

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**An Investigation of Nutrition Risk among Hospitalised
Older Adults Admitted to the
Assessment, Treatment and Rehabilitation Wards
of Waitemata District Health Board Hospitals**

A Thesis Presented in Partial Fulfilment of the
Requirements for the Degree of

Master of Science in Nutrition and Dietetics

Massey University, Albany

New Zealand

Darshan Arvind Patel

2016

Abstract

Background: The proportion of older adults in New Zealand is increasing. Studies shows compromised nutrition status is prevalent in older adults, and can exacerbate poor health. It is therefore important to identify those who are malnourished, or those who are at nutrition risk for early nutrition intervention. Nutrition screening tools allow for the identification of nutrition risk status and initiation of nutritional care to result in improved health outcomes. Current data on the prevalence of nutrition risk in hospitalised older adults in New Zealand is limited.

Design: Cross-sectional, observational study as part of a multicentre prospective study.

Aim: To investigate the prevalence of nutrition risk among older adults (65-84 years) in the Assessment, Treatment and Rehabilitation (AT&R) wards of North Shore and Waitakere Hospitals. Potential nutrition risk factors including dysphagia risk, muscle mass and hand grip strength will also be investigated, as well as other relevant physiological and socio-demographic risk factors.

Methods: Participants were recruited within five days of admission to the AT&R wards. Face-to-face interviews and assessments were conducted on the wards. A questionnaire incorporating participant characteristics, health and support data and validated screening and assessment tools were used. Nutrition risk status was assessed by the Mini Nutrition Assessment-Short Form, dysphagia risk status was assessed by the Eating Assessment Tool, cognitive status was assessed by the Montreal Cognitive Assessment and muscle mass was assessed by bioelectrical impedance analysis. Hand grip strength was measured using a hydraulic dynamometer.

Results: A total of 89 participants took part in the study. Nutrition risk and malnutrition was evident in 43.8 and 27.0 percent of the study participants respectively. Indicated by the Mini-Nutrition Assessment-Short Form, participants with poor nutritional status were more likely to report reduced food intake, unintentional weight loss, requiring aid with activities of daily living, having previous dietetic input and being at risk of dysphagia compared to participants with 'normal' nutritional status.

Conclusion: A high percentage of hospitalised older adults recently admitted to the AT&R wards had compromised nutritional status. Routine screening is highly advised to identify nutritional risk and instigate nutritional care.

Keywords: Older Adults, Nutrition Status, MNA-SF, Dysphagia, Muscle Mass, Muscle Strength, AT&R ward

Acknowledgments

This research project would not have been possible without the help and support of so many people in so many ways. I would like to express my sincere gratitude to everyone who has helped and encouraged me in the past two years during this thesis project.

I would first like to thank my supervisors, Dr Carol Wham and Dr Marilize Richter, for their tremendous assistance, invaluable guidance on the research process, and for sharing their extensive knowledge on statistics, nutrition and older adults.

I would also like to thank Dr Jacqui Allen and Dr Cheryl Johnson for their assistance and providing the opportunity to conduct this research.

I am also grateful to the healthcare staff in the AT&R wards of Waitemata and North Shore Hospitals for being accommodating in regards to data collection.

I would like to acknowledge all the participants in this research for their contributions, willingness to engage and for sharing their stories with me.

I would also like to thank my classmates whom I shared an incredible two years with. It was a pleasure to experience this journey with you all.

Thank you to all my friends, in particular Nick Draganow, Alex Cossio, Vimal Patel and Jimmy Liu for their continued encouragement, belief in me and their unenthusiastic help in proofreading the thesis.

To my family, for their unwavering love and support. I could not have done this without them.

I thank you all from the bottom of my heart.

Table of Contents

Abstract.....	i
Acknowledgments.....	iii
Table of Contents.....	iv
List of Tables.....	vi
List of Figures.....	vii
Abbreviations.....	viii
Chapter 1: Introduction.....	1
Chapter 2: Literature Review.....	4
2.1 Ageing in New Zealand.....	4
2.2 Health Care Service and Cost Implications.....	7
2.3 Hospitalisation with Ageing.....	8
2.4 Ageing in Place.....	9
2.5 Health and Ageing.....	10
2.6 Nutrition and Ageing.....	17
2.7 Malnutrition.....	22
2.8 Factors Affecting the Nutritional Health of Older People.....	24
Chapter 3: Methods.....	37
3.1 Aims and Objectives.....	37
3.2 Study Design.....	37
3.3 Setting.....	37
3.4 Ethics.....	38
3.5 Recruitment of Participants.....	40
3.6 Data Collection.....	41
3.7 Data Handling and Statistical Analysis.....	49
Chapter 4: Results.....	50
4.1 Participant Characteristics.....	50
4.2 Participant Anthropometric, Muscle Mass and Grip Strength Measures.....	52
4.3 Health and Medications.....	53
4.4 Dental Characteristics and Dysphagia Status (EAT-10).....	55
4.5 Support Services.....	56
4.6 Participant Cognition.....	57
4.7 Nutrition Risk Status (MNA-SF).....	58

4.8 Nutrition Risk Associations	61
Chapter 5: Discussion.....	66
5.1 Nutrition Risk Prevalence.....	66
5.2 Nutrition Risk Factors.....	68
5.3 Dysphagia Risk Status and Prevalence	70
5.4 Muscle Mass & Strength.....	71
5.5 Strengths of the Study.....	73
5.6 Limitations of the Study.....	74
Chapter 6: Conclusion and Recommendations	77
6.1 Aim of the Research	77
6.2 Main Findings and Recommendations	77
References.....	82
Appendices.....	91

List of Tables

Table 1: Nutrient Reference Values for Older New Zealand Adults

Table 2: The Four Food Groups: Advice on Servings and Nutrients for Healthy Older Adults

Table 3: Participant Characteristics

Table 4: Participant Anthropometric, Muscle Mass and Grip Strength Measures

Table 5: Regular Prescribed Medications

Table 6: Dental Status of Study Participants

Table 7: Dysphagia Risk Status

Table 8: Support Service Use and Previous Dietetic Input

Table 9: Cognitive Status

Table 10: MNA-SF Scores of Study Participants

Table 11: MNA-SF Participant Specific Answers

Table 12: Associations between Nutrition Risk Prevalence and relevant Physiological and Socio-demographic Risk Factors

List of Figures

Figure 1: Age distribution of population as percentage of total population from 1948 – 2068

Figure 2: Factors contributing to nutrition-related health

Figure 3: The InBody 230 BIA scales and printer set up

Figure 4: Correct form and position of participant on the BIA scales

Figure 5: Dysphagia Status and Nutrition Status

Figure 6: Previous Dietetic Input and Nutrition Status

Abbreviations

Abbreviation	Definition
ADL	Activities of Daily Living
AT&R	Assessment, Treatment and Rehabilitation
BIA	Bioelectrical Impedance Analysis
BMI	Body Mass Index
DHB	District Health Board
EAT-10	Eating Assessment Tool
IADL	Instrumental Activities of Daily Living
IHD	Ischaemic Heart Disease
Kg	Kilogram
MCI	Mild Cognitive Impairment
MNA	Mini Nutritional Assessment
MNA-SF	Mini Nutrition Assessment – Short Form
MoCA	Montreal Cognitive Assessment
MoH	Ministry of Health
MoW	Meals on Wheels
NZ	New Zealand
WDHB	Waitemata District Health Board
WHO	World Health Organisation