements varied, with some clients living alone, others living with their spouse or other family. The majority of clients received a pension (income less than $30 000) from the Commonwealth Government or Department of Veterans Affairs (DVA).

Clients of the community nursing service were recruited by nursing staff throughout the Greater Melbourne metropolitan area from May to July 2009. On admission to the nursing service, the assessment nurse identified clients who met the eligibility criteria. Eligible clients included those aged 65 years and over, clients newly admitted to the nursing service and funded by the Home and Community Care (HACC) or DVA programs. All clients sign a consent form for treatment (including assessment) on admission to the service.

Clients currently undergo a nutrition assessment when they are admitted to the service; however, for the purposes of this study, the MNA® replaced this nutrition assessment. Only clients with complete assessments were included in the study.

Before the study commenced, an Accredited Practising Dietitian (APD) provided nursing staff with scales and tape measures to take anthropometric measurements, a resource kit and education on using the screening and assessment tool.

The MNA® was used to assess the nutrition risk of study participants. It is a valid and reliable tool specifically developed to identify older people who are suffering from malnutrition or at risk of malnutrition. The MNA® detects the risk of malnutrition before severe changes in weight or serum proteins occur and can be used in a variety of healthcare settings including the community.[13]

The tool assesses issues specific to ageing such as functionality, depression, and dementia as well as anthropometric measures, social situation and food patterns. It is comprised of 18 questions, 6 screening questions and 12 assessment questions.

Part 1 (MNA®-SF screening tool) is designed to detect a decline in food intake or weight in the past 3 months, psychological stress or acute disease, current mobility and neuropsychological problems, and body mass index (BMI). After consultation with an APD and a review of the literature, BMI categories in accordance with the recommendations from the Australian Nutrition Screening Initiative were used to

Body mass index (BMI kg/m²)	
< 22	underweight
22 – 26.9	healthy weight
27 – 29.9	overweight
> 30	obese

Figure 1 BMI ranges for older adults (Source: Miller M, Thomas J, Cameron I *et al*. BMI: a simple, rapid and clinically meaningful index of undernutrition in the oldest old? *Br J Nutr* 2009; **101:** 1300–305).

describe whether the participants were underweight, overweight or a healthy weight (see Figure 1).[14] Weight and height were recorded in kilograms (kg) and metres (m), respectively.

A screening score of 12–14 signifies normal nutrition status and no need for further assessment, while a score of 11 or lower indicates 'possible malnutrition', and requires the assessment tool (part 2) to be completed. Part 2 of the MNA® assesses polypharmacy, pressure ulcers, food and fluid intake and eating ability, living situation, perception of own nutrition and health status, and mid-arm and calf circumferences. A malnutrition indicator score of ≥24 indicates a well-nourished person. A score of 17–23.5 indicates 'risk of malnutrition' and a score of <17 indicates malnutrition.

Participant's demographic and socioeconomic data were extracted from the electronic client database of the community nursing service.

The Statistical Package for the Social Sciences (SPSS) Version 17 (SPSS Inc., Chicago, IL. USA) was used to check and analyse the study data in accordance with the study objectives. Frequencies were reported for gender, financial status, country of birth, language spoken, living arrangements and the categorised malnutrition indicator score. Descriptive statistics including mean, range and standard deviation were reported for age, weight and BMI. An independent sample *t*-test was used to compare mean malnutrition indicator score and age group. Chi-square tests were used to compare categorised malnutrition indicator score and gender, financial status, country of birth and living arrangements. An alpha value of 0.05 was chosen to report levels of significance.

Results

During the recruitment period, 250 clients consented to undergo MNA® screening for malnutrition risk. Fifteen forms were incomplete, leaving a total sample of 235 participants.

The demographic characteristics of the sample are presented in Table 1. The age of participants ranged from 65 to 100 with a mean age of 82 (SD = 7.0), and there were similar proportions of males (47.2%) and females (52.8%) in the sample. All participants were receiving a pension. The

Table 1 Comparison of participant demographic characteristics and MNA® groups

Variable	$n^{(a)}$ (At risk and malnourished/No risk)	At risk and malnourished	No risk	P-value
Age (mean, SD)	99/134	82.4 (7.2)	82.0 (7.0)	0.62
Gender (male/female, %)	99/134	40.4/59.6	52.2/47.8	0.08
Country of birth (Australia/other, %)	92/123	68.5/31.5	58.5/41.5	0.15
Living arrangements (family/alone, %)	88/121	54.5/45.5	48.8/51.2	0.48

(a) Sample size varies from 209 to 233 due to missing data for some variables.

Table 2 Comparison of group characteristics based on MNA® score classifications

Variable	$n^{(a)}$ (At risk and malnourished/No risk)	At risk and malnourished (Mean, SD)	No risk (Mean, SD)	P-value
Height (cm)	97/133	155.8 (24.6)	159.4 (22.0)	0.24
Weight (kg)	95/133	59.2 (18.5)	72.1 (17.9)	0.01
BMI (mean, SD)	100/135	24.3 (5.0)	27.8 (5.4)	0.001
MAC (cm)	96/130	24.8 (6.4)	28.0 (7.2)	0.01

(a) Sample size varies from 208 to 234 due to missing data for some variables.
BMI, body mass index; MAC, mid-arm circumference.

majority of the clients were born in Australia (62.8%) and just under half were living alone (48.8%).

Participant weights ranged from 31.8 to 135 kg. The mean BMI was 26.4 kg/m^2 (SD = 5.5) with a range of 13.2–45.0 kg/m^2. Nineteen per cent (19.1%) of participants were classified as underweight, 41.3% as healthy weight, 17.0% overweight and 22.6% as obese.

The proportion of participants identified as well nourished, at risk of malnutrition or malnourished is outlined in Figure 2. Just over a third of participants (34.5%) were at risk of malnutrition, 8.1% were identified as malnourished and 57.4% had no or low nutrition risk.

Further analyses comparing malnourished clients and those at risk of malnutrition with clients who were not at risk were carried out to see if there was a relationship with any demographic characteristics.

The results of independent sample *t*-tests (for interval data) and χ^2 procedure (for categorical data) comparing demographic characteristics with the clients' level of nutrition risk showed no significant differences for age, gender, country of birth or living arrangements ($P > 0.05$) (see Table 1).

T-test analyses revealed that clients with no risk of malnutrition weighed significantly more and had higher BMI and mid-arm circumference scores compared with the malnourished/at risk of malnutrition group ($P < 0.05$) (see Table 2).

Discussion

This study used the MNA® to identify the presence of malnutrition in a sample of community-living older people
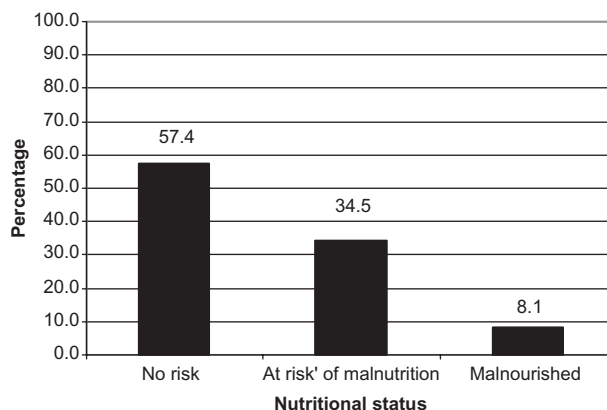
Figure 2 Malnutrition and risk of malnutrition among 235 community-living older people receiving home nursing care.

(≥ 65 years) receiving community home nursing services in Victoria, Australia. The extent of malnutrition identified in the study sample (8.1%) was higher than that found in a similar population (4.8%) in an Australian study by Visvanthan *et al.*,[5] but was similar to the 9% malnutrition rate reported by Guigoz in a review of the MNA® literature.[13] Similar proportions of nutrition risk were observed in this study (34.5%), Visvanthan *et al.*'s Australian study (38.4%)[5] and a recent New Zealand study by Watson *et al.* (31%).[15]

The sample included in this study and the Visvanthan *et al.*'s study[5] were similar in that they included frail older people as described above who were receiving home nursing care and not 'well' people. However, Visvanthan's participants had been receiving an intervention which could

explain the lower malnutrition rate. In comparison, similar numbers of respondents in both studies were at nutrition risk.

The ongoing demand for community health services and the commensurate financial burden on the health-care system associated with malnutrition is not known, nor can it be quantified as malnourished older people are not always recognised.[16] Consequently, community nursing services providing home care need to ensure that nutrition is a priority in care provision.

Targeting malnutrition among older individuals living in the community needs an integrated approach from community health agencies, and policy direction and support from government. Health agencies and government have a role in supporting and prioritising malnutrition screening, treatment and prevention by making it a national health priority.

As a starting point, health organisations providing care to older adults in the community need to adopt or develop nutrition policies to not only identify malnutrition but also support the provision of appropriate care to treat malnutrition. Any policies need to address the inclusion of a validated nutrition screening and assessment tool such as the MNA® as part of the health assessment. A number of organisations including the Dietitians Association of Australia[16] and National Institute for Health and Clinical Excellence[17] have developed evidence-based practice guidelines that provide health professionals with comprehensive frameworks to address nutrition issues in older people across the continuum of care through an integrated approach to nutrition care. Using these types of guidelines means that organisations can more rapidly introduce evidence-based nutrition care.

Bates et al. emphasised that 'Malnutrition is not a consequence of ageing and it should not be allowed to persist as though it were a "normal" process'.[18] Community nurses are ideally situated to identify nutrition issues among this population group as they are at the forefront of client care in the home. They have an important role to play in the provision and monitoring of basic nutrition interventions as part of an interdisciplinary team with direction and guidance from a dietitian and/or a dietitian-led program.

The main limitation of the study was that the sample only reflected one community nursing service in Victoria. As the population being examined was receiving community nursing services, the results may not be relevant to the total population of community-living older people in Victoria or Australia. A nationwide malnutrition prevalence study is recommended to truly understand the extent of the problem in community-living older people.

Like other studies reported in the literature, this study identified the presence of malnutrition and malnutrition risk in a sample of older adults living in the community, and receiving care from a home nursing service. The findings from this study contribute to the body of evidence that suggests that the prevalence of malnutrition in the community is a problem that needs to be addressed. The need to screen nutrition status and monitor older people living in the community has been demonstrated; however, support

through nutrition interventions also needs to follow. Therefore, it is the responsibility of health agencies and government to ensure that nutrition programs are available to address identified nutrition issues.

At the local level, organisations providing care to people in the community can develop programs to address the nutrition needs of the populations they service. These programs need to be based on government policy and guidelines developed by relevant national and international organisations. This will ensure that better health outcomes are achieved, thus helping to reduce the burden caused by malnutrition on the health-care system.

Acknowledgements

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