

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.

The barriers to surgical patients' oral intake in the acute hospital setting

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.

Olivia Stone

2018

Abstract

Background: Hospital patients worldwide often do not eat all of their meals, resulting in suboptimal food intakes. These patients are more likely to experience numerous undesirable health outcomes as a consequence of not meeting their nutritional requirements.

Aim: To investigate the barriers to surgical patients' oral intake in an acute hospital setting in New Zealand (NZ).

Objectives: To conduct a pilot study to test the usability of the validated Patient Mealtime and Nutrition Care Survey (PMNCS) in a NZ setting, and to adapt the PMNCS to include the most relevant barriers to oral intake in NZ. Further, to conduct a feasibility study to test the effectiveness of the NZ-PMNCS independently, and paired with patient meal observations to confirm the effectiveness of the tool.

Methods/Design: A single-centre cross-sectional study conducted at North Shore Hospital, NZ. A sample of 100 surgical in-patients participated in the pilot study and 65 patients in the feasibility study.

Results: The most frequently reported barriers were food brought into the hospital by visitors (81.5%) and a loss of appetite (70.8%). Six barrier domains were explored revealing significant findings for: younger (<65 years) compared to older (≥ 65 years) age associated with more hunger domain barriers (1.47 ± 0.81 versus 0.90 ± 0.67 , $P=0.003$); longer (>5 days) versus shorter (≤ 5 days) length of stay associated with more food quality domain barriers (1.20 ± 1.26 versus 0.40 ± 0.81 , $P=0.003$). Comparing the NZ-PMNCS and meal observation results showed that patients consuming $\leq \frac{1}{2}$ of their meals more frequently reported inability to make informed menu choices (50.0%) ($P=0.027$) and that consumption of their prescribed nutritional supplements affected their food intake negatively (50%) ($P=0.001$).

Conclusion: Compared to earlier studies using previous versions of the PMNCS, the NZ-PMNCS captured similar results in the NZ hospital setting. Key issues identified include a younger age being associated with experiencing more hunger domain barriers, and patients consuming less food experienced difficulty choosing menu options and found prescribed nutritional supplements interfered with their food intake. The NZ-PMNCS was practical to use and feasible in identifying barriers to food intake. These findings could contribute to changing practices to improve hospital food intake.

Keywords: barriers, oral intake, foodservice, surgical patients, hospital

Acknowledgements

There are numerous people that I would like to acknowledge for their contributions throughout my research project. I would like to start by thanking the 165 patients at North Shore Hospital, who participated in this study, for volunteering their time. Without sharing their honest thoughts and experiences this project would not have been possible.

I would like to thank my Massey University supervisors Rozanne Kruger and Deirdre Johnson, you have been incredibly supportive over the last two years and I have enjoyed working with you both. Rozanne, thank you for your guidance and feedback, your wealth of knowledge has been extremely helpful from the beginning to the end of this project. Deidre, thank you for your encouragement and input getting this project started. To the wider Massey University staff within the Institute of Food, Nutrition and Human Health, your help along this journey has not gone unnoticed.

I owe another thank you to my Medirest supervisor, Laura Mash, and advisor, Charlotte Moor. Laura, thank you for all of the advice, from a foodservice point of view, you have given throughout the duration of this project. Charlotte, I appreciate all of the help you provided coordinating and getting this research project up and running.

To the Charge Nurse Managers, Susan Johnston, Roslyn Bell, Frances Scheirlinck and Suzanne Huskinson, thank you for allowing me to be in and amongst your wards. I appreciate you all taking time out of your busy schedules to facilitate data collection. Thank you also to Roslyn Norrie, for coordinating all foodservice related matters at North Shore Hospital.

I would like to thank all of my class mates for your continual support. I look forward to progressing onto the next chapter in our lives. I can't wait to see what the future holds for each and every one of us.

To my family, Mum, Dad and Hamish, I don't think this would have been possible without you. You have provided me with so much encouragement and continually kept me motivated throughout this research project. I don't know if I can ever repay you for your assistance and ongoing emotional and financial support! Lastly, to all of my friends who constantly reminded me that anything was possible, you mean so much to me.

Table of Contents

Abstract	ii
Acknowledgements	iii
List of Tables	vi
List of Figures	vii
Abbreviations	viii
Chapter 1. Introduction	1
1.1 Background	1
1.2 Purpose of the study	5
1.3 Aim	6
1.4 Objectives	6
1.5 Thesis structure	6
1.6 Researchers' contributions	7
References	8
Chapter 2. Literature Review Manuscript	11
2.1 Nutrition in the hospital setting	11
2.1.1 Oral intake	11
2.1.2 Energy requirements	11
2.1.3 Protein requirements	12
2.2 The consequences of poor nutrition	13
2.2.1 Weight loss and muscle wasting	13
2.2.2 Malnutrition	13
2.2.3 Length of stay	14
2.2.4 Readmissions	15
2.2.5 Morbidity and quality of life	15
2.2.6 Mortality	16
2.2.7 Hospital resources	16
2.3 Nutrition in surgical patients	17
2.4 The barriers to patients eating	19
2.4.1 Organisational barriers	20
2.4.2 Choice	21
2.4.3 Hunger	21
2.4.4 Eating difficulties	22
2.4.5 Quality and satisfaction	22
2.4.6 Effects of illness on food intake	24
References	25
Chapter 3. Research Study Manuscript	32
3.1 Abstract	32
3.2 Introduction	34
3.3 Methods	35
3.4 Results	39
3.5 Discussion	56
3.6 Conclusion	66
3.7 Acknowledgements	66
3.8 Author contributions	66
3.9 Conflicts of interest	66

References.....	67
Chapter 4. Conclusions and Recommendations	73
4.1 Overview and conclusions.....	73
4.2 Strengths	75
4.3 Limitations	75
4.4 Recommendations for practice.....	76
4.5 Recommendations for future research.....	77
References.....	79
Appendix A. Supplementary Results.....	80
A.1 Pilot study results.....	80
A.2 Feasibility study results.....	83
Appendix B. Research Approval	86
B.1 Massey University Human Ethics Committee (MUHEC) Review.....	86
B.2 Health and Disability Ethics Committee (HDEC) Review.....	87
B.3 Māori Research Committee Review.....	89
B.4 Awhina Research and Knowledge Centre Locality Approval	92
Appendix C. Additional Materials.....	96
C.1 Participant Information Sheet: Pilot Study	96
C.2 Participant Information Sheet: Feasibility Study	98
C.3 Participant Consent Form: Pilot Study	100
C.4 Participant Consent Form: Feasibility Study	101
C.5 Participant Background Information Sheet: Pilot Study	102
C.6 Participant Background Information Sheet: Feasibility Study	104
C.7 Patient Mealtime and Nutrition Care Survey (PMNCS)	107
C.8 New Zealand Patient Mealtime and Nutrition Care Survey (NZ-PMNCS).....	110

List of Tables

Chapter 1. Introduction

Table 1.1: Clinical consequences of progressive under-/ malnutrition demonstrated in scientific studies (Löser, 2010).....	3
Table 1.2: Researchers' contributions towards the research project.	7

Chapter 3. Research Study Manuscript

Table 3.1: Summary of demographic information including patient, care and hospital characteristics	39
Table 3.2: Prevalence of food related barriers, for the total patient sample and short/ long stay patients, within food intake barrier domains	42
Table 3.3: Patient gender, age, length of stay, stage of admission and type of surgery associations with food intake barrier domains	45
Table 3.4: Patient ward, diet codes, intake and bowel motion associations with food intake barrier domains.....	46
Table 3.5: Prevalence of patient opinions and comments.....	48
Table 3.6: Meal observations associated with patient, care and hospital characteristics	49
Table 3.7: Proportional intake of patients' food during meal observations	52
Table 3.8: Prevalence of food related barriers within food intake barrier domains compared to patients' food intake during their meal observation	53

Appendix A. Supplementary Results

Table A.1: Summary of demographic information including patient, care and hospital characteristics for the pilot study	80
Table A.2: Prevalence of food related barriers, for the pilot study, within food intake barrier domains.....	81
Table A.3: Prevalence of patient opinions for the pilot study	82
Table A.4: Proportion of meal components consumed by patients	83
Table A.5: Case-by-case analysis for the seven patients who proportionally consumed between none to $\frac{1}{4}$ of the delivered food during the meal observation	84
Table A.6: Types of food brought into the hospital for patients.....	85

List of Figures

Chapter 1. Introduction

Figure 1.1: Mutual relations between nutritional status, underlying disease, and complications during the course of the disease (Naber et al., 1997).....2

Chapter 3. Research Study Manuscript

Figure 3.1: Visual representation of the two phases of research36

Figure 3.2: Photographic example of a patient who proportionally consumed between none to $\frac{1}{4}$ of their meal.....50

Figure 3.3: Photographic example of a patient who proportionally consumed between $\frac{1}{4}$ to $\frac{1}{2}$ of their meal51

Figure 3.4: Photographic example of a patient who proportionally consumed between $\frac{1}{2}$ to $\frac{3}{4}$ of their meal51

Figure 3.5: Photographic example of a patient who proportionally consumed between $\frac{3}{4}$ to all of their meal52

Abbreviations

ANCDs - Australasian Nutrition Care Day Survey

BMI - Body Mass Index

CI - Confidence Interval

HDEC - Health and Disability Ethics Committee

MAT - Mealtime Audit Tool

MST - Malnutrition Screening Tool

MUHEC - Massey University Human Ethics Committee

NBM - Nil by Mouth

NZ - New Zealand

NZ-PMNCS - New Zealand Patient Mealtime and Nutrition Care Survey

ONS - Oral Nutritional Supplements

PMNCS - Patient Mealtime and Nutrition Care Survey

PONV - Postoperative Nausea and Vomiting

RDI - Recommended Daily Intake

REE - Resting Energy Expenditure

RR - Relative Risk

SD - Standard Deviation

SE - Standard Error

SGA - Subjective Global Assessment

SPSS - Statistical Package for the Social Sciences

TPN - Total Parenteral Nutrition

UK - United Kingdom

USA - United States of America

WDHB - Waitemata District Health Board