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A volunteer feeding assistance program can improve dietary intakes of elderly patients – A Pilot Study

Abstract

Malnutrition is prevalent in elderly hospitalised patients and has been associated with longer lengths of stay (LOS), higher rates of complications and increased hospital costs. Feeding assistance has traditionally been the role of nurses, however with an ageing population and an ever-increasing workload there may not be sufficient time to ensure the nutritional care of all patients. A program in which trained volunteers assist, socialise and feed nutritionally vulnerable patients at lunch on weekdays has been initiated in a major suburban hospital in Sydney. The pilot study reported here aimed to evaluate the lunchtime assistance program in terms of dietary intakes by comparing data from weekdays (with volunteers) and that from weekends (no volunteers). Nine patients (mean age+(SD): 89±4.6 years) participated in the study. Observations and weighed plate waste were recorded for each patient at lunch on two weekdays and two weekend days. When volunteers were present, the average protein intake increased by 10.1 g at lunch ($p<0.05$) and 10.7g over the whole day ($p<0.05$). There was also a trend to increased energy intake. Observations indicated that the volunteers, when compared to the nurses, socialised more with patients, encouraged them to eat more often and spent more time feeding them. Trialing volunteer assistance in a larger study would be useful.

Disciplines

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A volunteer feeding assistance program can improve dietary intakes of elderly patients –A Pilot Study

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Abstract

Malnutrition is prevalent in elderly hospitalised patients and has been associated with longer lengths of stay (LOS), higher rates of complications and increased hospital costs. Feeding assistance has traditionally been the role of nurses, however with an ageing population and an ever-increasing workload there may not be sufficient time to ensure the nutritional care of all patients. A program in which trained volunteers assist, socialise and feed nutritionally vulnerable patients at lunch on weekdays has been initiated in a major suburban hospital in Sydney. The pilot study reported here aimed to evaluate the lunchtime assistance program in terms of dietary intakes by comparing data from weekdays (with volunteers) and that from weekends (no volunteers). Nine patients (mean age \pm (SD): 89 \pm 4.6 years) participated in the study. Observations and weighed plate waste were recorded for each patient at lunch on two weekdays and two weekend days. When volunteers were present, the average protein intake increased by 10.1 g at lunch ($p<0.05$) and 10.7g over the whole day ($p<0.05$). There was also a trend to increased energy intake. Observations indicated that the volunteers, when compared to the nurses, socialised more with patients, encouraged them to eat more often and spent more time feeding them. Trialing volunteer assistance in a larger study would be useful.

Keywords

Feeding assistance; Volunteers; Dietary intakes; Hospital; Elderly

Introduction

Malnutrition in hospitals is a serious concern. It is estimated that up to 40% of all patients admitted are already in a malnourished state and that up to 60% are 'at risk' of malnutrition. Older patients have a higher prevalence, with patients above 80 years of age suggested to have five times the rate of malnutrition as those patients younger than 50 years (Pirlich et al 2005; The European Nutrition for Health Alliance, 2005). A further concern for many is that their nutritional status may continue to decline throughout their stay (Chima et al 1997; Kowanko 1997; Hall et al 2000). Reasons for this decline may include: poor appetite and disinterest in food, the variety of food options available, poor dentition, difficulty with manipulating cutlery and accessing food, lack of feeding assistance and encouragement, the amount of food packaging, difficulties with chewing and swallowing, gastrointestinal upsets, malabsorption, depression and dementia (Kowanko et al 1999; Hickson 2006).

A recent national survey of Australian dietitians, food service managers and rehabilitation nurse unit managers identified many possible barriers to adequate dietary intakes for long stay patients, as well as many priorities for intervention. Significant barriers included: a lack of feeding assistance, difficulty with food and beverage packaging and setting up for meals. Key priorities for intervention included: food fortification, additional nursing assistance with feeding, as well as additional non-nursing assistance with feeding (Walton et al 2006a).

Provision of food and beverages is traditionally the role of nurses (Kowanko et al 1999). While nurses may view the nutritional care of patients as an important aspect of their job, increased time pressures and competing tasks may mean that they are not able to prioritise feeding above other duties, such as the distribution of medicines at meal times (Kowanko et al 1999; Dickinson, et al 2005). Most research in this area has reported common themes of time restraints and staff shortages. Attention by nurses and other staff to patient meal times can have a positive affect on patient eating habits (Dickinson et al 2005; Kayser-Jones & Schell 1997a; Chang et al 2003).

The effects of employing one additional health care assistant on an acute ward to assist older patients (>65 years) with two meals per day, five days per week was studied in 2004. While food intakes were increased in the intervention group, there was no difference in nutritional status, length of stay, grip strength or mortality. The researchers concluded that the use of specialised assistants, without changes to

food provision, or the targeting of higher risk patients had limited impact, but did emphasise that the intervention may be better suited to a longer stay setting (Hickson et al 2004).

The hospital in which this pilot study was conducted is a 333 bed community hospital located in Sydney, New South Wales. It introduced a volunteer feeding assistance program to a 28 bed aged care ward in June 2005. The program had been developed over three years by the dietitian in charge and volunteer coordinator, with the support of the executive director and the management and development team. Patients were referred by the Clinical Care Coordinator (CCC) or Nurse Unit Manager (NUM) for assistance with feeding, opening packages, encouragement and/or social support at meal times. Currently there are twenty-five trained volunteers who are available to assist patients at lunch time, each weekday. Typically about three volunteers are available most weekdays, with eight to ten patients being referred each weekday.

The volunteers usually have about 45 minutes to assist two to three patients with their lunch meal. Not all patients require feeding so the volunteers may also assist with meal tray set up, opening packages, encouragement and conversation at meal times. Volunteers complete a form for each patient that outlines what assistance was provided and approximately how much of the meal was eaten. The volunteers are specifically recruited and trained for this feeding assistance program and are advised to encourage the high protein, high energy components of the meal first. Their duties are clearly outlined, as are when they must call for nursing assistance (e.g. changing the patients' position, putting in dentures, swallowing difficulties). This study was planned as the first formal evaluation of this program.

The aims were:

- (1) To determine if patient energy and protein intakes increased at the lunch meal and over the whole day on the days when the volunteers were present.
- (2) To compare the average daily energy and protein intakes to the average estimated daily requirements.
- (3) To obtain the opinions of nurses and volunteers regarding patient feeding and the volunteer program.

Methods

Study design

A convenience sample of nine elderly inpatients (three male, six female) from an aged care ward were studied. Data were collected in August 2006 and involved two weekdays (Thursday and Friday) and the following two weekend days for each patient. Overt observations were made of the volunteers (during lunch on weekdays only), patients and staff at each main meal. Leftover food was weighed and demographic details for each patient were obtained from the medical records. Patients were asked about their mid meal intakes and appetite, while nurses and volunteers answered survey questions regarding the program.

The NUM and CCC referred patients to the volunteer feeding assistance program as was the usual practice. They also explained the study, and obtained written consent from the patients' (or their next of kin) who agreed to be part of the study.

Data collected

The dietitian in charge obtained quantitative data from the medical records of those patients whom four day data was collected. Data on diet type, age, the reason for admission, weight and height (when available) were obtained, and meal orders from the tray ticket or menu slip were recorded. This information was used to determine each patient's estimated daily requirements for protein and energy, as well as to describe the study population.

One set of electronic scales (accurate to ± 1 g) was used to determine all food and beverage weights. A copy of the standard serve sizes of each food and fluid item was provided by each of the hospital food service departments. Duplicate samples of each meal and beverage option were requested so they could provide baseline information about weights and be compared to the standard serve size information. Many snack and beverage items were commercially packaged with known weights. After the meal trays were collected by the food service assistants, individual foods and beverages left on them were weighed to determine the amounts eaten at each meal, and compared to the standard serve sizes provided by each of the hospital food service departments.

Intakes of between-meal snacks provided by the hospital and visitors were estimated by observations and questions asked of the patients on the last afternoon of each

data collection period. However because of the unreliability of these estimates these foods and beverages were not included in the food intake analysis so daily intake data reflects only the foods consumed at the three main meals.

Observational data was collected at each main meal and focused on when and how the food was served, the time before patients started to eat, the time patients took to eat, the assistance provided, any socialisation aspects and any interruptions during mealtimes. Nurses and volunteers were invited to complete an open-ended questionnaire on their opinions about the feeding assistance program and opportunities for improvements. A total of 13 nurses completed questionnaires, while 10 questionnaires were returned by volunteers, with another four preferring to discuss the questions and their responses in a focus group.

Data Analysis

Estimated daily energy and protein requirements were calculated for each patient using the Schofield equation as recommended in Australia (Commonwealth Department of Health and Ageing 2006) and the recommended dietary intakes for protein (National Health and Medical Research Council (NHMRC) 2005). Estimated energy and protein requirements were typically determined using an activity factor of 1.2, an injury factor of 1.2 and a protein requirement of 1.2 g/kg/day. FoodWorks (Professional Edition) nutrient analysis software (Version 4, 1998-2003, Xyris Software Pty Ltd, Highgate Hill, Australia) was utilised to calculate the estimated energy and protein content of the foods consumed. Means and standard deviations were calculated for estimated requirements and amounts consumed. The Shapiro-Wilk test of normality was used and paired samples t-tests were used for comparison as all data being analysed was normally distributed. All statistical analyses were completed using the Statistical Package for the Social Sciences (SPSS Version 15 for Windows, 2006, SPSS Inc., Chicago, IL).

Ethics approval for the study was obtained from the University of Wollongong and Illawarra Area Health Service Human Research Ethics Committee in 2005, and the South Eastern Sydney and Illawarra Area Health Service (Southern Section) Human Research Ethics Committee in 2006. Written consent was obtained from patients or their next of kin where the patient was cognitively unable to provide informed consent. Verbal consent was obtained from volunteers, staff and visitors.

Results

The nine patients had an average age of 89 ± 4.6 years and a mean length of stay of 29.3 ± 12.3 days (range 9-46 days), compared with the hospital average of 5.7 days. The most common causes of admission were limb injury, followed closely by dementia and delirium.

Significantly more protein was consumed at weekday lunches (10.1g; $p < 0.05$) and more energy (439kJ; $p = 0.072$) was consumed when the volunteers were present (Table 1). The daily protein intake was significantly larger (10.7g; $p < 0.05$) when volunteers were assisting, but the average daily energy intake was not significantly increased. There was no significant difference between intakes of energy and protein between weekday (WD) and weekend (WE) days at the breakfast ($(1151 \pm 515\text{kJ})$ WD vs $(1071 \pm 485\text{kJ})$ WE; $P = 0.619$ and $(9.7 \pm 5.02\text{g})$ WD vs $(8.8 \pm 5.60\text{g})$ WE; $P = 0.630$) or evening ($(1167 \pm 411\text{kJ})$ WD vs $(1452 \pm 682\text{kJ})$ WE; $P = 0.142$ and $(15.5 \pm 8.26\text{g})$ WD vs $(15.8 \pm 8.35\text{g})$ WE; $P = 0.834$) meals. Importantly, patients were not eating significantly less energy and protein at the breakfast or evening meal in response to the higher lunch intakes.

Table 1: Average lunch and total daily energy and protein intakes, with and without volunteers assisting

Category	Energy (kJ) n=9	Protein (g) n=9
Lunch with volunteers		
Mean (\pm SD)	1700 (± 897)	25.3 (± 15.8)
Lunch without volunteers		
Mean (\pm SD)	1261 (± 772)	15.2 (± 12.3)
Lunch		
Difference (\pm SD)	439 (± 848)	10.1 (± 15.7)
P value	0.072*	0.015*
Whole day with volunteers		
Mean (\pm SD)	4018 (± 1244)	50.5 (± 20.3)
Whole day without volunteers		
Mean (\pm SD)	3784 (± 1800)	39.8 (± 21.1)
Whole day		
Difference (\pm SD)	236 (± 1022)	10.7 (± 10.4)
P value	0.509*	0.015*

Legend: * Paired samples t-test

The average estimated daily energy and protein requirements were 7348kJ and 71.1g protein. No individual patient met their estimated daily energy requirement, although one patient met their daily protein requirement and another consumed >97% of the estimated daily protein requirement, but only when the volunteers were present. The percentage of energy requirements met were marginally higher when the volunteers were present, although intakes were only just above half the daily requirements in both situations (Table 2). The amount of the protein requirement consumed was improved by approximately 15% ($p < 0.05$) when the volunteers were present.

Table 2: Mean percentage of average estimated daily requirements met with and without volunteers assisting

	Intake as a % energy requirement n=9	Intake as a % protein requirement n=9
Whole day with volunteers	54.7	71.0
Whole day without volunteers	51.5	56.0
Difference	3.2	15.0
P value	0.478*	0.020*

Legend: * Paired samples t-test

The volunteers were observed doing numerous tasks at the mealtimes, including opening food and beverage packets, removing lids, making drinks, opening supplements, moving the meal tray closer, rearranging the meal tray, feeding patients, encouraging/prompting intake, providing social support and conversation at the meal, as well as providing written feedback for the nurses.

Thirteen nurses completed the questionnaire. All of the nurses surveyed reported the volunteer feeding assistance program to be of value on the ward. In addition, 54% of them expressed concern about a lack of time or staffing resources at mealtimes and a desire for the volunteer program to be extended to other meals. The most commonly stated reasons were that patients required assistance with feeding, setting up of meals and prompting to eat.

A total of fourteen surveys were completed by volunteers. Most (76%) felt that there was enough time to assist and feed patients. Opening packages was identified as an important role to assist and encourage dietary intakes. Twelve of the volunteers felt

that company at mealtimes positively influenced the patient dietary intakes.

Discussion

The problem of malnutrition in elderly patients is common, but is also complex and can be difficult to address. Addressing issues such as packaging, preparation to eat and feeding assistance have certainly been highlighted amongst suitable interventions (Schenker 2003, Walton et al 2006b). This pilot study has shown that a volunteer feeding assistance program can improve protein intakes in longer stay, aged care hospital patients. The higher intakes of energy at lunch with volunteers was approaching statistical significance but a larger study is needed to evaluate this impact more thoroughly.

The results are consistent with those of Kayser-Jones & Schell (1997a) who investigated nursing home residents and found residents and their trays were poorly positioned at mealtimes, and that nurses were busy, sometimes trying to feed as many as 15 patients each. At mealtimes when a specialist restorative nurses aide took her time with each patient and fed only two to three patients, they seemed to appreciate the time she took with them and consumed more (Kayser-Jones & Schell 1997b). This is similar to the current study which utilised trained volunteers in this role.

The positive outcomes of this pilot study contrast to those from a study by Hickson et al (2004). However there were a number of differences including: the current intervention was targeted at patients identified as 'at risk', rather than to all patients; the feeding assistance was provided by volunteers who were only present for the lunch meal; the patients were also long-stay patients rather than acute patients and dietary intake of energy and protein was a primary outcome in the current study, not clinical end points such as grip strength, mortality and nutritional status. These two studies indicate that there is the need for a larger, longer term feeding assistance study that would assess dietary intakes and also nutritional status for long stay, elderly patients in a hospital setting.

The surveys with the nursing staff and volunteers certainly showed strong support for the program. The nurses were appreciative of the assistance at the lunch meal and were keen to see the program expanded, which would require further volunteers. The volunteers appear very satisfied with their role and the success of the program in assisting the patients with an important part of their care.

This study also addresses several of the barriers to nutrient intakes outlined by the Committee of Experts on Nutrition, Food Safety and Consumer Protection (2002). These include cooperation between different types of staff (volunteers were also included in the present study) and the involvement of the hospital management in the planning and implementation of the program (COE 2002).

There were several limitations with this study. It utilised a small convenience sample and weighed intakes were only obtained for the three main meals each day. However the primary focus of the study was the influence on intakes at lunch and at the other main meals when volunteers assisted with weekday lunches. Further, as duplicate meals were not available for every option, intakes by patients were estimated by comparing the weight of food waste to standard portion sizes which would have introduced some error. Obtaining the weight of each item before service would have been the preferred method (Wilson et al 2000; Hartwell, & Edwards 2003), however for practical reasons this was not able to be conducted in this pilot study. The fact that this was an overt study may also have influenced some behaviours and resultant intakes, however measuring two days with and without volunteers attempted to minimise this bias. Furthermore, other factors that might have influenced intakes (such as patterns of care or number of visitors) were not considered in detail in this study.

Conclusion

This pilot study suggests that intakes of protein can be significantly improved at lunch and over the whole day when the feeding assistance volunteers are present. There was a trend to improved intakes of energy, both over the day, and at lunch when the volunteers were present. Given the ageing population and the increased demands on nurses, there may be potential to expand such a program to other wards or meals. However further study involving a larger sample size is certainly indicated. Potential expansion to other wards or meals would also need careful consideration regarding the availability of volunteers, particularly at an evening meal time, and the perceived impact on nursing jobs by some. However a volunteer feeding assistance program is certainly an intervention strategy worthy of further consideration in the battle to optimise intakes of older, longer stay hospitalised patients.

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