

INTRODUCTION

Problem: Malnutrition in Long Term Care (LTC)

Prevalence of **malnutrition** is estimated between **40% to 80%** in North American LTC facilities^{1,2,3,4}

Poor food intake is the primary cause of malnutrition in LTC, however it is **confounded** by multi-level and multi-factorial causes^{5,6,7}

Research suggests **pureed foods** are associated with a high prevalence of malnutrition and weight loss in older adults^{2,9,10,11,12}

- **Implications** of malnutrition^{5,6,7}:
 - Impaired psychosocial well-being
 - Reduced functional status
 - Weight loss
 - Morbidities
 - Hospitalization
 - Poor quality of life
 - Mortality
- **Malnutrition is preventable and treatable**⁶



MAKING THE MOST OF MEALTIMES PROJECT

Cross-sectional, multi-site study across Canada

Aim: to determine associations between inadequate food and fluid intake among residents living in LTC and the multi-level and multi-factorial causes of this intake which leads to malnutrition within this population

Goal: to improve food and fluid intake and thus malnutrition

32 LTC homes recruited

- 8 homes per province
- 4 provinces (Alberta, Manitoba, Ontario, New Brunswick)
- Convenience sampling and diversity of homes

640 participants randomly recruited

- 20 residents per LTC home
- Eligibility criteria:
 - Over 65 years
 - Resided in randomly chosen units for minimum of one month

• Exclusion criteria:

- Medically unstable and/or short term admission
- Required tube feeding and/or end of life care



SPECIFIC RESEARCH QUESTION

Is the prescription of a pureed diet, as compared to a regular texture diet, independently associated with malnutrition indicators in residents of LTC homes included in the M3 study when diverse relevant covariates are considered?

DATA COLLECTION

- Data collected by 12 highly trained personnel, 4 dental hygienists, directors of food service, and other key personnel (e.g. Dietitians)
- Data obtained from standardized procedures and measurements (e.g. health records), examinations (e.g. oral exam), and interviews with staff (e.g. nurses, food service managers)

DATA MEASURES

Resident Level Data

Nutritional Status
• Mini Nutritional Assessment Short Form (MNA-SF) ^{13,14}
Body Mass Index (BMI)
• < 18.5 kg/m ² and ≥ 18.5 kg/m ²
Minimum Data Set and Resident Characteristics ¹⁵
• Resident Chart Review
Oral Health Rating
• Oral Health Screen

Collected for **3 meals per day over 3 non-consecutive days including a weekend day**

Weighed Dietary Intake

Average Length of Meal

Eating Assistance Provision

Collected for **1 meal per day over 3 non-consecutive days including a weekend day**

Eating and Feeding Issues

- Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED)¹⁶
- Other Eating Behaviours

Staff Level Data

Collected for **1 meal per day over 3 non-consecutive days including a weekend day**

Quality of Eating Assistance

- Relational Behaviour Scale¹⁷

Person Centered Care

Home and Provincial Level Data

Proportion of Commercial Food Use

Raw Food Cost Per Day Allocated to Each Resident

METHODOLOGY

Secondary Data Analysis

- **Multiple linear/logistic regression** analyses will be used to assess the independent associations of **malnutrition indicators** (MNA-SF score, BMI of <18.5 kg/m²) with the prescription of a pureed diet as compared to a regular texture diet
- Relevant **covariates** will be included (e.g. eating assistance quality, oral health, proportion of commercial food use)

SUMMARY

- The aim of this secondary data analysis will help to determine independent associations between malnutrition and modified texture diets in the Canadian LTC context
- The first rigorous study to assess relevant covariates at an in-depth level that confound malnutrition for those prescribed modified texture diets, specifically pureed diets, in Canadian LTC
- This study will help to understand and address the problem of malnutrition in LTC in order to change current practices and to inform future interventions and policies



REFERENCES

1. Statistics Canada. Analytical document: The Canadian Population in 2011: Age and Sex [Internet]. 2011. Available from: <http://www12.statcan.gc.ca/census-recensement/2011/as-sa/98-311-x/98-311-x0011001-eng.pdf>
2. Browne S. Why are elderly individuals at risk of nutritional deficiency. *Int J Nurs Pract.* 2006;12:110-8.
3. Humbert, Janessa A. R. Dysphagia in the elderly. *Phys Med Rehabil Clin N Am* 2008 November ; 19(4): 853-x doi:10.1016/j.pmr.2008.06.002. 2008; 19(4):11-13.
4. Nelson KL, Coulston AM, Sacher KP, Tseng RY. Prevalence of malnutrition in the elderly admitted to long-term-care facilities. *J Am Diet Assoc.* 1993;93(4): 459-61.
5. Albaas AA, Rudman D. Undernutrition in the nursing home: prevalence, consequences, causes and prevention. *Nutr Rev.* 1994;52(4):113-22.
6. Hickson M. Malnutrition and aging. *Postgrad Med J [Internet].* 2006 Jun [cited 2014 Mar 19];82(963):2-8. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2563720&tool=pmcentrez&renderertype=abstract>
7. Wendland B. Malnutrition in Institutionalized Seniors: The Iatrogenic Component. *J Am Geriatr Soc [Internet].* 2003 [cited 2014 May 30];51(1):85-90. Available from: <http://onlinelibrary.wiley.com/doi/10.1046/j.1501-2215.2002.51015.x/full>
8. Keller H, Carrier N, Duizer L, Lengyel C, Slaughter S, Steele C. Making the most of mealtimes (M3): grounding mealtime interventions with a conceptual model. *J Am Med Dir Assoc [Internet].* American Medical Directors Association, Inc.; 2014 Mar [cited 2014 Apr 11];15(3):158-61.
9. Germain L, Dufresne T, Gray-Dondard K. A Novel Dysphagia Diet Improves the Nutrient Intake of Institutionalized Elders. *J Am Diet Assoc.* 2006;106:1614-23.
10. Foley NC, Martin RE, Salter KL, Teasell RW. A review of the relationship between dysphagia and malnutrition following stroke. *J Rehabil Med.* 2009;41:707-13.
11. Nelson KL, Coulston AM, Sacher KP, Tseng RY. Prevalence of malnutrition in the elderly admitted to long-term-care facilities. *J Am Diet Assoc.* 1993;93(4): 459-61.
12. Tamura BK, Bell CL, Masaki KH, Amella EI. Factors associated with weight loss, low BMI, and malnutrition among nursing home patients: a systematic review of the literature. *J Am Med Dir Assoc [Internet].* Elsevier Ltd; 2013 Oct [cited 2014 Mar 31];14(9):649-55.
13. Guigoz Y. The Mini Nutritional Assessment (MNA) review of the literature—What does it tell us? *J Nutr Health Aging.* 2006;10(6):466-85; discussion 485-7.
14. Guigoz Y. Identifying the elderly at risk for malnutrition: The Mini Nutritional Assessment. *Clin Geriatr Med.* 2000;16(4):737-57.
15. Keller H, Hirdes JP. Using the Minimum Data Set to determine the prevalence of nutrition problems. *Can J Diet Pract Res.* 2000;61(4):165-71.
16. Watson R, Deary IJ. Feeding difficulty in elderly patients with dementia: confirmatory factor analysis. *Int J Nurs Stud.* 1997;34(6):405-14.
17. McElilton KS, Saitan S, Boscart VM, Guigoz Y, Brown M. The relationship between care providers' relational behaviors and residents' mood and behavior in long-term care settings. *Aging Ment Health.* 2012;16(4):507-15.