

**Physical Activity and Health Literacy in Women Diagnosed with
Breast Cancer**



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

Leigh Clair Plummer

Bachelor of Arts

Bachelor of Arts (Psychology) Honours

Psychologist (Registered) PSY0001628043

Thesis submitted for the degree of
Doctor of Clinical and Health Psychology

School of Psychology

The University of Newcastle

New South Wales, AUSTRALIA

March 2016

Statement of originality

The thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to the final version of my thesis being made available worldwide when deposited in the University's Digital Repository, subject to the provisions of the Copyright Act 1968.

Statement of Authorship

I hereby certify that the work embodied in this thesis contains a paper of which I am a joint author. I have included as part of the thesis a written statement, endorsed by my supervisor, attesting to my contribution to the joint paper.

Leigh Clair Plummer

Supervisor's statement

I confirm that Leigh Plummer was fully involved in all aspects of the research project including literature review, planning, data collection, collation and analysis, as well as in the preparation of the submitted manuscript.

Dr Kerry Chalmers

Acknowledgements

I would like to express my sincere gratitude to my supervisor, Dr Kerry Chalmers, for her expertise and support she has provided throughout the entire process. Without your knowledge, understanding and assistance, I would not have been able to complete this thesis.

A special thank you goes to Dr Sue McConaghey. Your supervision and support have been incredibly valuable.

To my family and friends, you have been my rock throughout the entire journey. In particular, I would like to thank my mother, father and sisters for your encouragement and support. Your belief in me is what kept me going.

I would like to say a very special thank you to my husband, Kristan. You have been by my side every step of the way providing me with support, patience and words of wisdom. I doubt that I will ever be able to convey how truly grateful I am.

Table of Contents

List of Figures	13
Structured Abstract	15
Scope	15
Purpose	15
Methodology	19
Results	21
Conclusion	23
Literature Review	25
Breast Cancer in Australia	25
Physical Activity and Breast Cancer	26
Reduction in risk factors in women diagnosed with breast cancer.	26
Positive effects of physical activity on physical and psychosocial factors in women diagnosed with breast cancer.	29
Recommended Levels of Physical Activity	32
Participation in Physical Activity in Women Diagnosed with Breast Cancer	34
Factors Associated with Participation in Physical Activity After a Diagnosis of Breast Cancer	37
Health Literacy	41
Health literacy and health literacy responsiveness.	42
Measuring health literacy	43
Health Literacy in the General Population	44
Health literacy and the association with physical health and illness.	45
Health literacy and the association with psychological factors.	46
Health literacy and the association with hospitalisation and mortality.	47
Health literacy and the association with health behaviours.	47

Health Literacy and the Association with Physical Activity	48
Summary	50
Present Research	51
An Overview of the Remainder of this Thesis	53
Journal Article: Submitted Manuscript for Consideration	54
Abstract.....	55
Background	56
Method	58
Results	60
Discussion	61
References	65
Extended Discussion.....	73
Physical Activity After the Completion of Treatment for Breast Cancer	73
Relationship Between Health Literacy and Physical Activity After Completion of Treatment.....	74
Health literacy questionnaire.	74
Nutbeam's health literacy levels.	76
Change in Physical Activity from Before Diagnosis to After Treatment.....	77
The Relationship Between Health Literacy and Change in Physical Activity....	78
Implications for Provision of Health Care.....	78
Limitations and Future Directions.....	79
Conclusion.....	81
References	83

Appendices List and Content	95
APPENDIX A.1.....	98
Ethics Approval: Human Research Ethics Committee, The University of Newcastle	
APPENDIX A.2.....	103
Ethics Approval: Central Coast Local Health District Research Office	
APPENDIX B.1.....	105
Health Literacy Questionnaire Licence	
APPENDIX C.1.....	106
Extended Methodology: Participant Recruitment	
APPENDIX C.2.....	108
Extended Methodology: Recruitment Materials	
APPENDIX C.3.....	118
Extended Methodology: Interview Protocol	
APPENDIX C.4.....	121
Extended Methodology: Pre-Clinical Interview Questions	
APPENDIX C.5.....	125
Extended Methodology: Data not Included in the Analyses	
APPENDIX D.1.....	127
Extended Analyses and Discussion	
APPENDIX E.1.....	149
Scope of the Psycho-Oncology Journal	
APPENDIX E.2.....	150
Guidelines for Authors	
APPENDIX E.3.....	155
Evidence of Journal Submission	

List of Tables

Journal Article

Table 1. Participant Characteristics	70
Table 2. Mean Score (and Standard Deviation) for each Health Literacy Scale and its Correlation with Physical Activity	71
Table 3. Stepwise Regression Results for Health Literacy as a Predictor of Physical Activity	72

Appendices

Table D.5.1: Health Literacy Means (M) and Standard Deviations (SD) Before Diagnosis and After Treatment and t-test Results for Significance of Change in Health Literacy Questionnaire Scales.....	136
Table D.5.2: Correlations Between the Health Literacy Questionnaire Scales and Physical Activity	138
Table D.5.3: Stepwise Regression Results for Health Literacy Questionnaire Scales Before a Diagnosis as a Predictor of Physical Activity (PA) Before Diagnosis and Change in PA.....	139
Table D.5.4: Stepwise Regression Results for Health Literacy Questionnaire Scales After Treatment as a Predictor of Physical Activity (PA) after Treatment and Change	143
Table D.5.5: Regression Results for Health Literacy as a Predictor of Physical Activity.....	148

List of Figures

Appendices

Figure C.1.1: Flowchart of participant recruitment.....	107
Figure D.5.1: Change in level of physical activity from before diagnosis to after treatment.....	133

Structured Abstract

Scope

Breast cancer is the most commonly diagnosed cancer in Australian women (Australian Institute of Health and Welfare, 2014). Breast cancer is a significant cause of death and illness (Australian Institute of Health and Welfare, 2012) and is estimated to be the leading cancer for burden of disease in Australian women (Australian Institute of Health and Welfare, 2012). After a diagnosis of breast cancer, many women will experience physical and psychosocial concerns related to the impact of the disease and treatment. Due to the impact of cancer on the community, Cancer Australia (2014) stated an aim to decrease the impact of cancer for cancer patients and survivors by increasing the survival rate and increasing quality of life.

Purpose

Physical activity after a diagnosis of breast cancer is associated with many health benefits. Health literacy has been found to be associated with participation in physical activity, but there is limited research exploring the nature of this relationship. A comprehensive review of the literature found no research that has examined this relationship in women diagnosed with breast cancer. The aim of the present research was therefore to explore the relationship between health literacy and physical activity in women diagnosed with breast cancer. In an exploratory investigation, we examined which of the nine Health Literacy Questionnaire scales predicted physical activity in women diagnosed with breast cancer. Our primary aim was to examine which of Nutbeam's (2000) three levels of health literacy (functional, interactive, and critical health literacy) predicted physical activity in women who have completed treatment for

breast cancer. We also examined the level of participation in physical activity before diagnosis, after the completion of treatment for breast cancer, and the change in physical activity between these two points.

