

# Moderate Nutritional Risk among Community-Dwelling Canadian Older Men in the Manitoba Follow-up Study (MFUS)

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## INTRODUCTION

- The first step in identifying nutrition risk in older adults is through nutrition screening.
- Nutrition screening can be defined as "a process to identify an individual who is malnourished or who is at risk for malnutrition to determine if a detailed nutrition assessment is indicated" (Mueller, 2011).
- There are differing protocols set in place for community nutrition screening tools most commonly used in nutrition practice and for those who score as either low, medium and high nutrition risk.
- Trajectory analysis is used in longitudinal studies to subdivide the research sample into distinct groups to identify clusters of individuals who encompass similar trajectories overtime.
- Five nutritional risk trajectory categories were identified for the MFUS participants (all males): 1) Low (L); 2) Moderate (M); 3) Moderate-Increase (MI); 4) High (H) and 5) High-Increase (HI) (Lengyel et al., 2017)
- The protocol for those who score as moderate nutritional risk is often times less aggressive than the protocol for those who screen as high nutritional risk. Most often, individuals who score as moderate nutritional risk are placed lower on the priority list; often they get left alone or reassessed less frequently than individuals who score as high nutritional risk.
- Based on the Lengyel et al. (2017) results, this study will take a closer look at the older adult men who participated in the MFUS in 2007 and scored as moderate nutritional risk but then fall into two out of the five trajectory groups identified:
  - moderate risk (M) and;
  - moderate-increase risk (MI)

## OBJECTIVES

- To examine characteristic differences between MFUS participants at 2007 to predict trajectory group classification
- To compare the 16-nutrition risk (NR) items on SCREEN II among the two groups at 2007 to identify specific NR items that better predict trajectory group allocation
- To determine NR items that showed the biggest decline over a 4-year period among those in the MI trajectory group

## METHODOLOGY

- SCREEN II Survey
  - SCREEN II (Seniors in the Community: Risk Evaluation for Eating and Nutrition) is a validated nutritional risk screening tool for community-living older adults (Keller, Goy & Kane, 2005)
  - Nutritional Risk (NR) scores were calculated from 16 components
- Assessing Nutritional Risk in MFUS Cohort:
  - Five SCREEN II surveys from 2007-2011
    - In 2011, 336 men
    - Age of respondents (Mean ± SD): 90.2 years ± 3.1
      - 117 men in the M Trajectory Group
      - 49 men in the MI Trajectory Group
- Data Analysis
  - Trajectories of nutritional risk scores: semi-parametric group-based trajectory approach
  - Descriptive characteristics: t-tests and  $\chi^2$
  - M and MI NR items comparison in 2007:  $\chi^2 p < 0.05$
  - NR items that decline from 2007-2011 amongst MI trajectory group:  $\chi^2$

## Manitoba Follow-up Study (MFUS)

- Longest-running prospective longitudinal study of cardiovascular disease in Canada
- Cohort sealed on July 1, 1948 with 3,983 men
  - Royal Canadian Air Force aircrew recruits
  - Mean age at baseline 31y, with 90% of cohort 20-39y of age
- Primary objective has been to monitor morbidity and mortality of cardiovascular disease
- During the 1990s the study's focus on cardiovascular epidemiology shifted to examining issues of aging
  - Successful Aging Questionnaires (SAQ) administered in 1996, 2000, 2002, and annually 2004-2015
- After 70 years of follow-up, 180 men were alive, at a mean age of 96 years (July 1, 2017)
- This study has approval from the University of Manitoba Health Research Ethics Board
- Thanks to the members of the Manitoba Follow-up Study for their continuous participation and enthusiasm.
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## RESULTS

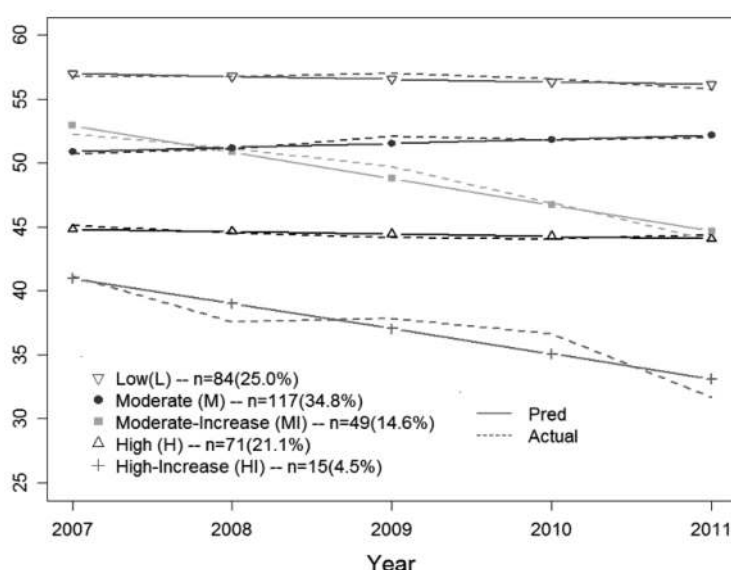


Figure 1. Trajectories of Nutritional Risk among very Old Community-Dwelling Men

Table 1. Descriptive Characteristics in 2007 of The MFUS Participants by Nutritional Risk Trajectory Group (n=166)

	Nutrition Risk Trajectories		p-value
	Moderate (M) n = 117	Moderate-Increase (MI) n = 49	
Age, mean (SD) <sup>2</sup>	86.0 (3.2)	86.2 (2.8)	0.74
SF-36 MCS, mean (SD)	55.8 (7.5)	55.5 (7.2)	0.86
SF-36 PCS, mean (SD)	42.9 (9.9)	42.8 (9.1)	0.91
BMI, mean (SD)	25.1 (2.9)	25.2 (3.1)	0.79
Live alone, n(%)	17%	22%	0.41
Married	79%	71%	0.32
Pre-existing health conditions:			
Ischemic Heart Disease	16.2%	24.4%	0.21
Stroke	6.0%	6.1%	-
Diabetes	6.8%	4.1%	-
C.O.P.D.	1.0%	2.0%	-
Peripheral Artery Disease	6.0%	4.1%	-
Cancer	8.6%	14.3%	0.26
Self-rating on how healthy their diets are	75.5 (19.2)	78.6 (19.8)	0.38
Self-rating of the importance Nutrition has on healthy aging	83.1 (18.6)	85.6 (13.4)	0.40
Aged successfully, n(%)	84.6%	81.6%	0.63

Table 2. Participants in the Moderate and Moderate-Increase Trajectory Groups Scoring in the 'Best' Category on each of the SCREEN II Items in 2007

SCREEN II Item	M (Moderate) n = 117	MI (Moderate-Increase) n = 49	p-value
Weight has stayed the same for the past 6 months	72%	90%	0.08
Succeeded in trying to change weight in the past 6 months	91%	98%	0.20
Thinks their weight is 'just right'	64%	71%	0.36
Never skips meals	83%	92%	0.19
Eats most foods (without limitations or avoidances)	63%	71%	0.47
Has a good or very good appetite	92%	96%	0.75
Eats five or more fruits and vegetables a day	23%	22%	0.99
Eats two or more meat and/or meat alternatives a day	13%	22%	0.29
Consumes two or more milk products a day	47%	39%	0.07
Drinks between five – seven cups (or more) of fluid per day	65%	57%	0.66
Never coughs, chokes or experiences pain when swallowing food or fluids	60%	61%	0.70
Never experiences biting or chewing food difficulty	64%	65%	0.39
Never or rarely uses commercial meal replacements or supplements	71%	88%	0.02
often or almost always eats with one or more meals with someone	86%	86%	0.12
Enjoys cooking/satisfied with the quality of food prepared by others	79%	82%	0.44
Never or rarely experiences problems procuring groceries	95%	98%	0.48

Table 3. Participants in the Moderate-Increase Trajectory Group with a Decline in Their Response from 2007 and Each Year After

Nutritional Risk Items on SCREEN II	% Showing decline over four years				
	2007	2008	2009	2010	2011
Weight change in past 6 months	44 (90%)	9 (20%)	8 (18%)	14 (32%)	19 (43%)
Trying to change weight in past 6 months	48 (98%)	3 (6%)	5 (10%)	12 (25%)	13 (27%)
Perceptions of weight as being 'just right'	35 (71%)	10 (29%)	12 (34%)	16 (46%)	18 (51%)
Meals skipped	45 (92%)	6 (13%)	10 (22%)	13 (29%)	17 (38%)
Limit or avoid certain food	35 (71%)	6 (17%)	6 (17%)	8 (23%)	9 (26%)
Appetite*	47 (96%)	11 (23%)	16 (34%)	18 (38%)	23 (49%)
Consumption of fruits and vegetables/day	11 (22%)	5 (45%)	6 (55%)	6 (55%)	10 (91%)
Consumption of meat and/or alternatives/day	11 (22%)	8 (73%)	6 (55%)	7 (64%)	7 (64%)
Consumption of milk products/day*	19 (39%)	5 (26%)	8 (42%)	7 (37%)	8 (42%)
Fluid consumption/day*	28 (57%)	9 (32%)	14 (50%)	16 (57%)	19 (68%)
Cough, choke or pain when swallowing food or fluids	30 (61%)	8 (27%)	8 (27%)	13 (43%)	14 (47%)
Biting or chewing food difficulty	32 (65%)	12 (38%)	8 (25%)	11 (34%)	15 (47%)
Use of commercial meal replacements or supplements	43 (88%)	12 (28%)	14 (33%)	12 (28%)	20 (47%)
Eating one or more meals a day with others*	42 (86%)	5 (12%)	8 (19%)	15 (36%)	16 (38%)
Meal preparation	40 (82%)	5 (13%)	9 (23%)	10 (25%)	16 (40%)
Problems getting groceries	48 (98%)	4 (8%)	7 (14%)	9 (18%)	17 (35%)

Legend  
**Red** = >50% declined  
**Yellow** = Moderate decline  
**Green** = Minimal decline

## CONCLUSION/IMPLICATIONS

- Individuals who screen as moderate nutritional risk are at an increased risk for nutritional decline over a four-year period
- Individuals who screened as moderate nutritional risk should be reassessed as often as individuals who fall into the high nutrition risk category
- The SCREEN II items: perceptions of weight as being just right, appetite, fruit and vegetable consumption and meat/alternative per day along with daily fluid intake, showed more than 50% decline over a four-year period. These items should be monitored more closely as indicators for possible decline in nutrition risk especially for men with moderate decline