Nutritional Status of Irish Older People in Receipt of Meals-on-Wheels and the Nutritional Content of Meals Provided



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Introduction

•In Ireland, meals-on-wheels (MOW) services have operated for over 100 years. Approximately 15% of MOW are provided by local authorities, the majority are provided by local community groups and charitable organisations, with some financial assistance provided by the State. There are no Irish statutory minimum standards for the nutrient content of MOW and no research on the nutritional status of Irish MOW recipients or on the dietary composition of the meals provided had been carried out prior to this study.

•In the UK, minimum standards for MOW recommend that each meal provides the recipient with 600-650kcals, 20g of protein, 3-4mg of iron and 10mg of vitamin C, while American MOW providers are required to supply recipients with one-third of the recommended dietary allowance (RDA) for nutrients and energy (Wellman, Rosenzweig & Lloyd, 2002).

Aims of Study

•To establish the nutritional status of a sample of MOW recipients.

•To review the nutritional content of the meals provided by MOW services.

•To analyse the overall dietary patterns of MOW clients.

•To explore the extent to which MOW contributed to the dietary intake of each individual.

The study was approved by the Ethics Committee of the School of Social Work & Social Policy, TCD. Ethical guidance was also provided by a Consultative Committee established by the National Council for Ageing & Older People, who provided funding for the study.

Subjects and Methods

There were two separate elements to the research: A nutritional assessment.

2) An assessment of the nutrient content of a sample of meals.

Subjects

•Subjects were accessed through their MOW service using self-selection sampling. Information leaflets were distributed by MOW drivers, asking recipients to contact the research team if they wished to take part in the study. Eligible participants included those able to give written informed consent who were not severely cognitively impaired.

Nutritional Assessment

•The Mini Nutritional Assessment (MNA) (Guigoz et al., 1994) was used to assess the nutritional status of 63 MOW recipients.

•A 24-hour dietary recall was taken by trained dietitians to gauge a typical day's actual intake in the same 63 individuals who underwent the MNA. The dietary data were analysed using WISP dietary analysis software (Tinuviel Software, Warrington, UK). A Food Atlas was used to estimate portion sizes consumed (Nelson et al., 2002). The results were compared to the RDAs for the Irish population (FSAI, 1999)

Assessment of Meals-on Wheels Meals

•46 meals from eight MOW services (Table 1) throughout Ireland were assessed using WISP software to ascertain the extent to which the meals provided by MOW services met the RDAs. The ingredients used in each meal were recorded. The energy content of each meal was assessed, along with the composition of protein, carbohydrate, fat, calcium, iron, vitamins C, B_{12} , D, and folate.

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 Descriptive statistics 	were used	to analyse	e the data

Organisation	Number of meals assessed	Days per week meals delivered	Menu rotation	Choice of main courses provided
1	6	3	Monthly	1
2	9	2	Every 5 weeks	2
3	5	5	Weekly	2
4	5	2	Every 5 weeks	1
5	5	5	Weekly	1
6	5	5	Weekly	1
7	5	7	Weekly	2
8	6	6	Weekly	1

Table 2: Mean Nutrient Content of MOW Meals and Contribution to RDA: Energy and Macronutrients

Nutrient	Mean nutrient content	RDA	% RDA met by meals
Protein (g, SD) Males: Females:	36 (7.2) (20% meal energy)	0.75g/kg body weight/day	67.5 76
CHO (g, SD)	63 (12.8) (33% meal energy)	No quantitative guideline >50% total energy	
Fat (g, SD)	37.5 (11.5) (47% meal energy)	No quantitative guideline <35% total energy	
Energy (kcal, SD) Males: Fomeloo:	719 (119)	1793-2032	35-40

Table 3: Mean Nutrient Content of MOW Meals and Contribution to RDA: Micronutrients

Nutrient	Mean nutrient content	RDA	% RDA met by meals
Iron (mg, SD)	3.2 (0.9)		34
Males:		10	27
Females:		9	35
Calcium (mg, SD)	167 (41.1)	800	21
Vitamin D (µg, SD)	1.2 (0.7)	10	11.6
Vitamin C (mg, SD)	21 (1.4)	60	25
Folate (µg, SD)	74 (20.3)	300	25
Vitamin B12 (µg, SD)	1.5 (0.6)	1.4	107

Table 4: Typical Daily Micronutrient Intake of MOW recipients and % meeting RDA

Nutrient	RDA	Estimated Average Req	Mean intake	% meeting RDA
Vitamin D (µg)	10	-	2.5	3
Iron (mg)	9-10	7.7	7.8	32
Calcium (mg)	800	615	666	25
Folate (µg)	300	230	190	9.5
Dietary fibre (g) (NSP)*	18	12**	9.6	3

*18g Non Starch Polysaccharide (NSP) = 24g dietary fibre; **12g lowest level recommended

References

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Results

Nutritional Status of Meals-on-Wheels Recipients •Using the MNA, 63.5% of MOW recipients were well nourished, 27% were at risk of malnutrition and 6 (9.5%) had protein-energy malnutrition (Figure 1). •Of the 12 with special dietary requirements, 10 were well-nourished while 2 were at-risk of malnutrition. All 5 recipients with diabetes were well-nourished, with a mean MNA score of 25.3 (SD 2.1).

•There was little difference in the nutritional status of those living in urban versus rural areas; 65.8% of

those living in urban areas were well-nourished, compared with 60% of those in rural areas.

•The mean BMI of those assessed was 25.8kg/m² (SD 5.4) but 52% were overweight or obese.

Figure 1: Nutritional Status of MOW recipients using MNA (n 63)



Assessment of Meals-on-Wheels Meals

•Tables 2 and 3 describe the mean nutrient content of the MOW meals provided and their contribution to the RDA

Contribution of Meals-on-Wheels to Recipients' **Dietary Intakes of Nutrients**

•While the delivered meal provided MOW recipients with between 35-45% of the RDA for energy, it provided 42% of their mean actual daily energy intake (SD 14.9). Similarly, the delivered meal provided between 67-76% of the RDA for protein, but 52% of the recipients' mean actual daily protein intake (SD 17.1). Table 4 describes the daily micronutrient intake of MOW recipients from the 24hour dietary recalls.

•Twenty respondents did not eat the whole meal, while just 48 (76%) ate the whole meal within a half an hour of the delivery time

Conclusions

•Although Irish MOW providers provide meals with adequate energy and protein, they contain less than one-third of the RDA for several key nutrients.

•Dietary intakes did not meet recommendations for many key micronutrients despite 52% of MOW clients being overweight or obese.

•37% of MOW clients were at nutritional risk using the MNA although only a small number could be described as underweight using the WHO BMI definition.

•The literature reviewed and the study findings suggest that Irish MOW services should be governed by legislation that sets out minimum standards for the nutrient content of meals.

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