

# A comparison of Energy Provision by Diet Order in a Long-Term Care Facility

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## RÉSUMÉ

La perte de poids involontaire est courante chez les personnes âgées en Amérique du Nord et touche jusqu'à 60 pour cent des résidents des centres d'accueil, ce qui représente une menace pour la santé et l'équilibre fonctionnel. Une enquête portant sur la fourniture d'éléments nutritifs dans un centre de soins de longue durée (SLD) a indiqué que l'exposition moyenne à l'énergie totale au cours d'un cycle de menus couvrant cinq semaines présentait une différence importante entre le régime régulier et le régime d'aliments en purées, et que le niveau moyen d'exposition aux trois macronutriments était inférieur dans un régime d'aliments en purée. Ce qui prouve que les menus actuels des SLD fournissent moins d'aliments nutritifs à ceux qui reçoivent des d'aliments en purée et qu'il faudrait une enquête plus poussée dans ce domaine.

## ABSTRACT

Involuntary weight loss (IWL) is common in the North American elderly population and affects as many as 60 per cent of nursing home residents, representing a threat to health and function. Investigation into nutrient provision in a long-term care (LTC) centre showed that mean total energy exposure over the 5-week menu cycle differed significantly between regular and puréed diet orders, with lower mean levels of exposure to all three macronutrients on a puréed diet order. There is sufficient evidence that current LTC menus may provide fewer nutrients in those receiving puréed diets that further investigation in this area is warranted.

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## Introduction

Involuntary weight loss (IWL) is common in the North American elderly population (Lewko, Chamseddin, Zaky, & Birrer, 2003) and affects as many as 60 per cent of nursing home residents. (Bouras, Lange, & Scolapio, 2001) This can represent a threat to health and function and result in increased risk of infection and depression. Many long-term care (LTC) residents are prescribed changes in the composition of their diets. Of particular interest is the role that a puréed diet order may play in IWL. This paper attempts to answer the question of whether residents are provided with fewer calories as a result of this specific diet change.

## Nutrient Provision and Diet Order

The nutritional status of residents in LTC facilities has been a topic of investigation for many years, with ambiguous results. Numerous researchers have concluded that institutionalized LTC residents are exposed to satisfactory dietary energy levels but insufficient levels of certain vitamins and minerals, regardless of diet order (Johnson, Smiciklas-Wright, Soucy, & Rizzo, 1995; Wendland, Greenwood, Weinberg, & Young, 2003). However, actual energy intake levels were typically in the range of 1,000–1,500 kcal/d (Wendland et al., 2003) or were found to be generally appropriate (Johnson et al., 1995).

Johnson et al. (1995) compared the dietary intake of LTC residents for regular and puréed diet orders and found that, while those residents on a regular diet order typically consumed higher levels of energy and nutrients, the energy intake levels of both groups were satisfactory. However, the intake of these residents also included an oral nutritional supplement (OS), though the magnitude of this contribution was not identified.

Within the hospital setting, researchers have also concluded that elders consuming texture-modified diets have lower intakes of energy and protein when compared to those receiving a regular hospital diet order (Wright, Cotter, Hickson, & Frost, 2005).

### Oral Nutritional Supplementation

Investigations into the impact that OS have on total energy intake each day have yielded unclear results. Some have determined that OS use increases total daily energy and nutrient intake in LTC residents (Lauque et al., 2000; Payette, Boutier, Coulombe, & Gray-Donald, 2002), while others have found that long-term OS use decreases energy consumption in this population (Remburg, Sobel, Cohen, Koch, & Radu, 2001). What does appear consistent in the literature is that OS use typically alters mealtime and voluntary food intake. Some researchers have determined that OS may reduce mealtime food intake (Fiatarone Singh, et al., 2000; Remburg et al., 2001).

An accepted method of improving the intake of OS in long-term care facilities is to dispense them during the medication run (MR), though few studies support this routine. Assessment of this technique has found that, when compared with methods that allow free access to OS, the MR method actually decreased total supplement energy intake and total daily energy intake (Remburg et al., 2001), though no clear explanation was provided.

### A Comparison between Regular and Puréed Diet Orders

#### Methods

This study was conducted at a 70-bed rural LTC facility in Nova Scotia during the early part of 2006 and took place during a single cycle of the 5-week cycle menu. Actual energy exposure was determined using the Food Processor SQL software package. Energy exposure (kcal/d) included food provided on meal trays alone and did not include additional nutritional supplements. Duplicate trays were collected for all meals to confirm portion sizes as reported in the cycle menu. Energy exposure for those residents receiving a regular-diet-as-tolerated (DAT)

diet order ( $n = 19$ ) was compared with that for those receiving a puréed diet order ( $n = 8$ ), with regular, non-thickened beverages, throughout the 5-week cycle menu.

#### Results

The mean total energy exposure over the 5-week menu cycle differed as between the two diet orders. The mean energy provision was 2,120 ( $\pm 222$ ) kcal/d for the regular diet and 1,666 ( $\pm 78$ ) kcal/d for the puréed diet ( $p < 0.001$ ). Mean levels of exposure to all three macronutrients was lower in the puréed diets. Daily protein provision differed by 7 g, from approximately 74 ( $\pm 7$ ) g to 67 ( $\pm 2$ ) g ( $p < 0.001$ ), carbohydrate from approximately 320 ( $\pm 38$ ) g to 255 ( $\pm 6$ ) g ( $p < 0.001$ ) and fat from 63 ( $\pm 9$ ) g to 43 ( $\pm 7$ ) g ( $p < 0.001$ ). This difference in daily energy exposure on the resident meal trays, a difference of greater than 21 per cent, could have a profound impact on those LTC residents who require greater than average energy intake, particularly for those residents unable to articulate their desire for additional nutrient supplements. Tracking took place during one cycle of the 5-week cycle menu, but since the menu cycle repeated itself every 5 weeks, the differences in energy and macronutrient provision should not have differed significantly with each repetition. Although average values for daily energy requirements based on patient diet order have not been published in the academic literature, it is possible that residents receiving a puréed diet order are typically less ambulatory and less physically active than those receiving a regular diet order and thus require less energy each day. In addition, a puréed diet order is typically less varied than a regular diet order, and researchers have determined that greater dietary variation is associated with superior nutritional status in the elderly (Bernstein et al., 2002).

The findings in the present study are unique, as previous work in this area (Johnson et al., 1995) indicated that diet consistency does not affect nutrient intakes. The present study clearly showed that energy and nutrient exposure was lower for residents receiving a puréed diet order, assessed over the 5-week cycle menu in its entirety rather than for 7 consecutive days as in previous work.

This work supports the assertions of other researchers who have claimed that LTC menus based on Canada's Food Guide alone may result in malnutrition in this vulnerable population (Wendland et al., 2003), especially if the diet is puréed. It highlights the need for dietitians to remain diligent in their monitoring of the nutrient intakes and nutritional status of all residents in LTC facilities.

There are several limitations on this preliminary study. It was conducted on a small number of residents in a single LTC facility, thus the results cannot be generalized, but should be seen as stimulating further research in the area.

## Conclusion

This study suggests that LTC residents who receive puréed diet orders may obtain fewer nutrients than those receiving regular diet orders. Careful consideration is therefore needed when designing LTC menus and providing oral nutrition supplementation for residents.

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