

Our results illustrate that, for a small but well defined set of cardiovascular drugs, and a small number of ethnic groups, there is evidence that susceptibility to adverse reactions differs between ethnic groups. For a much larger group of drugs, the data do not exist to confirm or refute the existence of ethnic differences in susceptibility to ADRs.

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Effect of family style mealtimes on quality of life, physical performance, and body weight of nursing home residents: cluster randomised controlled trial

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Abstract

Objective To assess the effect of family style mealtimes on quality of life, physical performance, and body weight of nursing home residents with chronic somatic diseases.

Design Cluster randomised trial.

Setting Five Dutch nursing homes.

Participants 178 residents (mean age 77 years). Two wards in each home were randomised to intervention (95 participants) or control groups (83).

Intervention During six months the intervention group took their meals family style and the control group received the usual individual pre-plated service.

Main outcome measures Quality of life (perceived safety; autonomy; and sensory, physical, and psychosocial functioning), gross and fine motor function, and body weight.

Results The difference in change between the groups was significant for overall quality of life (6.1 units, 95%

confidence interval 2.1 to 10.3), fine motor function (1.8 units, 0.6 to 3.0), and body weight (1.5 kg, 0.6 to 2.4).

Conclusion Family style mealtimes maintain quality of life, physical performance, and body weight of nursing home residents with chronic somatic diseases.

Trial registration Clinical trials NCT00114582.

Introduction

Mealtimes in nursing homes provide an opportunity to integrate and implement physical care with measures to improve quality of life. A convivial and social environment at mealtimes might add a sense of security, meaning, order, and structure to the day and improve satisfaction with life.^{1 2}



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Quality of life, physical performance, and body weight at baseline and changes within and between groups of nursing home residents assigned to family style mealtimes (intervention) or to individually pre-plated service (controls)

Variable	Intervention group (n=95)		Control group (n=83)		Difference in change (intervention group-control group)*	
	Mean (SD) at baseline	β coefficient (95% CI)	Mean (SD) at baseline	β coefficient (95% CI)	Unadjusted	Adjusted* (95% CI)
Quality of life (0-100):	60 (13.4)	0.4 (-1.8 to 2.5)	59 (13.6)	-5.0 (-9.4 to -0.6)	5.4	6.1 (2.1 to 10.3)
Sensory functioning	85 (20.5)	-2 (-5.4 to 1.59)	84 (21.2)	-4.7 (-10.7 to 1.4)	2.7	3.6 (-1.7 to 8.9)
Physical functioning	40 (24.5)	-0.4 (-2.6 to 1.8)	38 (18.1)	-3.4 (-8.9 to 2.1)	3.0	5.1 (0.8 to 9.4)
Psychosocial functioning	57 (22.1)	2.9 (-1.2 to 7.2)	55 (21.9)	-6.2 (-10.7 to -1.8)	8.8	7.3 (1.6 to 13.1)
Perceived safety	70 (30.2)	5.8 (-10.2 to 7.1)	78 (26.5)	-8.7 (-17.2 to -0.2)	14.4	16.6 (4.3 to 28.9)
Perceived autonomy	90 (19.7)	-1.6 (-10.2 to 7.1)	92 (19.1)	-3.9 (-10.9 to 3.1)	2.3	2.1 (-1.4 to 5.7)
Physical performance (0-48):	25 (12.3)	0.2 (-2.3 to 2.7)	24 (12.3)	-2.2 (-4.1 to -0.4)	2.4	3.2 (0.9 to 5.5)
Gross motor function (0-24)	7.8 (7.8)	0.7 (-1.1 to 2.5)	7.7 (7.1)	-0.1 (-1.7 to 1.5)	0.8	1.3 (-0.6 to 3.3)
Fine motor function (0-24)	17.7 (6.4)	-0.5 (-1.6 to 0.7)	16.4 (6.9)	-2.1 (-2.6 to -1.5)	1.6	1.8 (0.6 to 3.0)
Body weight (kg)	73.8 (16.5)	0.5 (-0.3 to 1.2)	74.6 (16)	-1.1 (-1.9 to -0.2)	1.5	1.5 (0.6 to 2.4)
Energy (kJ)	5979 (139)	481 (84 to 878)	6285 (167)	-420 (-713 to -127)	959	991 (504 to 1479)

*Adjusted for age, length of stay, sex, nursing home, and cluster effect of wards.

In most nursing homes, meals are individually served on trays in a non-stimulating social environment. Such meals provide task oriented care rather than resident oriented care.³ We assessed whether offering residents family style mealtimes (see bmj.com) would prevent a decline in quality of life, physical performance, and body weight compared with those receiving the usual pre-plated service.

Methods

Sixteen of 53 nursing homes that expressed an interest in our study were eligible (see bmj.com); five took part. Each nursing home had a control ward and an intervention ward with separate dining areas for each ward. The ward's name with the initial letter occurring first in the alphabet became the intervention ward. Admission of participants to the wards was independent of the ward's name.

A total of 282 residents were recruited from the five nursing homes (see bmj.com for exclusion criteria). New residents entered the wards when beds became vacant.

From the residents' files we collected information on sex, age, length of stay, number of drugs prescribed, diseases, and dietary supplements. Nutritional status was determined by using the mini nutritional assessment.⁴ This tool classifies nutritional status into three categories: malnourished, risk of malnutrition, and well nourished. Residents' height was derived using the formula $\text{height (cm)} = 3.16 \times \text{knee to floor height (cm)}$.

The intervention lasted for six months and consisted of table dressing (for example, tablecloths, glassware, flower arrangements); food services (meals served in dishes on the table, choice of foods); and protocols for the staff (sitting with residents and chatting during mealtimes), residents (balanced seating arrangements), and mealtimes (no other activities at mealtimes). The control wards maintained the individual pre-plated service, whereby the residents had to choose their menus two weeks beforehand. See bmj.com for fuller details of the interventions.

Outcome measurements

Although the intervention was implemented at ward level, we measured outcomes at individual level.

Quality of life

Quality of life was assessed using the validated Dutch quality of life of somatic nursing home residents questionnaire, which consists of five subscales representing quality of life dimensions: sensory functioning, physical functioning, psychosocial functioning, perceived autonomy, and perceived safety.⁵ The questionnaire consists of 50 statements, scored on a dichotomous scale (yes or no). Each subscale and the total questionnaire could be computed to a range of 0 to 100. A high score represents a high quality of life.

Physical performance

We used the nursing home physical performance test to assess physical performance.⁶ The residents carried out six tasks to assess gross and fine motor functions: tasks related to gross motor function were change from a sitting to standing position, putting on or taking off a sweater, and walking or using a wheelchair for six metres; fine motor functions were spooning apple sauce from one vertically oriented bowl to another, washing the face, and dialling a telephone. The score for each task could vary between 0 and 8, with a minimum score of 0 and a maximum score of 24 for both motor functions. The total score ranged from 0 to 48. A higher score means better physical performance.

Body weight and energy intake

We measured body weight using various scales (see bmj.com). Dieticians measured food intake with the observation and weighing back method during three days before and after the intervention.

Statistical analyses

Because the allocation procedure was carried out at ward level (cluster) we took into account that the outcome measures within the same ward were not independent of each other.⁷

We carried out data analyses with and without adjustments for age, length of stay, and sex. In further analysis the variable nursing home turned out to be a confounder, therefore we also adjusted all outcome measures for the effect of nursing home. In the text we provide data for the adjusted estimates.

Results

Overall, 250 of 282 invited residents took part in the study: 178 completed the programme (95 in the intervention group and 83 in the control group; see bmj.com).

The difference in changes in quality of life between both groups was significant (6.1 units, 95% confidence interval 2.1 to 10.3 units; table). The intervention group remained stable (0.4, -1.8 to 2.5) whereas the control group declined (-5.0, -9.4 to -0.6). This difference in change was also seen in physical functioning (5.1, 0.8 to 9.4), psychosocial functioning (7.3, 1.6 to 13.1), and perceived safety (16.6, 4.3 to 28.9). The changes within the groups were not different from each other for sensory functioning (3.6, -1.7 to 8.9) and perceived autonomy (2.1, -1.4 to 5.7).

Scores for physical performance were stable in the intervention group (0.2 units, -2.3 to 2.7 units) but declined significantly in the control group (-2.2, -4.1 to -0.4). The difference in change was mainly in the subscale fine motor function (1.8, 0.6 to 3.0), where the scores for controls declined significantly (-2.1, -2.6 to -1.5). No statistically significant changes were found for gross motor function.

Mean body weight remained relatively stable in the intervention group (0.5 kg, -0.3 to 1.2 kg) but decreased significantly in the control group (-1.1, -1.9 to -0.2). Changes in body weight between control and intervention groups were significantly different (1.5, 0.6 to 2.4).

Mean energy intake increased significantly in the intervention group (481 kJ, 84 to 878 kJ) but decreased significantly in the control group (-420, -713 to -127). Changes in energy intake between control and intervention group were significantly different (991, 504 to 1479).

Discussion

Family style mealtimes prevent a decline in the quality of life, physical performance, and body weight of nursing home residents without dementia.

Considering the low non-response (11%) and our inclusion criteria we conclude that the study population was representative of residents in Dutch nursing homes with a chronic somatic disorder. Earlier research showed that residents with dementia benefit from these kinds of intervention.⁸⁻¹⁰ Although we excluded this important group, we think that our principal conclusion may be extended to all nursing home residents.

Although many people support the idea that a warm and social ambience during mealtimes can contribute to the wellbeing of nursing home residents, only a small number of studies has measured its effects in a systematic way.⁸⁻¹⁵ Most of these concerned residents with cognitive impairment and with outcome variables that reflected changes in behaviour instead of changes in quality of life. The sample sizes in these studies were small (<30 participants).⁸⁻¹¹ Two other studies optimised ambience during mealtimes by changing the food delivery system and by focusing on outcome measures such as food intake and body weight.^{12 13} In both studies there were no statistically significant changes in body weight, which was probably

What is already known on this topic

Eating in the company of others significantly increases food intake

Family style mealtimes improve the mood of nursing home residents with dementia

What this study adds

Family style mealtimes improve the quality of life of nursing home residents without dementia

Improving the ambience at mealtimes prevents decline in physical performance and body weight

due to the short intervention periods (three months and 10 weeks).

Considering our simple method for optimising the ambience during mealtimes, the already low quality of life of the residents, and the limited prospect of discharge, the observed difference of 6 points (relative change = 10%) for quality of life is important. If we recalculated our estimates to proportions, then studies with the more drastic intervention of coronary artery bypass graft surgery had higher differences in physical functioning (25% *v* 13%) and social functioning (16% *v* 13%).¹⁴ However, in an activity stimulating programme for older community dwelling people and lay health mentoring in older people with ischaemic heart diseases the differences for physical functioning were similar (6.1 and 5.4) and were substantially lower for psychosocial functioning (0.4 and 4.4 *v* 7.4) than in our study.^{15 16}

The meals that we offered to the residents were of similar weight and nutrient content for both groups. The only difference was the timing of choice. This implies that the effects of the current intervention cannot be attributed to differences in food availability.

The protocol we used has to be considered as one package as we cannot say which part of the intervention had the most effect. This protocol was chosen on the basis of the Dutch situation, but there are other models to improve ambience during mealtimes, such as restaurant-type meals prepared by the residents.^{12 13 17}

As with most countries, Dutch nursing homes are limited by staff and budgets. Our intervention protocol did not necessitate extra staff or an increase in workload or costs of the meal. With motivated staff this programme is easy to achieve on a low budget.

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Underdosing of antiretrovirals in UK and Irish children with HIV as an example of problems in prescribing medicines to children, 1997-2005: cohort study

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Abstract

Objective To measure the extent of underdosing of antiretroviral drugs in children.

Design Multicentre cohort study.

Setting Clinical centres in hospitals in the United Kingdom and Ireland in the collaborative HIV paediatric study (CHIPS).

Participants 615 HIV infected children aged 2-12 years receiving antiretrovirals.

Main outcome measures Doses relative to weight and height compared with current recommended doses in 2004 European guidelines.

Results The CHIPS cohort of 934 children comprises 80% of diagnosed HIV infected children in the UK and Ireland between January 1997 and March 2005, of which 66% (615) aged 2-12 years were prescribed antiretrovirals. Actual doses standardised to weight or surface area varied widely across individual drugs, antiretroviral class, and calendar time, with children underdosed (prescribed less than 90% of current recommended doses) from 6-62% child time at risk. Three serious issues in prescribing antiretrovirals, which may also be relevant to paediatric prescribing in general, were identified. Firstly, dosing was inadequate before incorrect recommendations at licensing were later revised when important pharmacokinetic results emerged. Secondly, guidelines stating dosage alternatives (by weight/surface area) for the same drug led to different and inconsistent doses. And, thirdly, ongoing growth was not adjusted for.

Conclusions Largely inadvertently, HIV infected children in the United Kingdom and Ireland have been underdosed with antiretrovirals, highlighting problems applicable throughout paediatric prescribing.

Introduction

Most drugs have limited paediatric pharmacokinetic and pharmacodynamic data, partly due to a longstanding culture of resistance to enrolling children in clinical trials^{1,2} and the genuine difficulties of undertaking paediatric pharmacokinetic studies. Without age specific data, adult doses are often extrapolated without regard for age related differences in drug handling or requirements for effectiveness. Lack of acceptable formulations limits the precision with which doses can be prescribed to children as they grow. Postmarketing pharmacovigilance of most drugs licensed for children is limited at best, without legal obligation to monitor drugs prescribed off label (25% of drugs used in paediatric wards³).

Few published studies describe the scale or nature of the obstacles to accurate and effective paediatric prescribing. Antiretroviral prescribing to HIV infected children is a good example of some universal problems.

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Table A, showing the recommended doses, is on bmj.com