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TITLE PAGE

**Eating and Weight Problems in the Community: Prevalence, Implications for
Mental Health and Community Beliefs**

**Thesis submitted by
Anita Mary STAR BHlthSc (Nut & Diet) CSU
in February 2012**

**for the degree of Doctor of Philosophy
in the School of Medicine
James Cook University**

AKNOWLEDGEMENTS

It is a pleasure to thank those people who made this thesis possible. The production of this piece of work has been both a difficult and extremely rewarding journey, the people who supported me along the way have been integral part of its successful completion and for that I owe you my deepest gratitude.

I feel incredibly fortunate to have worked with a truly great team of supervisors, Professor Phillipa Hay, Associate Professor Frances Quirk and Associate Professor Jonathan Mond.

Phillipa Hay has greatly inspired me with her own work in the eating disorder field, and showed such generosity in sharing her encouragement, wisdom, intellectual property, and a gentle push when required. This was always done with amazing promptness; in spite of what I know is Phillipa's tremendous work load of academic, clinical and administrative work. Thank-you Phillipa for the time and in helping me develop an amazing foundation of research and academic skills which I will be able to apply for the rest of my career.

Jonathan Mond, who will always tell it like it is, an amazing intellect and writer in the field. Jonathan and I worked in the same academic team, before we even had the chance to meet each other. From very early on, Jonathan was able to both support and challenge me with my academic development, with rapidly produced emails, full of intellectual advice, humour and encouragement, sent from various locations around the world. Despite only sharing a building for a relatively small amount of time, Jonathan has continued this support an unwavering manner.

Frances Quirk who stepped in at James Cook University when it seemed everyone else, including me, was physically locating elsewhere. Frances was able to help me maintain a stable

link to the university, and support me in a range of both practical and intellectual aspects of the thesis, and in life more generally.

I would also like to thank Professor Petra Buttner who was able to assist with the more complex statistical analysis for this project.

My family has always been an amazing support to me. To my Mum who always radiates love and support, thank-you, and thank-you for showing me how to carry on, no matter the obstacle. To my sisters Julia, Jacqui and Megan, and brothers, Bernie, Damien, James, Vincent and Thomas, you are my best friends, thank-you for sharing this journey with me, and offering your practical help, love and encouragement along the way. To my Dad, who showed me the value of education, thank-you.

I am also very fortunate to have an amazing network of friends, extended family and colleagues who have been with me for all or part of this journey, and who have each played a role in getting me here – Thank-you.

This piece of work has been part of my life for what seems like a very long time, it has seen me change and grow with the ups and downs of life. In the midst of the thesis writing my first marriage ended, and I came extremely close to giving up on the goal of a submitting altogether. It was only with the amazing support from my family, friends and supervisors that I have finally made it to this point. Again my heartfelt thanks goes out to each and every one of you.

PREFACE

When I completed my undergraduate degree in nutrition and dietetics in 2003, I had gained a general understanding of causes, consequences and treatment for obesity and underweight. I also had an understanding of the various eating disorders and accompanying mental health problems. However, it did not dawn on me until I started practicing as a clinician and working in research, that there was considerable overlap between these disorders. Disordered eating, weight problems and poor mental health do co-exist, however, research to understand the relationship between them is still relatively new, and many questions remain. The broad scope of the following thesis is to further the understanding of co-morbid eating and weight problems in the community, examine their impact on psychological health and explore community beliefs regarding these problems.

The findings reported in this work pertain to three different research samples. 1) A population sample of young women from the Australian Capital Territory (ACT), 2) A longitudinal follow up sub-sample of women identified with disordered eating who were drawn from this population in the ACT, and 3) a population sample of adults aged 15 years or more from South Australia. I was fortunate enough to be working as a research officer in a team of academics under the direction of Prof Phillipa Hay at the time these research samples were being recruited and the projects were being designed and carried out. As such I was able to provide intellectual input, be involved in carrying out the studies, and in managing and analysing the data and commenced producing the following thesis. A full statement of my contribution and the contribution of others to the work can be found on page 8.

The thesis has three sections. **Part 1**, provides an introduction to the topic and builds up a detailed picture of the current literature. It goes on to outline the overall aims, hypothesis, and methods of the research. **Part 2**, the body of the thesis is comprised of 5 chapters or manuscripts, of which 4 have been published in peer-reviewed journals and one which is

submitted and under review for publication. **Part 3**, provides a detailed discussion on the outcomes of the research. The discussion elaborates on the brief discussions provided in the individual manuscripts and pulls together the findings to explore the overall implications for prevention, treatment and future research in the weight and eating disorder field.

STATEMENT OF ACCESS

I, the undersigned, author of this work, understand that James Cook University will make this thesis available for use within the University Library and, via the Australian Digital Theses network, for use elsewhere. I understand that, as an unpublished work, a thesis has significant protection under the Copyright Act and I do not wish to place any further restriction on access to this work.

2nd October 2012

Signature

Date

STATEMENT OF SOURCES

DECLARATION

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

2nd October 2012

Signature

Date

STATEMENT OF CANDIDATES CONTRIBUTION AND THE CONTRIBUTION OF OTHERS

This thesis involves epidemiological research projects with published chapters which would not have been feasible for a student to fully design, obtain funding, conduct, analyse and publish on their own. The thesis work was embedded in a number of cross sectional and longitudinal studies. The research in chapters 2 and 3 was designed by other collaborators, the candidate was able to apply her own new hypotheses and analyse in previously un-examined ways. The research in chapters 4, 5 and 6 was designed and conducted by a number of collaborators, with intellectual input and assistance from the candidate. Funding support for the projects came from a range of sources. The details of these contributions can be found below.

Candidates Contribution

- Development of new aims and hypothesis for this thesis and its individual manuscript chapters which were previously not under investigation by the research team.
- Intellectual input in the design of vignettes and items (in conjunction with Phillipa Hay) used to assess Mental Health Literacy in chapters 4 and 5 of the thesis.
- Intellectual input into changes necessary in the longitudinal research survey in chapter 6 e.g. formatting, addition of questions known to impact on weight i.e. pregnancy and nutritional intake (nutritional intake not reported as part of this thesis).
- Data entry for a part of the Health and Well-Being of Female ACT Residents Study (chapter 2 and used to obtain participants for chapter 6).
- Senior Research Officer responsible for recruitment, retention and data collection for the longitudinal study reported in chapter 6 (postage, phone calls, interviews, participant

newsletters, database entry and data management) together with Junior Research Assistants, Jodi Lorenz and Carolyn Clark.

- Supervision and training of Junior Research Assistants in the management of above tasks, the use/ scoring of survey tools and in the conduct of the Eating Disorder Examination interview.
- Preparation for the Eating Disorder section of the 2005 South Australian Health Omnibus survey chapters 3- 5. This involved writing and preparing for use the survey questions and vignettes to be used by Harrison Health Research employees.
- Data analysis for the all work in this thesis; some assistance received- please refer to statistical support.
- Preparation with assistance of collaborators of ethics applications and reports pertaining to the research undertaken work.
- Assistance and input into grant applications for the longitudinal study reported in chapter 6.
- Preparation of manuscripts (chapters 2-6) for publication, with guidance and feedback from Supervisory team and minimal feedback from other collaborators- see below.
- General introduction and literature review.
- Discussion, including implications for and novel new directions for health promotion, clinical treatments and research.
- Preparation of the thesis, with guidance and feedback from the Supervisory team.

Thesis & Research Supervision

Phillipa Hay, Jonathan Mond, Frances Quirk, provided guidance, support and feedback to the Candidate for this body of work.

Design and Conception of Studies

The design and conduct of the research in chapter 2, the Health and Well-Being of Female ACT residents Study was designed and conducted by Jonathan Mond, Bryan Rodgers, Cathy Owen and Phillipa Hay. The candidates' involvement is described above.

The initial design and grant funding for the longitudinal study in chapter 6 was obtained by Phillipa Hay, Jonathan Mond, Susan Paxton and Frances Quirk. The candidates' contribution to this study is described above.

Phillipa Hay was the Principal Investigator who obtained funding for the research pertaining to Eating Disorders in the South Australian Health Omnibus Survey- chapters 3-5. The 1995 portion of the research in chapter 3 was conducted without any input from the candidate; however she was able to use this data for her own unique hypothesis. The 2005 portion of this research chapter 3-5 was conducted with intellectual input and practical research management from the candidate, see above.

Statistical support

The supervisory team provided guidance to the candidate in the statistical analysis for the thesis.

Professor Petra Buttner, a statistician conducted the more advanced statistical analysis, namely the multinomial (polytomous) logistic regression in chapter 3. She also provided advice and feedback on the statistical analysis of the longitudinal data in chapter 6.

Other Collaborators

Phillipa Hay, Jonathan Mond and Frances Quirk, provided thesis supervision and shared intellectual property with the candidate as described above.

Professor Bryan Rodgers- Was involved in the design and funding application for the research in chapter 2. Following data analysis and the preparation of chapter 2 by the candidate he also read over the manuscript and provided opinion on the text and statistical analysis.

Professor Cathy Owen- Was involved in design and funding application for the research in chapter 2. Following data analysis and the preparation of chapter 2 by the candidate she also read over the manuscript and provided opinion on the text.

Professor Susan Paxton- Was involved in design and funding application for the longitudinal research in chapter 6. Following data analysis and preparation of chapter 6 by the candidate she also read over the manuscript and provided opinion on the text.

Professor Lee Kennedy- Was the principal investigator in a research collaboration which received funding at JCU, these monies supported the employment of Jonathan Mond, during part of his time invested in supervising the candidate, at the time when work in chapter 3 and 6 was conducted.

Funding

The candidates role of Research Officer (Discipline of Psychiatry), where she worked for part of the research, was supported James Cook University, School of Medicine.

For work pertaining to Chapter 2:

- A research training fellowship for Jonathan Mond was provided by the NSW Institute of Psychiatry.
- A funding grant was also received from the Australian Capital Territory Department of Health and Community Care

For work pertaining to chapters 3-5:

- An internal grant from James Cook University was awarded to Phillipa Hay.

For work pertaining to chapter 6:

- The longitudinal follow up of participants in chapter 6 was funded by a grant from the Australian Rotary Health Research Fund.
- The baseline assessment of the participants was funded by sources listed above under work pertaining to chapter 2.

For work pertaining to Chapter 3 & 6:

- An internal grant from James Cook University was awarded to the AVANTI group (Chief Investigator Lee Kennedy); this supported the employment of Jonathan Mond during part of his time invested in supervising the candidate, when the research for these chapters was conducted.

Other support

The South Australian Health Commission conducts an annual South Australian Population Health Omnibus Survey. Academics can pay for their questions to be embedded in this population survey at the discretion of the Health Commission. Preparation for the survey items is done by the Academics, and sent to Harrison Health Research who are contracted to conduct the interviews and data entry. Data pertaining to the items requested is then returned to the academics involved. Data for chapters 3, 4 and 5 was collected in this manner.

The Sydney Children's Hospital granted the candidate leave without pay for the purposes of study, from her clinical position at the hospital for the finalisation of the thesis.

2nd October 2012

Signature

Date

DECLARATION OF ETHICS

The research presented and reported in this thesis was conducted within the guidelines for research ethics outlined in the National Statement on Ethics Conduct in Research Involving Humans (1999) the Joint NHMRC/ AVCC Statement and Guidelines on Research Practice (1997), the James Cook University Policy on Experimentation Ethics. Standard Practices and Guidelines (2001) and the James Cook University Statement and Guidelines on Research Practice (2001).

The thesis work was embedded in a number of cross sectional and longitudinal study carried out by the Candidates Supervisors Phillipa Hay, Jonathan Mond and Frances Quirk and thus there were a number of ethical clearances associated with the project.

Ch 2: Relates to data collected in the Health and Well-Being of Female Residents ACT. Ethics approval for this study was granted to Principal Investigator Jonathan Mond from the ACT Human Health Research Ethics Committee

Ch 3 through to 5: Relates to data collected in the South Australian Health Omnibus Survey in 1995 and 2005. Ethics approval for the questions used was granted to Principal Investigator Phillipa Hay by the South Australian Department of Health

Ch 6 Relates to data collected in a study on mediating factors and effects of health literacy in course and outcome of common eating disorders: a longitudinal study. Ethics approval was granted to Principal Investigator Phillipa Hay by JCU ethics committee (H2039) and ethics monitoring and processes later changed to University of Western Sydney (H6696).

2nd October 2012

Signature

Date

TABLE OF CONTENTS

STATEMENT OF CANDIDATES CONTRIBUTION AND THE CONTRIBUTION OF OTHERS	8
DECLARATION OF ETHICS.....	13
LIST OF TABLES	18
LIST OF FIGURES	19
LIST OF ABBREVIATIONS	20
THESIS ABSTRACT	21
PART ONE.....	24
CHAPTER ONE – LITERATURE REVIEW	25
EPIDEMIOLOGY OF ED’S &WEIGHT PROBLEMS IN THE COMMUNITY.....	25
THE RELATIONSHIP BETWEEN DISORDERED EATING, BODY WEIGHT AND PSYCHOLOGICAL DISTRESS.....	41
UNDERSTANDING COMMUNITY BELIEFS AND STIGMA REGARDING EATING AND WEIGHT DISORDER	91
OVERALL SCOPE, SIGNIFICANCE AND AIMS OF THE THESIS	99
CHAPTER ONE – REFERENCES	100
PART TWO.....	108
CHAPTER TWO – DISORDERED EATING BEHAVIOURS AND COGNITIONS IN YOUNG WOMEN WITH OBESITY: RELATIONSHIP WITH PSYCHOLOGICAL STATUS	109
METHOD.....	112

RESULTS	114
DISCUSSION	121
CHAPTER TWO – REFERENCES	126
CHAPTER THREE – THE RISING PREVALENCE OF CO-MORBID OBESITY AND EATING DISORDER BEHAVIOURS FROM 1995 TO 2005 ..	130
ABSTRACT.....	132
INTRODUCTION	133
METHOD.....	134
RESULTS	136
DISCUSSION	141
CHAPTER THREE – REFERENCES.....	143
CHAPTER FOUR – COMMUNITY RECOGNITION AND BELIEFS ABOUT ANOREXIA NERVOSA AND ITS TREATMENT	146
ABSTRACT.....	148
METHOD.....	149
RESULTS	151
DISCUSSION	155
CHAPTER FOUR APPENDIX:	157
CHAPTER FOUR REFERENCES.....	158
CHAPTER FIVE – THE PARADOX OF POSITIVE REGARD AND PERCEIVED DISCRIMINATION IN EATING DISORDERS: IMPLICATIONS FOR PREVENTION AND TREATMENT	161
ABSTRACT.....	163

INTRODUCTION	164
METHOD.....	166
RESULTS	168
DISCUSSION	174
CHAPTER FIVE APPENDIX:.....	179
CHAPTER FIVE – REFERENCES.....	181
CHAPTER SIX – BETTER PSYCHOLOGICAL HEALTH IS ASSOCIATED WITH WEIGHT STABILITY IN WOMEN WITH EATING DISORDERS.....	183
ABSTRACT.....	185
INTRODUCTION	186
METHOD.....	187
RESULTS	192
DISCUSSION	198
CHAPTER SIX – REFERENCES	202
PART THREE.....	205
CHAPTER SEVEN- DISCUSSION.....	206
THE EPIDEMIOLOGY OF CO-MORBID DISORDERED EATING BEHAVIOURS AND OBESITY	207
THE IMPACT OF DISORDERED EATING ON PSYCHOLOGICAL DISTRESS	210
COMMUNITY BELIEFS AND ATTITUDES TOWARD EATING DISORDERS OF DIFFERING BODY WEIGHT	211
THE IMPACT OF DISORDERED EATING AND PSYCHOLOGICAL DISTRESS ON THE BODY WEIGHT OF AUSTRALIAN COMMUNITY WOMEN WITH PRE- EXISTING DISORDERED EATING BEHAVIOURS	217

IMPLICATIONS FOR EATING DISORDER AND OBESITY TREATMENT	223
IMPLICATIONS FOR PUBLIC HEALTH.....	226
STRENGTHS, LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH	237
CONCLUSION	243
CHAPTER 7 REFERENCES	244
APPENDICES	259
1 CO-AUTHOR ACCEPTANCE OF THE CANDIDATE’S CONTRIBUTION TO PAPERS AND CONSENT TO THE INCLUSION OF THE PAPERS IN THE THESIS	
2 PUBLISHER AGREEMENT TO THE USE OF PUBLICATIONS IN THESIS	
3 SURVEY ITEMS USED TO MEASURE ED BEHAVIOURS AND ED MHL IN THE SOUTH AUSTRALIAN HEALTH OMNIBUS SURVEY	

LIST OF TABLES

Chapter 1

Table 1. Recent literature on prevalence of eating disorders.....	31-33
Table 2. Summary of key literature exploring relationships between disordered eating body weight and psychological distress in community and school samples.....	79-85
Table 3. Summary of key literature exploring relationships between disordered eating body weight and psychological distress in treatment settings.....	86-90

Chapter Two

Table 1. Demographic details of non obese and obese sub-sample	115
Table 2 – Comparison of Obese and Non Obese Women in quality of life measures, psychological distress, global EDE-Q and subscale scores	116
Table 3 – Comparison of Obese and Non Obese Women in the use of any and regular use of ED behaviours	117
Table 4. Spearman Rank Correlations between eating disorder features and psychological distress according to obesity status	119
Table 5. Predicting Variables in Psychological Distress (K-10)	120

Chapter Three

Table 1. Change in prevalence of co-morbid obesity and ED behaviours compared to obesity alone and ED behaviours alone. Results of weight adjusted multinomial (polytomous) logistic regression based on 5366 participants of two surveys conducted in Australia in 1995 and 2005	139
Table 2. Change in characteristics of participants with co-morbid obesity and ED behaviours (n=137) between 1995 and 2005	140

Chapter Four

Table 1. Perceived helpfulness of interventions for Jenny’s problem.....	152
--	-----

Chapter Five

Table 1. Demographic, weight status and Eating Disorder features of participants (n=3047)	169
---	-----

Chapter Six

Table 1. Description of socio-demographics, weight status and eating disorder behaviours of women at baseline	193
Table 2. Descriptive Information on baseline psychopathology according to change in weight category	196
Table 3. Two year change in psychopathology according to change in weight	197

LIST OF FIGURES

Figure 1. Hypothetical model of weight changes in women with bulimic ED	222
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LIST OF ABBREVIATIONS

AN	Anorexia Nervosa
BDI	Beck Depression Inventory
BE	Binge Eating
BED	Binge Eating Disorder
BES	Binge Eating Scale
BMI	Body Mass Index
BN	Bulimia Nervosa
BWL	Behavioural Weight Loss
CBT	Cognitive Behavioural Therapy
CIDI	Composite International Diagnostic Interview
chEDE	Children's Eating Disorder Examination Questionnaire
DEBQ	Dutch Eating Behaviour Questionnaire
DSM	Diagnostic and Statistical Manual of Eating Disorders
ED	Eating Disorder
EDE	Eating Disorder Examination
EDE-Q	Eating Disorder Examination Questionnaire
EDNOS	Eating Disorder Not Otherwise Specified
EI	Eating Inventory
GP	General Practitioner
IDI-10	International Classification of Diseases 10 th Revision
K10	Kessler 10 item distress scale
LOC	Loss of Control
MHL	Mental Health Literacy
OBE	Objective bulimic episodes
PCSC	Perceived Competence Scale for Children
RCT	Randomised Control Trial
RiBED	Risk behaviour for Eating Disorders- 8 items
SBE	Subjective Bulimic Episodes
SCID	Structural Clinical Interview for the DSM
SCL-90	Psychological Symptom Checklist 90
SED	Survey for Eating Disorders
SPIKE	Structural Psychopathological Interview and Rating Scale of Social Consequences
TAS 20	Toronto Alexithymia Scale
WHO	World Health Organisation

THESIS ABSTRACT

Eating and Weight Problems in the Community: Prevalence, Implications for Mental Health and Community Beliefs.

Anita Star: James Cook University, PhD candidate

Background and Study Aims: Whilst often regarded as distinct, problems with eating and problems with weight have many common characteristics, including dietary restriction, binge eating, poor body image and psychosocial difficulties. Furthering our understanding of these commonalities may lead to improvements in prevention and treatment efforts for eating disorders (EDs), obesity and mental health. The goal of this thesis was to examine the prevalence, relationships between and impact on psychological health, of co-morbid eating and weight problems, while also exploring public knowledge and beliefs regarding these problems.

First, this thesis sought to determine the prevalence of ED behaviour and cognitions in obese and non-obese women and to elucidate time trends in the population prevalence of co-morbid ED behaviour and obesity. Second, the thesis examined how ED behaviour relates to psychological distress in obese and non-obese women and how ED behaviour and psychological distress impact on weight over time, in community women with ED symptoms. Third, the thesis explored community knowledge and beliefs regarding the nature and treatment of eating problems occurring in sufferers of differing body weights.

Method: These issues were addressed in various community-based samples, namely: 1) a large, general population sample of young women from the Australian Capital Territory (ACT), 2) a two year longitudinal follow up sample of women with ED symptoms identified from the larger sample; and 3) general population samples (1995 and 2005) of adults aged 15 years or

more from South Australia recruited, independently, in 1995 and 2005. Anthropometric measures included self-reported height and weight, used to calculate Body Mass Index (BMI), categorical weight status i.e. underweight, normal weight, overweight and obese, and change in weight over time. Self-report surveys were used to assess ED behaviours, shape concern, weight concern, eating concern and dietary restraint. General psychological distress was measured via the Kessler (10- item) Psychological Distress Scale (K10). Community beliefs and attitudes regarding ED recognition, treatment, stigma and regard for symptoms, were modelled on previous, community-based studies of ED 'mental health literacy'. These surveys presented participants with a vignette describing a sufferer of an ED and then asked them to answer a range of questions addressing recognition, treatments, stigma and favourable regard. A range of univariate and multivariate data analysis were performed using the SPSS software.

Results: In 2005 ED behaviours affected approximately 1 in 5 obese persons in the Australia population and young obese women were particularly likely to have ED symptoms. Increases over time from 1995 to 2005, in the prevalence of co-morbid obesity and ED behaviour were more rapid than increases in the prevalence of obesity or ED behaviour alone. Specific aspects of ED psychopathology, namely, the cognitive aspects of weight, shape and eating concerns and dietary restraint, were associated with psychological distress in obese women, whereas for non-obese women ED behaviours were additionally associated. Overall better psychological health was associated with weight stability in community women with EDs of various weight categories. A sizable minority of individuals in the community expressed a favourable regard for the weight and shape control aspects of ED behaviour, despite the adverse impacts on mental health. Obese participants, younger participants and those with existing ED psychopathology were more likely to express positive regard for ED. Obese persons were more likely to highly regard the weight loss seen in Anorexia Nervosa. Community stigma towards individuals with an ED was high, and both obese and underweight sufferers of EDs were more often perceived as being likely to experience discrimination when compared with a normal-weight ED sufferer. Mental health literacy relating to underweight individuals with ED

symptoms was satisfactory in that the features of anorexia nervosa were generally recognised and both primary care physicians and mental health professionals were favourably regarded as potential treatment providers.

Conclusion: This research has contributed to the literature and the collective understanding of co-morbid eating and weight problems. There was a strong relationship between ED, obesity and psychological distress, a concerning increase in the prevalence of comorbid ED behaviour and obesity, and community beliefs regarding ED behaviour characterised by both stigma and favourable regard, particularly among obese persons. These observations have important implications for the prevention and treatment of eating and weight problems and for future research. In particular, it adds further support to calls for an integrated approach to obesity and ED prevention. It suggests that improving body image and changing attitudinal aspects of eating and dieting, may improve the psychological health of sufferers of co-morbid disordered eating and obesity, which may in turn promote weight stability. Furthermore reducing weight based and ED stigma, whilst simultaneously reducing positive regard for ED behaviours, may assist in reversing the rising prevalence of co-morbid obesity and EDs in the community.