

EVALUATION OF A PILOT VOLUNTEER FEEDING ASSISTANCE PROGRAM: INFLUENCES ON THE DIETARY INTAKES OF ELDERLY HOSPITALISED PATIENTS AND LESSONS LEARNT

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Abstract: *Objectives:* Malnutrition is a serious concern in hospitals and is known to be associated with increased complications for patients, increased hospital costs and length of stay. Trained volunteers that assist 'at risk' and malnourished patients at lunch meals have been shown to effectively increase nutritional intake in a suburban hospital in Sydney. The pilot study reported here aimed to evaluate and share learnings from a similar, newly implemented program, comparing energy and macronutrient intakes on days with no volunteer assistance, to days with volunteers. *Design:* Dietary intakes were determined by visual estimation of meal trays before and after meals, for two days without volunteers, and two days with volunteer assistance at lunch. Macronutrient and energy intakes were compared and data such as weight, height, diet type and medical history were obtained from medical records. Questionnaires were completed by nurses and volunteers in regards to their views and experiences with the program. *Setting:* Hospital based. *Results:* Eight patients (83±4.5 years) participated in the study. When volunteers were present at lunch, the average macronutrient and energy intakes increased, though not statistically significantly. The mean increases were 316kJ (p=0.175) for energy, 3.1g (p=0.468) for protein, 1.4g (p=0.418) for fat and 11.6g (p=0.084) for carbohydrates. Non-significant increases in macronutrients were also noted for the average daily intakes. *Conclusion:* Although not statistically significant, energy and macronutrient intakes increased when volunteers were present. The implementation of a volunteer feeding assistance program is one strategy to assist dietary intakes but requires a ready team of volunteers, training, acceptance and significant time to develop.

Key words: Hospital, elderly, feeding assistance, volunteers, dietary intakes, energy.

Introduction

Addressing malnutrition amongst elderly hospitalised patients is a priority. A recent Australian study reported a prevalence rate of 33%, with a further 51.5% found to be 'at risk' as defined by the Mini Nutritional Assessment (MNA) Tool, where a score of <17 is classified as malnourished and between 17-23.5 is classified as nutritionally 'at risk' (1). Malnutrition increases complications, as well as healthcare costs, length of stay and the likelihood of readmission to hospital (2).

Traditionally nursing staff held the role of assisting patients with their meals in hospitals (3). However roles during meal times in Australian hospitals have changed. Xia & McCutcheon (2006) observed nurses' activities and found that nurses had little involvement with patients' nutritional intake during meal times and that not all patients received adequate feeding assistance. Many interruptions were observed during meal times, and very little social interaction occurred between nurses and patients (3). Another study reported nursing staff as the main source of assisted feeding in the wards, but little time was dedicated to the task (4).

A 1997 report from the Community Health Council of England, "Hungry in Hospital," proposed a potential cause of malnutrition in hospitals (5). The report suggested that some patients may not be eating due to difficulty reaching meal trays and opening packaging, and their incapability of handling

cutlery. These patients, despite having good appetites, may still have suboptimal nutrient intakes. This is supported by the literature with reported factors such as difficulty in bringing food from the plate to the mouth resulting in weight loss, which highlights the importance of assisting patients with feeding to improve nutritional intakes (6). Unfortunately inadequate staffing can prevent optimal assistance in practice (7).

Feeding assistance education and the training of caregivers has been recognised as beneficial in helping patients with their feeding difficulties (8). Thus a series of programs introducing specially trained feeding assistants have been implemented in various settings to assist patients with feeding. One example is the "Silver Spoons" program, which provides volunteer feeding assistance in many nursing homes in the USA (9). More recently AgeUK launched the "Hungry to be Heard" campaign across many UK hospitals, which involves flagging 'at risk' patients with red trays, as well as providing protected meal times with feeding assistance (10).

A study investigating the impact of paid feeding assistants on the nutritional intake of acutely ill older inpatients reported a trend towards increasing nutritional intake in patients receiving feeding assistance (11). Several Australian studies have evaluated a volunteer feeding program and its effects on energy and protein intakes of elderly hospitalised patients (12, 13). Significantly more protein was consumed when volunteer assistance was given, and there was a trend towards increased energy intakes. A later study at the same hospital,

with 23 patients found a significant increase in protein and energy intakes at lunch, and in protein intake for the days when volunteers were present (13). Another international study focused on patients with dysphagia and the influence that feeding assistance had on dietary intakes (14). The patients receiving assistance consumed significantly more energy and protein than those not receiving assistance.

The current pilot study was conducted only five months after the introduction of the volunteer feeding program at a 60 bed suburban hospital. The program involves volunteers assisting identified nutritionally 'at risk' patients at lunch meals during week days. Volunteers are trained by dietetics, speech pathology and nursing staff to assist with tasks such as feeding, correctly positioning meal trays, cutting up foods, handling cutlery, opening packaging, and encouraging patients with conversation and socialisation at the lunch time meals.

This study aimed to evaluate this newly implemented program, comparing energy and macronutrient intakes on days with no volunteer assistance, to days with volunteers.

Methods

Design

This study was conducted during August and September of 2010. Participants were inpatients within two aged care wards that were identified as 'at-risk' or malnourished by the hospital dietitian and requiring full assistance with meals and/or requiring encouragement and some assistance at meals.

Data were collected for four days for each patient; two days when volunteers were present, and two days when volunteers were not present. Observations were made of the patients, staff and volunteers during the meals (3 main meals, a morning tea and afternoon tea snacks), and meal trays sighted before and after the meal. Standard templates were used for recording dietary intakes (as 0, 10%, 20%,.....90%, 100% consumed for each meal item) and training was provided by the dietitian. Nurses and volunteers provided feedback via a short, self-administered questionnaire about the program. Sample open ended questions included: 'How helpful do you find having volunteers assist with feeding patients their meals' and 'Do you have suggestions for the improvement of the volunteer feeding assistance program'

Data Collection

Two student dietitians and the hospital dietitian were involved in the data collection. The dietitian at the hospital obtained data (e.g. diet type, age, anthropometry and medical history) from the eight patients and their medical records. Their nutritional status was determined by the dietitian using the validated Mini Nutritional Assessment (MNA) (15). Estimated daily energy and protein requirements were also calculated by the dietitian, using the Schofield equation (average stress factor of 1.2 was used) and the Nutrient Reference Values (NRVs) (16, 17).

Individual meal trays were sighted before and after each meal by the student dietitians in order for them to visually estimate the amount of each meal eaten by each patient. Meals were compared with tray tickets to identify the food items on the tray. The amount of each individual food item consumed was estimated to the nearest 10%, and noted on a standard template.

Observations were also made at the three main meals, as well as the mid morning and mid afternoon snacks by the two student dietitians so as to better understand the mealtime context. Training was provided by the hospital dietitian and discussion sessions held regularly with the dietitian and two student dietitians to ensure consistency of documentation about mealtimes.

Data Analysis

CBORD Nutrition Service Suite® (CBORD Group Inc, Ithaca, New York, USA) was used to determine the energy, protein, fat, and carbohydrate content of each meal, and of the amounts of each consumed by each patient. Microsoft Office Excel for Windows 2007 (Microsoft Corporation, Redmond, Washington, USA) and the Statistical Package for the Social Sciences (SPSS for Windows Version 17.0 SPSS Inc. Chicago, Illinois USA) were used for statistical analyses. Means and standard deviations were calculated for the energy and macronutrient intakes each day and the lunch meal only. The Shapiro-Wilk test was used to determine the normality of data. Paired samples t-tests were used to compare intakes and a significant difference was assumed when $P < 0.05$.

Data compared included:

- Lunch time energy and macronutrient intakes when volunteers were present and were not present.
- Daily energy and macronutrient intakes when volunteers were present and were not present.
- Daily energy and protein intakes when volunteers were, and were not present, to the estimated daily requirements.

The observational data at meals were collated for each patient for each day. The mealtime observations of patients, volunteers, visitors and staff were summarised to contextualise the mealtime environment and to triangulate with the questionnaires and the dietary intake data.

Ethics approval for the study was provided in 2010. Written, informed consent was obtained from patients, or their carers, volunteers and nurses by the dietitian before they participated in the study.

Results

The eight patients had a mean (\pm SD) age of 83 ± 4.5 years and an average length of stay of 40 ± 25.7 days. The main causes of admission were falls, fractures, cerebrovascular accident and dementia; while the average MNA score was low at 12 ± 3 (Range 8.5-18/30). Seven patients were malnourished and one

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was ‘at risk’; with seven receiving high protein, high energy texture modified diets (3 Puree, 3 Minced, 1 Soft) and one on a Full diet.

When comparing the intakes of energy and macronutrients at the lunch meals there were no significant increases, although a trend towards increased intakes were evident. Five of the eight patients had increased intakes of energy, protein and fat, while six of the eight patients had increased carbohydrate intakes when volunteers were present at lunch as shown in Table 1.

Table 1

Mean lunch intakes from the two days with and without volunteer assistance (n=8)

Nutrient	Non-Volunteer Mean±SD	Volunteer Mean±SD	Difference Mean±SD	P-Value*
Energy(kJ)	1404±638	1720±617	316±591	0.175
Protein(g)	20.1±12.5	23.2±12.0	3.1±11.4	0.468
Fat(g)	11.0±4.6	12.4±4.2	1.4±4.6	0.418
Carbohydrate(g)	38.1±16.4	49.7±19.1	11.6±16.4	0.084

*P-Values were determined by paired t-tests

When comparing the daily intakes of energy and macronutrients there were no significant increases when volunteer assistance was available as shown in Table 2. However there was a trend towards increased intakes for energy (6 patients), protein (4 patients) and fat (6 patients).

Table 2

Mean daily energy and macronutrient intakes for days with and without volunteer assistance (n=8)

Nutrient	Non-Volunteer Mean±SD	Volunteer Mean±SD	Difference Mean±SD	P-Value*
Energy(kJ)	5237±766	5484±1298	247±735	0.373
Protein(g)	64.4±16.2	65.2±26.1	0.8±14.2	0.873
Fat(g)	41.7±9.4	43.6±13.5	2.0±7.0	0.452
Carbohydrate(g)	152.3±20.4	150.0±37.1	-2.4±33.7	0.848

*P-Values were determined by paired t-tests.

No individual patient met their estimated daily energy requirement, although improvements towards requirements were seen in six of the eight patients. Four of the eight patients met or exceeded their protein requirements when volunteers were not present, while three patients met their estimated daily protein requirement when volunteers were present as indicated by Table 3.

Observations during mealtimes found that patients had difficulty reaching food trays, opening packaging, and a number lacked the motivation to eat. Volunteers’ tasks were observed to include: encouraging patients with meals, opening packages, removing lids, familiarisation of food items, assisting with utensils, spoon feeding the patients, socialising with

patients, making conversation and motivating the patients to eat. Visitors were also observed assisting with feeding and encouraging patients to eat during mealtimes when volunteers were not present. Most of the patients consumed a higher proportion of their desserts, compared to the main meal.

Table 3

Mean protein and energy intakes, as a percentage of patient requirements, on days with and without volunteer assistance (n=8)

	Requirement Mean ±SD	Non- Volunteer	Volunteer	Difference	P-Value*
Energy(kJ)	6783±1039	77.8%	80.1%	2.3%	0.614
Protein(g)	66.1±14.6	98.0%	95.9%	-2.1%	0.755

*P-Values were determined by paired t-tests.

Five volunteers completed the questionnaire and provided feedback about the program. They all found the program to be beneficial and saw a need for the program. Eight nurses completed the questionnaire, with seven of them classifying the program as “very helpful” and one as “moderately helpful”. The general consensus of the nurses was that having volunteers assist with feeding allowed them more time to complete their other tasks. Six of the eight nurses reported that they also have a role in assisting patients with feeding.

Discussion

This study aimed to evaluate and share learnings from this newly implemented program, comparing energy and macronutrient intakes on days with no volunteer assistance, to days with volunteers. The results indicate a trend towards increased daily intakes for energy, protein and fat when volunteers were present. A trend was also found for increased energy, protein, fat and carbohydrate intake, during the lunch meals when volunteers were present.

The main issue faced in this study was having enough volunteers to assist patients at mealtimes. There was only a small pool of five volunteers, whom visited intermittently when it suited them, and were not necessarily rostered. This issue was not faced by a previous international study as they employed feeding assistants (11). Their randomised control trial (with 592 patients) was carried out in three acute elderly wards at a hospital in London and the paid assistants worked five days a week, and were present at two meals per day. Although no significant differences were found, a trend towards a greater energy intake (5410kJ compared to 5780kJ) and protein (47g to 50g) was found (11).

Other points of difference are that seven out of the eight patients in the current study were on a texture modified diet. Research has shown that it is harder for patients on a texture modified diet to meet their energy requirements, and that

targeted volunteer feeding assistance can be particularly effective in increasing intakes of patients on texture modified diets (14, 18). Significantly more protein and energy was consumed by patients with dysphagia when additional assistance was available at breakfast, lunch, morning and afternoon teas (14). In contrast the present study only included volunteer feeding assistance at lunch on some week days, highlighting the need for further intervention in the form of volunteer and/or paid assistance to further encourage dietary intakes.

The current study is very similar to, and the results are mostly consistent with a previous volunteer feeding assistance study conducted at another Australian hospital (12). Their study consisted of nine elderly patients, and compared two days with no volunteers present, and two days with volunteers present at lunch. The study found a significant increase in protein intake during the lunch meals with volunteers present and throughout the whole day where volunteers were present. A trend towards increasing energy intake was found during the lunch meal when volunteers were present, but no significant increase was shown for energy for the whole day that volunteers were present. The study also found that patients were closer to meeting their daily energy requirements when volunteers were present, although it was not a significant increase.

Points to note are that the previous study used a different method of determining patient meal intake. They weighed meal trays to determine the amounts of food left on each plate, while this current study estimated through visual observation, although visual methods are still suitable (19). The previous study was also conducted after three years of developing, and 18 months of establishing the program in the hospital. So as to make an early evaluation, this study was conducted after only five months of program implementation, which may account for some of the differences seen in the results.

A follow up study at the same hospital confirmed the benefits of the established volunteer feeding assistance program. The two most common reasons for admission were also similar between studies; fractures and falls. The follow up study had twenty-three patients, and average lunch meal intakes of energy and protein increased significantly; as did the daily intake of protein (by 8.7g). Lunch meal intakes increased on average; 396kJ for energy, and 4.3g for protein (13). A trend towards an increased percentage of patients meeting estimated energy and protein requirements was seen as well suggesting that improved outcomes may be found when the program is better established (13).

An interesting point to note from the present study is that patients tended to be more willing to eat their desserts, such as ice creams and custard, compared to their main meals, which has previously been reported in the literature (20). This highlights the importance of nourishing desserts at main meals and between meals as another strategy to combat malnutrition in hospitals. Surveys returned from both volunteers and nurses

were largely positive. The volunteers appreciated the need for the program and gained self-satisfaction in their roles of assisting patients with eating. Some volunteers mentioned disagreements with some nurses about their input and felt that the program obviously needed more time to develop.

The surveyed nurses were also supportive of the program. They appreciated the program as the focus of the volunteers on lunch meals allowed them more time for their other nursing duties. A study by Xia and McCutcheon reported that nurses did not prioritise nutrition issues during meal times (3). Nurses also saw the benefits to the patients, as the volunteers spent more time with the patients than they would be able to, and increased social interaction with the patients.

This study was not without its limitations. The study was conducted shortly after the program began, and thus it was a small pilot study that involved only five volunteers, who did not always attend regularly. This in itself highlights the need for an adequately sized volunteer pool, sound coordination, engagement with the program and the considerable time needed for this to develop. The fact that patients, nurses and volunteers knew when intakes were being monitored could have also impacted on results. Patient's also had varying gaps between meals when any other intakes were not observed or analysed, which could impact on results. Seven of the eight patients being on a texture modified diets also made achieving adequate dietary intakes more difficult. Activities of family and friends at mealtimes and on weekends were beyond the scope of the study and their attention would also impact on intakes. The fact that four of the eight patients met or exceeded their protein requirements when the volunteers were not present, hints at the important role of family, friends and socialisation when present at meals. The lack of power in this small pilot study is the most significant limitation making the detection of any significant changes in dietary intakes difficult. Thus a larger follow up study with sufficient statistical power is recommended to further investigate the impact of such a volunteer feeding assistance program.

This study suggests that volunteer feeding assistance may contribute to increased macronutrient intakes by elderly hospitalised patients. There was a trend towards increased energy, protein, fat and carbohydrate intakes from the lunch meals when volunteers were present; and for the whole day when volunteers had been present to assist at the lunch meal. However the key new contributions provided by this pilot study, which was conducted early after the implementation of the volunteer feeding assistance program is an awareness of the time it takes to develop a volunteer base; the resource investment; the need for a volunteer coordinator; the importance of training people and developing systems for regular evaluation and feedback, as well as building environmental support. Additional mealtime assistance is needed by many elderly patients to improve dietary intakes and a volunteer feeding assistance program is one of a number of strategies that can assist. Recommendations to improve

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the efficacy of this program in clinical practice are to further implement the program in collaboration with nursing and medical staff, to increase the number of volunteers; to involve a volunteer coordinator and to provide ongoing evaluation, training and support to volunteers.

Ethical Statement: Written, informed consent was obtained from patients, carers and staff and the study was approved by the former Illawarra Area Health Service/University of Wollongong Human Research Ethics Committee.

Acknowledgements: The authors would like to thank the volunteers, patients and staff involved in this study.

Conflict of interest: No authors have any potential conflicts of interest.

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