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What's on the tray? Nutritional intake of Meals on Wheels clients

Abstract

A letter to the editor. Meals on Wheels (MOW) is a community-based not-forprofit organisation that delivers nutritious meals to vulnerable clients in the community, to enable them to maintain their health and independence within their own home. MOW meals aim to provide at least one-third of the recommended dietary intake (RDI) for energy, fibre and calcium, and one-half of the RDI for protein, vitamins and minerals.¹ A variety of options are provided to their clients to allow self-selection from a large menu choice of soups, main meals and desserts and a range of meal delivery options, ranging from 1 to 5 days per week. MOW also provides variation in types of meals provided (hot, chilled or frozen), as well as being able to support special dietary meal requirements, such as texture modified variations. Studies from Australia and other countries have demonstrated that even with the provision of home-delivered meals, some MOW clients still have a poor nutritional status because of their multiple medical and social risk factors.

Keywords

meals, wheels, intake, clients, nutritional, tray

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What's on the tray? Nutritional intake of Meals on Wheels (MOW) clients

Sarah Anne Galea, Karen Walton, Karen Charlton and Anne McMahon

Meals on Wheels (MOW) is a community-based not-for-profit organization that delivers nutritious meals to vulnerable clients in the community, to enable them to maintain their health and independence within their own home. MOW meals aim to provide at least one third of the RDI for energy, fibre, and calcium and one half of the RDI for protein, vitamins and minerals [1]. A variety of options are provided to their clients to allow self selection from a large menu choice of soups, main meals and desserts and a range of meal delivery options, ranging from one to five days per week. MOW also provides variation in types of meals provided (hot, chilled or frozen), as well as being able to support special dietary meal requirements, such as texture modified variations. Studies from Australia and other countries have demonstrated that even with the provision of home-delivered meals, some MOW clients still have a poor nutritional status due to their multiple medical and social risk factors [2,3].

A pilot study was undertaken in one MOW service (Camden, NSW; n = 67 clients) to assess the contribution of MOW meals to total dietary intake in older clients. Information on selection of MOW choices, ordering patterns and consumption of the provided meals was obtained through client interviews conducted in-home (summative qualitative findings only reported in this letter due to word restrictions). Participants with cognitive impairments; those who required a carer to provide consent and those from non-English speaking backgrounds were not eligible for inclusion. Approval for the study was obtained from the University of Wollongong Human Research Ethics Committee. Nutritional status was determined by the Mini Nutritional Assessment Short Form (MNA-SF). Dietary assessment included a combined diet history interview, 24-hour recall and food frequency questionnaire to estimate usual daily intake. Energy and protein requirements were calculated using the Schofield equation⁴ and RDI⁵ for protein. Adjusted ideal body weight was used in calculations if participants were not within the healthy weight range (BMI 22-27). The nutrient content of 30 of the most frequently purchased MOW main meals, soups and desserts was determined by analysis of the recipe information provided by suppliers using FoodWorks Professional dietary assessment package (6.0.2562:2009, Xyris Software, Highgate Hill, Australia), based on AUSNUT 2007 nutrient composition database. Contribution of MOW meals to total daily intake was estimated, according to clients' ordering patterns (main meal only; main and dessert; or main, soup and dessert). Reported intakes were compared with calculated requirements for each participant using a paired samples t-test for parametric data, and Wilcoxon signed ranks test for non-parametric data.

Ten women and two men participated in the study (mean age = 84.9±10.9y, range = 67–102y; BMI = 25.8±5.6, range 15 - 34). Most (n = 11) participants lived alone. One participant was classified at risk of malnutrition, while the remainder were classified as well nourished. On average, meals were ordered on 4.2 (±1.2) days per week, ranging from 2 – 5. Meals are delivered hot (n=2), chilled (n=6) and frozen (n=4); and two received their meals pureed. Participants reported the variety of meals to be good (n=10) and found packaging easy to open (n=11). Most reported consuming the full meal (n=7), which is either main only (n=5),

main with soup or dessert (n=4), or main with dessert and drink (n=3) and transfer the meal from the MOW packaging to a plate before eating. Meal times are spent alone (n=10), however most participants also reported dining out more than once per week, with friends, relatives or a community group (n=10). Mean protein intakes were adequate but a wide range was reported (63–151g/day) (Table 1).

Table 1 Mean total daily intake of nutrients of MOW clients

		Intake mean $\pm$ SD	NRV mean $\pm$ SD	P
Energy (kJ)		7225 $\pm$ 1295	7313 $\pm$ 1152a	.812
Protein (g)		85.8 $\pm$ 23.1	59.2 $\pm$ 13.1a	.003*
Fibre (g)		23.9 $\pm$ 9.5	25.5 $\pm$ 1.2	.410
	female	22.4 $\pm$ 7.4 25 .294	22.4 $\pm$ 7.4 25 .294	22.4 $\pm$ 7.4 25 .294
	male	31.5 $\pm$ 19.1	28	.839
Calcium (mg)		860 $\pm$ 293	1275 $\pm$ 87	.006*
	female	848 $\pm$ 270.6	1300	.001*
	male	917 $\pm$ 526.8	1150	.491

a Requirement adjusted for ideal body weight if participant is not within the healthy weight range (BMI 22-27)

* Significant difference exists between actual intake and recommended intake, $p < 0.05$

The meal package ordered by each client which could consist of a main meal, soup, dessert and/or juice in various combinations, contributed 23.3 $\pm$ 7.6% of their daily energy requirements and 34.1 $\pm$ 6.7% of their daily protein requirements (Table 2). On average, the meal package would have contributed 33.5 $\pm$ 4.9% and 43.9 $\pm$ 8.2% of energy and protein requirements, respectively, if the main, soup and dessert had been ordered by each client, as recommended.

Table 2 Mean nutrient content of 30 MOW meals (mean $\pm$ SD) and contribution of actual meal components ordered to daily requirement of energy and protein (mean $\pm$ SD)

	Energy (kJ)	Protein (g)	Fat (g)	% daily energy requirement	% daily protein requirement
Main	1231.9 $\pm$ 577.6	17 $\pm$ 9.9	13.9 $\pm$ 9.0	16.5 $\pm$ 2.4	30.0 $\pm$ 5.7
Soup	393.6 $\pm$ 132.6	3.5 $\pm$ 2.3	3.5 $\pm$ 2.1	5.0 $\pm$ 0.9	5.6 $\pm$ 1.2
Dessert	811.2 $\pm$ 372.6	4.8 $\pm$ 2.5	7.3 $\pm$ 5.2	10.9 $\pm$ 1.7	7.8 $\pm$ 1.5
Total (mean)	2425.6 $\pm$ 486	25.8 $\pm$ 3.0	24.2 $\pm$ 4.2	23.3 $\pm$ 7.6a	34.1 $\pm$ 6.7a
Min - max				(15–37)	(22–49)

a Calculated according to the contribution of the particular meal package combination ordered by the individual client (main $\pm$ soup $\pm$ dessert) to individual calculated requirements

This pilot study has provided a case study of the usage patterns of MOW in older clients, and has shown that the meals meet recommended guidelines in terms of protein and energy content, but only if all three components of the meal are ordered. In reality, the meal combinations ordered by clients provide much lower contributions to overall intake than recommended. A potential limitation to the study findings is that dietary intakes were self-reported, therefore wastage could not be measured. Nevertheless, the study, although small and not generalizable to older clients of other MOW services, addresses a gap in the literature regarding dietary intakes of frail older adults in the community who access the service. In contrast to previous studies of MOW clients [3,6-8] our study participants were well

nourished, which suggests that the MOW service is supporting the independence of these individuals. Overall, dietary intake was adequate for energy, protein and fibre, however calcium intake could be improved.

We recommend that meal reference guidelines of services such as MOW be revised so that smaller meals provide greater nutritional support, possibly through enrichment of food items. This study focused on the nutritional aspect of the MOW service and did not investigate the benefit associated with social contact of clients with staff and volunteers of the service. In order to ensure that MOW meets the needs of the growing elderly sector of the Australian population, future studies that include in-depth interviews to explore the food choice behaviour of clients would be informative.

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