NUTRITION SCREENING OF OLDER PEOPLE IN A COMMUNITY GENERAL PRACTICE, USING THE MNA-SF

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Abstract: Background: Objective: The study aimed to determine the prevalence of malnutrition risk in a population of older people (aged 75 years and over) attending a community general practice and identify characteristics of those classified as malnourished or at risk of malnutrition. Design: Cross-sectional study of nutritional risk screen conducted over a six month period. Participants and setting: Patients attending a general practice clinic in Victoria, Australia, who attended for the “75 plus” health assessment check. Measurements: The Mini Nutritional Assessment Short Form (MNA®-SF) was included as part of the health assessment. Information was collected on living situation, co-morbidities, independence with meal preparation and eating, number of medications. Height and weight was measured and MNA®-SF score recorded. Results: Two hundred and twenty five patients attending a general practice for a health assessment with a mean age of 81.3(4.3)(SD) years, 52% female and 34% living alone. Only one patient was categorised by the MNA®-SF as malnourished, with an additional 16% classified as at risk of malnutrition. The mean Body Mass Index (BMI) of the at-risk group was significantly lower than the well-nourished group (23.6 ± 0.8 (SEM) vs 27.4 ± 0.3; p=0.0001). However, 34% of the at-risk group had a BMI of 25 or more with only 13% in the underweight category. Conclusion: In this population of older adults attending their general practitioner for an annual health assessment, one in six were identified as being at nutritional risk which is an additional risk factor for a severe health issue. Importantly, one third of the at-risk group had a BMI in the overweight or obese category, highlighting that older people can be at nutritional risk although they may be overweight or obese.

Key words: Malnutrition, Mini Nutritional Assessment, elderly, community, General Practice.

Introduction

Malnutrition in older people has been shown to be associated with severe adverse health outcomes including an increased risk of mortality (1, 2), hospitalisation and increased length of stay (3), falls and fractures (4), prolonged wound healing (5, 6) and institutionalisation (7, 8). Prevalence of malnutrition amongst older adults in institutional settings has been reported to be as high as 23% with a further 51% being classified as at risk of malnutrition (9). Only a few studies have been conducted amongst community-dwelling older adults and prevalence rates vary depending on the population studied. A recent Australian study of older people receiving home nursing care reported that 8% of clients were malnourished according to the Mini Nutritional Assessment (MNA®) with a further 35% of clients identified as being at risk of malnutrition (10). Routine nutrition screening to identify those at risk of malnutrition allowing earlier intervention has been recommended by a number of national and international nutrition and health organisations (11-15), however there is little evidence of screening practices being incorporated in the community setting or within general practices. With over 93% of older Australians living in private dwellings, implementing nutritional screening for this population may provide benefits of improving health and maintaining independence.

In Australia, general practitioners can conduct a government funded annual health assessment on patients aged 75 years or older (75+ health assessment) with the intention of identifying health issues and conditions that are potentially preventable or amenable to interventions. Although nutrition is not a mandatory component of the assessment, some form of nutrition assessment has been recommended (16) and a variety of nutrition questions have been adopted by medical practices, however there is no standard measurement tool. The MNA®-SF is a validated screening tool designed to identify nutritional risk in an elderly population (65 years and older) (9, 17). It comprises six questions specifically relevant to an older population, taking into account mobility and cognitive state in addition to dietary and anthropometric data. The MNA®-SF has been recognised as the most extensively evaluated screening tool across a variety of settings (18) and is considered to be an appropriate screening tool for use in community dwelling older adults (19). The tool classifies individuals into categories of well nourished, at risk of malnutrition or malnourished.

The aim of this study was to determine prevalence of malnutrition risk amongst a population of older people attending their general practitioner for an annual health check, and to explore characteristics associated with malnutrition or at risk of malnutrition.

Methods

Subjects
This nutrition screening project was conducted at a general medical practice in Victoria, Australia. The medical practice...
has four sites and services a patient population of around 16,000, with approximately 18% aged 75 years or over. Patients are invited for a 75+ health assessment when they reach the age of 75 and annually thereafter. They are invited by letter or an opportunistic invitation when attending their medical appointment. Approximately 600 75+ health assessments are conducted by the practice each year, representing 18% of the target population. Patients attending for an assessment between July 2011 and December 2011 were invited to participate in the study. The project was approved by Faculty of Health Human Ethics Advisory Group on behalf of the Deakin University Human Research Advisory Committee. All participants provided written informed consent.

### Study Design

Six nurses conducted the 75+ health assessments across four medical practices. All nurses were instructed in administering the MNA®-SF by one of the investigators (DF) and were provided with instructions on interventions based on the MNA®-SF score. Nurses weighed and measured all patients.

The 75+ health assessment includes a medical, physical, psychological and social assessment. The assessment also includes the Mini-Mental State Exam (MMSE), a validated screening tool for cognitive impairment (20) with a score of 25 or greater indicating normal cognitive state. Nurses conduct the assessment, and provide comments or management recommendations which are then reviewed by a medical practitioner, who determines interventions. The assessment included details of age, marital status, sex, living arrangement (alone or with others), assistance required with eating or meal preparation, need for social supports (for example home delivered meals or home care services), number of oral prescription medications, height, weight, and specific co-morbidities (such as cardio-vascular disease, diabetes, depression).

The MNA®-SF was added to the regular assessment to screen for risk of malnutrition. The MNA®-SF comprises six questions about changes in food intake, weight loss, mobility, acute illness, cognitive function and body mass index (BMI). A score of 12 or greater indicates normal nutritional status, a score of eight to 11 indicates 'at risk of malnutrition' and a score of seven or less indicates malnutrition.

If subjects were identified as being at risk of malnutrition or malnourished, nurses were instructed to explain the importance of good nutrition and provide some simple dietary advice or offer services (such as home delivered meals or home help) as required. The screening result was noted in the patient's medical file so that the doctor was aware of it.

### Statistical Analysis

Data were analysed using SPSS Version 20 (SPSS Inc., Chicago IL., USA). Frequencies were reported for gender, marital status, living arrangement (alone or with others), cognitive state and nutritional risk. Descriptive statistics including mean, and standard deviation (SD) or standard error of the mean (± SEM) were reported for normally distributed variables of age, weight, BMI, MNA-SF score, and number of oral medications. Frequencies were reported for sex, cognitive function, supports required, living arrangements and nutritional risk category. Chi-square test was used to analyse the relationship between nutritional risk and categorical variables and two sided z-test to determine whether proportions of the two populations were different. Independent t-tests were utilised to analyse the relationship with continuous variables, p<0.05 was considered to be statistically significant.

### Results

During the study period, 239 subjects were asked to participate and 225 consented to participate in the study and all had the MNA®-SF successfully completed. Fourteen patients who completed the 75+ health assessment declined to be involved and details of these patients were not collected. One assessment was conducted in the subject’s home and because height was unable to be measured, calf circumference was used instead of BMI in the MNA®-SF. All other assessments were conducted at the medical practice. The average age was 81 years, with approximately half of the participants being male (Table 1). One third of subjects lived alone and the majority were not requiring any support services.

#### Table 1

<table>
<thead>
<tr>
<th>Characteristics of study participants (mean (SD) and percentages)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All subjects (n=225)</strong></td>
</tr>
<tr>
<td>Age (years)</td>
</tr>
<tr>
<td>Weight (kg)</td>
</tr>
<tr>
<td>Body Mass Index (kg/m2)</td>
</tr>
<tr>
<td>MNA®-SF score</td>
</tr>
<tr>
<td>Number of oral medications</td>
</tr>
<tr>
<td>Male / Female</td>
</tr>
<tr>
<td>Normal cognitive function</td>
</tr>
<tr>
<td>Living alone</td>
</tr>
<tr>
<td>Supports required</td>
</tr>
<tr>
<td>MNA score:</td>
</tr>
<tr>
<td>&gt;11 (well nourished)</td>
</tr>
<tr>
<td>≤11 (at risk of malnutrition or malnourished)</td>
</tr>
</tbody>
</table>

Approximately one in six patients were at risk of malnutrition, with only one male subject being classified as malnourished according to the MNA®-SF (this subject was then included in the at-risk group for further analyses). There were no significant differences between the groups in terms of gender, percentage living alone or independence with meal preparation. However the at-risk group had a significantly lower body weight and BMI than the well nourished group (Table 2) and were twice as likely to have depression reported in their medical history. There was also a trend towards those at nutritional risk requiring support services.

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The average BMI of the at-risk group was 23.6. Although this was significantly lower than the well nourished group, 34% of at-risk subjects had a BMI in the overweight or obese range (Figure 1). Compared with the well nourished group, significantly more subjects in the at-risk group had a BMI between 18.5 and 24.9 (p<0.05), while fewer had a BMI in the overweight range of 25-29.9 (p<0.05).

Figure 1
BMI characteristics of the well nourished and at-risk groups

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Well nourished (n=187)</th>
<th>At risk (n=38)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>81.2 ± 0.3</td>
<td>81.9 ± 0.7</td>
<td>0.395</td>
</tr>
<tr>
<td>Weight (kg)*</td>
<td>73.9 ± 0.9</td>
<td>62.5 ± 2.5</td>
<td>0.0001</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>27.4 ± 0.26</td>
<td>23.6 ± 0.81</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Percentages (n)

- Male: 50% (94) vs. 37% (14) (p=0.183)
- Normal cognition*: 96% (178) vs. 90% (34) (p=0.097*)
- Living alone: 33% (62) vs. 37% (14) (p=0.803)
- Independent with meal preparation*: 83% (154) vs. 81% (28) (p=0.279)
- Supports required: 18% (33) vs. 26% (10) (p=0.327)
- Depression: 10% (19) vs. 21% (8) (p=0.034*)

Table 2
Characteristics of the at-risk group compared with the well nourished group (mean ±SEM or percentage)

*a. n=224; b. n=223; *Fisher’s exact test

Discussion
This study used the MNA®-SF to determine the prevalence of malnutrition or risk of malnutrition in older adults (75 years and over) who presented to their general medical practice for a routine annual health assessment. We found that one in six patients who were screened were identified as being at risk of malnutrition, but only one patient was classified as malnourished.

Other recent studies of malnutrition prevalence in community-dwelling older people have found higher rates of nutritional risk. Rist and colleagues (10) assessed clients of a home nursing service and identified more than a third at risk of malnutrition and 8% malnourished. Similar results were seen by Visvanathan et al (21) in a study of 250 clients of a home care service, finding over a third of clients at-risk of malnutrition but only 4% were classified as malnourished.

The population in this study would be considered a generally ‘well’ population as they were mobile enough to attend the doctors’ surgery and the majority had normal cognitive function. The population was a small sample of independently living elderly who may not be representative of the general older population living at home. However, there has been little published literature on the risk of malnutrition amongst older adults living in the community who are not necessarily the recipients of home care services. In a recent study conducted in Germany which validated the MNA®-SF, Kaiser (22) found similar results, where out of 272 healthy, functional and motivated adults with a mean age of 81 years, 11% were found to be at risk of malnutrition, with none classified as malnourished.

Body mass index is often used as a crude screening tool for nutritional status in primary health care. The group of patients in our sample who were identified as being at risk of malnutrition, had a significantly lower mean weight and BMI than those classified as well nourished. Given that BMI is one of the items in the MNA-SF, this is not unexpected, however importantly approximately one third of the at risk group had a BMI over 25, putting them in the overweight or obese category. Using BMI as a sole indicator of nutrition would fail to identify nutritional issues in these individuals.

The adverse consequences of malnutrition have been well documented and include an increased risk of hospitalisation and falls (21), poorer wound healing (6) and poorer quality of life (23). Unfortunately, malnutrition is not well recognised by health care professionals and therefore intervention is often delayed until treatment and reversal of malnutrition becomes more difficult (24, 25). Incorporating a validated nutrition screening tool into routine assessments in a general practice setting would allow early identification and intervention in individuals at risk of malnutrition.

The factors influencing nutritional status with age include the ‘anorexia of ageing’, in addition to social, medical, and psychological factors that influence food intake (26). In our population sample, we did not see any differences in age, cognitive state, or living arrangements according to nutritional risk category however this was a relatively small study and we had limited power to detect differences in these factors with the categories of nutritional risk. Significantly we did find that those at risk of malnutrition were twice as likely to have a history of depression, an association previously reported (27, 28). Depression is an important cause of reduced appetite in older people (29, 30) and has been identified as a cause of
weight loss in nursing home residents (31). Conversely, treating depression has been shown to assist in achieving weight gain and improving nutritional indices (32). The patients in our study found to be at risk of malnutrition also tended to be more in need of support services such as home help or home delivered meals. These are important factors to consider when planning intervention strategies. The approach to managing nutritional risk needs to be multi-faceted including management of co-morbidities such as depression, providing home and social supports to encourage and facilitate food consumption and implementing dietary modifications to improve diet quality.

Although generalisation of our results is limited by the small sample size in one setting using self-reported information we did find that even amongst community dwelling older adults who appear to be independent with normal cognition, approximately one in six were at risk of malnutrition. This at-risk group with a lower BMI, were more likely to suffer depression and tended to need more social supports. This indicates that improvement in nutritional status is more likely to be achieved utilising a multi-disciplinary approach that includes management of psychological issues, provision of appropriate social supports, together with nutritional interventions.

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References