Clinical Nutrition ESPEN xxx (2017) 1–8

Contents lists available at ScienceDirect

Clinical Nutrition ESPEN

journal homepage: http://www.clinicalnutritionespen.com

Original article

Improving nutrition care and intake for older hospital patients through system-level dietary and mealtime interventions

Adrienne M. Young [a, b, *], Merrilyn D. Banks [a, b], Alison M. Mudge [c]

[a] Dept of Nutrition and Dietetics, Royal Brisbane and Women's Hospital, Butterfield St, Herston 4029, Australia
[b] School of Exercise and Nutrition Sciences, Queensland University of Technology, Victoria Park Road, Kelvin Grove 4059, Australia
[c] Dept of Internal Medicine and Aged Care, Royal Brisbane and Women's Hospital, Butterfield St, Herston 4029, Australia

ARTICLE INFO

Article history:
Received 21 May 2017
Accepted 13 December 2017

Keywords:
Malnutrition
Hospital
Older adults
Feeding assistance
Foodservice

SUMMARY

Background & aims: Interventions such as oral nutritional supplements (ONS), fortified meals and mid-meals, feeding assistants and Protected Mealtimes have shown some impact on nutritional intake in research studies, but embedding them in practise remains challenging. This study monitored nutritional intake of older medical inpatients as dietary and mealtime interventions were progressively implemented into routine practise.

Methods: Series of three prospectively evaluated patient cohorts allowed comparison of nutritional intake of 320 consented medical inpatients aged 65 + years: cohort 1 (2007–8), cohort 2 (2009) and cohort 3 (2013–14) as nutrition care interventions were progressively introduced and embedded. Interventions focused on 'assisted mealtimes', fortified meals and mid-meals, and ONS. Energy and protein intake were calculated from visual plate waste of individual meal and mid-meal components on day 5 of admission. Nutrition care processes were evaluated by mealtime audits of diet type, assistance and interruptions on the same day. One-way ANOVA and chi square tests were used for comparison between cohorts.

Results: Significant, progressive improvements in energy and protein intake were seen between cohorts (energy: cohort 1: 5073 kJ/d; cohort 2: 5403 kJ/d; cohort 3: 5989 kJ/d, $p = 0.04$; protein: cohort 1: 48 g/d, cohort 2: 50 g/d, cohort 3: 57 g/d, $p = 0.02$). Greater use of fortified meals and mid-meals and sustained improvements in mealtime assistance likely contributed to these improvements.

Conclusions: Multi-faceted system-level approach to nutrition care, including changes to dietary and mealtime care processes, was associated with measureable and sustained improvements in nutritional intake of older inpatients over a seven year period.

1. Introduction

Malnutrition is a common and costly problem. Approximately 30% of hospitalised patients are malnourished [1,2] and at increased risk of poor health outcomes related to their malnutrition [3,4], including long hospital stays, pressure injuries and reduced quality of life. Approximately half of hospital patients eat 50% or less of the food provided to them at meals [1,5,6]. Barriers to adequate nutrition include patient and illness factors, mealtime care processes and the hospital environment [7–11].

Nutrition interventions aimed at increasing intake of older hospitalised patients focus on either increasing nutrient delivery (e.g. oral nutritional supplements (ONS), fortified diets) or changing mealtime practises (e.g. feeding assistants, Protected Mealtimes). There is good evidence from randomised controlled trials that ONS improve nutritional, functional and clinical outcomes of older people [12–14]. However, compliance with ONS in the hospital setting is lower than in the community [15], which may be due to barriers to delivery and assistance or encouragement to consume them. Similarly, there is some evidence that fortified meals, mid-meals and/or drinks improve dietary intakes and/or nutritional status [16–20], but their success may be hampered by mealtime barriers such as limited assistance, interruptions and poor mealtime environments. While there is some evidence to support

* Corresponding author. Dept of Nutrition and Dietetics, Level 2 Dr James Mayne Building, Royal Brisbane and Women's Hospital, Butterfield St, Herston 4029. Australia.
E-mail address: adrienne.young@health.qld.gov.au (A.M. Young).

https://doi.org/10.1016/j.clnesp.2017.12.009
2405-4577/

feeding assistant interventions [21], studies of Protected Mealtimes have shown mixed results [22–26], reflecting the challenges inherent in changing ward culture around nutrition and mealtime practises. Multidisciplinary, multi-faceted changes to nutrition care which combine nutrient delivery and mealtime interventions implemented using active strategies have demonstrated promising improvements to nutritional and clinical outcomes [27,28]. However, such complex programmes may be difficult to implement and sustain at scale.

Beginning in 2007, we have undertaken a programme of multidisciplinary quality improvement in nutrition care in a major tertiary hospital, with a particular focus on older medical patients (Fig. 1). This included observational studies to understand barriers and enablers to nutrition care [9,10], as well as local and systemic interventions [28,29]. This study examines the impact of this quality improvement approach over a seven year period. The primary aim of this study was to evaluate the impact of planned, incremental changes to nutrition care through dietary and mealtime interventions on the energy and protein intakes of older medical inpatients over this period. Secondary aims were to evaluate key nutrition care processes (fortified meals and mid-meals, ONS, nutrition screening, dietetic input mealtime assistance and interruptions) to help understand changes in the primary outcomes.

2. Methods

2.1. Setting

This work was undertaken at the Royal Brisbane and Women's Hospital, a 900 bed publicly funded metropolitan teaching hospital in Brisbane, Australia. Improvements were led by the Department of Nutrition and Dietetics in collaboration with the Department of Internal Medicine and Aged Care. Authors AY (Accredited Practising Dietitian, APD), MB (APD and Director, Nutrition and Dietetics) and AM (specialist physician, Internal Medicine and Aged Care) are collaborating clinical researchers interested in improving care of older patients during and following a hospital stay.

Prior to the commencement of this study (2007), MB and AM helped to lead development of an integrated nursing admission assessment which included malnutrition screening using the Malnutrition Screening Tool (MST) [30] and there was an endorsed policy for referring patients identified at risk for dietitian assessment and monitoring. All three medical wards had introduced consistent multidisciplinary care teams [31] which included approximately 0.5 full-time equivalent (FTE) dietitian per 25 patients. Each ward also had access to approximately 10 h per week of dietetic assistant time. Dietetic assistants helped patients with menu ordering, intake monitoring, delivery of prescribed ONS and mid-meal snacks, and conducting nutrition screening using MST. Food service staff delivered meals based on diet orders submitted by nursing staff in collaboration with the dietitian. Most patients were on a "standard diet" (average selections providing approx. 7500 kJ and 75 g protein per day) with a plain sweet biscuit and tea or coffee offered at morning tea and supper. Patients only received the high energy and protein fortified "HPHE diet" (including hot breakfast, high fat sauces, and high energy desserts; providing 8700 kJ and 90 g protein per day), nourishing snacks and drinks between meals ("mid-meals"; including chips, chocolate, protein bar, flavoured milk) and/or ONS if screened at risk of malnutrition (MST score ≥ 2) or as prescribed by the dietitian or treating team. There were no specific ward mealtime policies or processes in place.

2.2. Interventions

In the first phase of improvements (2008–2009), an action research approach was used to engage clinicians in the design and implementation of specific strategies to encourage nutritional intake of patients, following collection of extensive baseline data about patient, staff and environmental barriers to inpatient nutrition care [9,10]. The "Encouraging, Assisting and Time to Eat" (EAT) programme [28] included implementing "assisted mealtimes" where nutrition and mealtimes are prioritised by all members of the multidisciplinary teams, avoiding non-urgent interruptions to patients during mealtimes and rearranging nursing meal breaks to maximise the number of nurses available to assist patients at mealtimes. Funded by a government grant to improve care of elders, the programme used an enabling facilitation approach to help the ward teams devise and embed locally effective solutions, and also included an additional 1.0 FTE assistant-in-nursing (AIN) position to assist with set-up, feeding and encouraging with meals, mid-meals and ONS. Nurses, dietitians and dietetic assistants were educated about the high prevalence of malnutrition and poor intake of patients on the internal medicine wards, and were encouraged to order HPHE diets and mid-meals for these patients on admission to the ward.

In the second phase of improvements (2011–12), the EAT "assisted mealtimes" program was integrated into the multidisciplinary "Eat Walk Engage" program [29], implemented using the Promoting Action in Research Implementation in Health Services framework [32]. In this program, an ongoing focus on nutrition care was supported by clinical champions, audit and feedback, and quarterly multidisciplinary education sessions targeting junior medical officers and allied health professionals. In place of the EAT

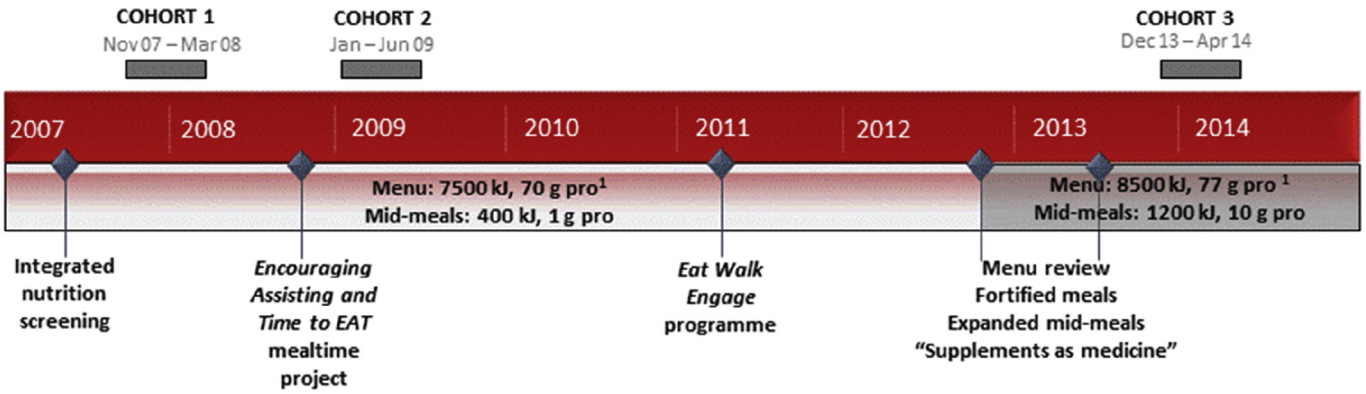

Fig. 1. Summary of introduction of dietary and mealtime improvements and evaluation time-points. [1]values indicate the average energy and protein content of food and drinks on offer to patients on the standard menu.

Please cite this article in press as: Young AM, et al., Improving nutrition care and intake for older hospital patients through system-level dietary and mealtime interventions, Clinical Nutrition ESPEN (2017), https://doi.org/10.1016/j.clnesp.2017.12.009