

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.

Disaster Risk Reduction Considerations for Big Bodied People in Aotearoa New Zealand

A thesis presented in partial fulfilment of
the requirements for the degree of

Doctor of Philosophy
in
Emergency Management

at Massey University, Wellington
Aotearoa New Zealand

Lesley Gray
2022

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.

*For my mum Mary who provided lifelong support and humour and
my uncle Gordon, the most knowledgeable and humble man I ever knew.
You believed in me and I miss you both immensely*

Abstract

Big bodied people have been left behind in disasters and are conspicuously absent in disaster risk reduction planning, policies and practices. This exploratory study addresses the needs and considerations of big bodied people relating to disaster risk reduction. Aotearoa New Zealand is well suited as the setting for this study with the experience of a wide range of natural hazards and recent, significant disasters, and importantly in relation to body size demographics, having very high population levels of body mass.

There is a dearth of research on this topic. Descriptive qualitative methodology was applied, framed by a pragmatic worldview in order to build knowledge from the perspectives and experiences of 55 emergency managers and 17 people identifying as big bodied. These were explored through an online survey and semi-structured interviews. Descriptive and reflexive thematic analysis of the data were undertaken.

The research findings, presented in three publications, highlight the complexities of disaster risk reduction for big bodied people and emergency managers. A number of assumptions and expectations were identified that may explain why there has been scant, if any, consideration of the needs of BBP in a disaster particular to size, shape and weight.

The study outcomes support the prospect of 'triple jeopardy' for big bodied people through the intersection of discrimination, stigma and bias alongside social determinants of health and disaster vulnerability factors. Importantly, this study amplifies the voices of big bodied people, so often excluded, silenced or invisible in research. To meet the United Nation's Sendai Framework for Disaster Risk Reduction 2015–2030 requirement for 'all-of-society engagement and partnership', the conceptualisation of vulnerability must be widened to include size, shape and weight.

Further empirical research and strong advocacy are required to ensure that big bodied people and emergency managers are well supported in preparedness planning and to ensure the needs of big bodied people are included in national and international in future disaster planning, policies and practices.

Acknowledgements

Completing a disaster focused doctorate during a 100-year global pandemic was not my intention, although it did bring aspects of my research sharply into focus. If my work contributes in any small way to disaster risk reduction for big bodied people that will be a pleasing practical outcome.

I sincerely thank all the participants of this research who candidly shared their experience and knowledge. I hope I have honoured your words, sentiments and hopes in this thesis. Thanks also to my colleagues and acquaintances who kindly circulated my requests for participants through their own networks.

I owe much to my supervisory team at the Joint Centre for Disaster Research at Massey University, Wellington, without whose guidance, direction and support this thesis would not have come to fruition. Thanks to Professor David Johnston, Centre Director, for your global strategic knowledge and expertise; Associate Professor Julia Becker for keeping me on track and answering the difficult institutional and process questions with grace and humour and ironing out methodological wrinkles; Professor Christine (Cassie) Kenney and Dr Denise Blake for keeping me grounded and for guiding the ethical approval processes for this study - tēnā kōrua. The team would not be complete without Dr Carol MacDonald, you have been with me every step of the way (including the painful ones), before, during this journey and most definitely after, you are my mentor, colleague and dear friend.

The doctoral students at the Joint Centre were the best support group anyone could wish for. Your advice, debate, challenges and critiques have been invaluable. We shared ideas, practice presentations and embraced conferences together, including the famous Disastrous Doctorates workshops. I would like to thank those most influential at the start of my journey, Dr Nancy Brown, Dr Maureen Mooney, Dr Sara McBride, Dr Marion Tan, and Dr Brenda Mackie. And those throughout and towards the end of this journey, my North of England sister from another mother Dr Ashleigh Rushton, Dr Martin Garcia Cartagena, Dr Sara Harrison, Dr Miles Crawford, Jon Mitchell, Nilani Algiriyage and Wairarapa coffee buddy Lisa McLaren QSM.

My work colleagues from the University of Otago, Wellington who encouraged and supported me to undertake this doctorate. In particular, Heads of Department (Primary Health Care and General Practice, University of Otago, Wellington) Professor Sue Pullon for encouraging and supporting me to start this journey and Associate Professor Dr Lynn McBain in the latter stages supporting me to the journey's end; Senior colleagues including Professor Tony Dowell, Associate Professors Maria Stubbe and Ben Gray along with Dr Caroline Morris, your words of encouragement mean a lot; Not forgetting the Medical Librarian team, in particular Susan Hope, Michael Fauchelle and Anna Ormond. Huge appreciation to the University of Otago for providing staff study support towards my course fees and to Massey University for assistance towards research costs.

I had the great pleasure to meet a number of people during this doctorate who have helped shape my research, including Dr Sheri Fink – you inspire me, Lynn McAfee – you are a star, and Marilyn Wann – you rock! Professor Lori Peek for showing great interest in this topic and Professor Laura Stough for answering my silly questions with a smile on that bus in Colorado. To those at the inaugural Australian Diversity in Disaster Conference, held in Melbourne in April 2018 who were so welcoming and for acknowledging big bodied people have historically been an excluded group from an emergency management perspective.

Last but by no means least, my family and friends in Aotearoa New Zealand and in the United Kingdom. The love of my life, Paul and my son Callan for believing in me and accepting all the times I had to be somewhere else. You are both my world and while you may never be able to explain to anyone else what it is that I do, you were with me every step of the way. Kathleen, Jill and Lorraine for being those BFF shoulders from time to time. My dad Jack, brother Colin, sister-in-law Julia and three wonderful nephews (Jack, Luke and Jamie), thank you. Mum, Gordy, Judy and Milo – you started this journey with me, but along the way we had to travel different paths.

Table of Contents

Abstract	iv
Acknowledgements	v
List of tables.....	xii
List of images	xiii
1 Introduction.....	1
Background context of this research	2
Who is at risk in disasters?.....	2
Big bodied people in disasters	4
Disaster Risk Reduction.....	5
Research aim and scope	9
Scope of thesis.....	9
Structure of thesis.....	10
Thesis chapters	11
Chapter summary	13
2 Conspicuous invisibility in the disaster risk reduction literature	14
Introduction	15
Needle in a haystack	15
Search strategy	15
Left behind.....	18
Priority groups?	20
Stay or go?.....	22
Health promotion to reduce risk	25
Heatwave.....	26
Pandemic	27
Triage.....	28
Planning and preparedness	29
Limitations	30
Chapter Summary	30

3 Research theory and process.....	32
Research paradigm	34
Epistemology	35
Ontology	36
Philosophical worldview	36
Methodology	39
Methods.....	45
Desk based literature search/review.....	45
Exploratory survey of emergency managers	46
Semi-structured qualitative interviews	46
Data analysis.....	50
Reflexivity	52
Treaty of Waitangi.....	53
Ethical considerations.....	53
4 Intersection of big bodied people and disaster risk reduction.....	57
Social determinants of health, disaster vulnerability, severe and morbid obesity in adults: Triple jeopardy?	59
Abstract	59
Introduction.....	59
Severe and morbid obesity.....	61
Disaster vulnerability.....	63
Intersecting the social determinants of health and disaster vulnerability with severe or morbid obesity	63
Triple jeopardy?.....	67
Limitations	68
Conclusions.....	68
5 Names will never hurt you: Language and power discourse	71
Body Mass Index – origins and limitations.....	72
The ‘O’ words.....	74
Finding the right term	76
Language as power	78

6 Current arrangements for big bodied people in emergency management	81
Preparing for the big one: An exploratory study with emergency managers, planners and responders in Aotearoa New Zealand.....	82
Method.....	82
Recruitment and respondents.....	84
Data Analysis	85
Results	86
Strengths and limitations	89
Discussion	90
Conclusion	91
7 Emergency management planning	93
A qualitative study of emergency management considerations for big bodied people in Aotearoa New Zealand	94
Abstract	94
Introduction.....	95
Methods	97
Results	98
Discussion	124
Strengths and limitations	127
Conclusion	127
8 Voices of big bodied people in disaster risk reduction	130
Sizing up disaster risk reduction: a qualitative study of the voices of big bodied people in Aotearoa New Zealand	131
Abstract	131
Introduction.....	131
Methods	134
Results	137
Discussion	154
Conclusion	161
9 World views collide?	163
Needs, responsibilities and roles	163
It's not a big issue.....	166
The red herring of health or disability	168

Stay or go	170
Positioning dynamic of language	172
Chapter summary	173
10 The positioning of big bodied people in disaster risk reduction	175
Overview of research outcomes	176
Impacts of the research	178
Sharing knowledge	178
Practical outputs.....	179
Mapping prevalence.....	180
Advocating for inclusion	181
Limitations of the research	182
Next steps and future research.....	184
Authentic engagement with BBP.....	184
Social networks.....	184
Positioning	185
Rural Communities of Aotearoa New Zealand	185
Planning tools.....	186
Beyond Aotearoa New Zealand	186
Conclusions	186
References.....	189
Appendices	213
Appendix 1: Massey University guidelines.....	213
Appendix 2: Online survey emergency managers.....	217
Appendix 3: Ethics (Low risk)	219
Appendix 4: Online survey information sheet (EM).....	220
Appendix 5: Semi-structured interview guide - emergency managers.....	222
Appendix 6: Semi-structured interview guide - big bodied people	223
Appendix 7: Interview information sheet (BBP)	224
Appendix 8: Consent form (BBP).....	227
Appendix 9: Authorship contribution statement (Chapter 4).....	228
Appendix 10: Personal communication - Professor Lori Peek	229
Appendix 11: Authorship contribution statement (Chapter 7).....	230
Appendix 12: Ethics (full)	231

Appendix 13: Authorship contribution statement (Chapter 8).....	232
Appendix 14: Ministry of Health email	233
Appendix 15: Welfare Forum speaking invitation.....	234
Appendix 16: Reviewer comments - excerpts from feedback	236
Appendix 17: SSEER Network Award Letter.....	238
Appendix 18: CONVERGE Working Group Technical Report.....	240
Appendix 19: Letter to Pharmac	243
Appendix 20: Ngāti Porou Hauora letter.....	245

List of tables

Table 1: Search strategy for literature review.....	16
Table 2: Positioning of my philosophical worldview	39
Table 3: Semi-structured interviews: EM and BBP participant characteristics	49
Table 4: Body Mass Index (BMI) - Classification for adults.....	72
Table 5: Online survey participant characteristics (n =44)	85
Table 6: Groups for which organisation has specific disaster-related arrangements	86
Table 7: Emergency management participant characteristics (n =15)	100
Table 8: Semi-structured interview participant characteristics (n=17)	135
Table 9: Alignment of research questions with thesis chapters and publications	176

List of images

Image 1: te harakeke	xiv
Image 2: Lesley Gray and Dr. Caitlin (Cat) Pausé (29 May 1979-24 March 2022)	13
Image 3: Lesley Gray and Levi Vaoga.....	31
Image 4: Parent and child enjoying outdoor activity.....	56
Image 5: Lesley Gray and Lynn McAfee.....	70
Image 6: Work colleagues chatting during lunchtime walk.....	80
Image 7: Winter Games.....	92
Image 8: Workout time	129
Image 9: Outdoor fun	162
Image 10: Bill Cavubati, Fijian former professional rugby union player	174
Image 11: Catching up with friends.....	188

Unuhia te rito o te harakeke
Kei hea te kōmako e kō?
Whakatairangitia, rere ki uta, rere ki tai;
Ui mai ki ahau,
He aha te mea nui o te ao?
Māku e kī atu,
He tangata, he tangata, he tangata.

If you remove the central shoot of the flax bush
Where will the bellbird find rest?
Will it fly inland, fly out to sea, or fly aimlessly?
If you were to ask me,
What is the most important thing in the world?
I will tell you,
It is people, it is people, it is people.



Image 1: te harakeke

The researcher recognises Ngāti Porou ownership of this taonga and respects the kaupapa expressed. This whakatauki (Māori proverb) refers to the importance of human life, likening human life to the central shoot of the flax bush, with the bush as family, emphasising the most important thing in the world – people.

1

Introduction

Ko te pae tāwhiti whaia kia tata, ko te pae tata whakamaua kia tina

[Pursue the distant dreams so they become closer; pursue the close dreams so they can be]

This introductory chapter outlines the background to this doctoral study. As a health promoter and public health specialist, what matters most to me are the people (he tangata is a Māori term for 'it is the people') and the communities in which people grow, live, work and thrive.

Throughout this thesis I endeavour to capture the dynamics of people's size, shape and weight that includes, but may not be exclusive to, people identifying as fat. For the purpose of this study, the term big bodied people (BBP) is applied and is not a euphemism to avoid naming fatness. The language of size, shape and weight will be explored in more detail in Chapter 5.

It should be noted that this thesis contains words and quotes that might be upsetting, insulting or may trigger negative memories or thoughts for BBP, such that if it were a social media posting it would be labelled with a trigger or content warning.

Background context of this research

The impetus for this study came from my role in medical education and issues relating to equity, quality, safety and dignity for people disadvantaged in and by society, and this includes BBP. As a big bodied academic in a medical school, I am cognisant of the stigma and discrimination that BBP face in their interactions with health professionals (Puhl & Brownell, 2001; Puhl & Heuer, 2009; Pausé, 2014) and the contested origins of weight bias in racism and public health (Warbrick et al., 2019; Strings, 2019). I have observed first hand the bias of colleagues towards their big bodied patients and sometimes I observed the internalized self-bias of BBP and patients.

I am aware that people have been left behind in disasters in relation to their relative size, shape and weight, yet the disaster risk reduction (DRR) literature is silent for BBP (Gray & MacDonald, 2016). With a background in pandemic and communicable disease research (Gray et al, 2012; Dorward, 2001) and an interest in exploring health aspects of the Sendai Framework for Disaster Risk Reduction (United Nations Office for Disaster Risk Reduction, 2015), I hoped to better understand DRR considerations for BBP.

Through this doctoral study I explore strengths, capacities, risks and gaps in current knowledge and practice relating to BBP in Aotearoa New Zealand (NZ) in order to support individuals, agencies and organisations to implement appropriate practices and/or policies to ensure DRR inclusion of and for BBP.

Who is at risk in disasters?

The United Nations Office for Disaster Risk Reduction (UNDRR) defines a disaster as:

“A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, economic and environmental losses and impacts.”

(United Nations Office for Disaster Risk Reduction, n.d. available at

<https://www.undrr.org/terminology/disaster>)

Disasters occur at the intersection between hazardous events and humans; in the absence of people a significant event is not deemed a disaster (O'Keefe, Westgate & Wisner, 1976). While everyone is at potential risk of harm in a disaster, some people are at higher risk due to circumstances preceding disaster involving the complex interaction of physical, social, economic, environmental, cultural, and political processes with the person or group (UNDRR, 2022). According to Mizutori (2020), disasters occur when a community is made vulnerable due to poverty, social disadvantage or marginalisation in some way and therefore are not able to draw on resources to endure the impact of a disaster. The diversity of the risk landscape brings to bear social, political, cultural, beliefs and values (Handmer et al., 2021).

People's circumstances are shaped by the distribution of money, power and resources at global, national and local levels (Commission on the Social Determinants of Health, 2008). Associated vulnerabilities to disaster change over time and contribute to intergenerational exposure leading to access barriers, opportunities or limitations to resources (Wisner, Gaillard, & Kelman, 2011). Plough et al. (2013) make the connection between those communities that experience disparities during non-emergency times and the need to build resilience that in turn can strengthen a community's ability to rally from disasters.

Importantly, there has been a shift in the literature away from a focus on risk and vulnerability to include the capacities of people and communities for adaptation, self-protection, mobilized common effort and recovery (Gamble et al., 2016; Wisner, 2016; Ministry of Health, 2016; Kenney & Phibbs, 2015). This includes the capacities of people oppressed by policies and discourses of inferiority and marginalisation (Balgos et al., 2012). How people are viewed and located in society impacts their capacities for resilience, such as the ability to plan and prepare prior to a disaster and access to assistance and resources that may be scarce during and following a disaster (Wisner et al., 2004). The impacts of government policies and oppression are frequently portrayed as the responsibility of individuals (e.g. lifestyle changes or disaster risk reducing activities). However, those people most impacted often have least resources to change policies and systems that can only realistically be enacted by government changes in policy. Investment into equitable services e.g. removal of discriminatory laws, policies and practices and elimination of poverty, along with societal shifts in

beliefs, attitudes and behaviours (UNSDG, 2022; Baum et al., 2021) are required to remove barriers ensuring certain groups of people, such as BBP are not left behind.

Big bodied people in disasters

An initial scan of the disaster literature prior to commencement of this doctoral study located limited empirical research concerning BBP and DRR (Gray & MacDonald, 2016). Reports of people impacted in disasters in direct relation to their size, shape and weight were identified in staff accounts, books and journalist reporting (Ramme et al., 2015; Adkins as cited in Gillings, 2010; Fink, 2009; Fink, 2013; Hughes, 2013; Taylor, 2014). Most notable were reports from health care facilities that illustrated heightened risks that BBP faced despite being in a facility that had prior knowledge of the person's size, shape and weight (such as Fink, 2013; Ramme et al., 2015). Chapter 2 provides a detailed literature review, but I share two accounts here that cemented the focus for my doctoral study:

In 2012, following Superstorm Sandy in New York City, a 263kg post-operative patient in Bellevue Hospital Center (BHC), was left behind because she was reportedly too wide for the evacuation sled. This factor, along with safety concerns for the patient and evacuation personnel, prohibited her evacuation down 15 flights of stairs. Evacuation drills had been conducted at BHC, although without representative shape and weight in the evacuation sled. The patient was eventually evacuated several days after the storm when power was restored to elevators (Ramme et al., 2015). Another example concerns a person with paraplegia who was in hospital for a routine procedure before Hurricane Katrina hit New Orleans in 2005. At approximately 380 pounds (172 kilograms) the man was deemed too big to be evacuated by health care staff working in that section of the facility as documented in the book *Five Days at Memorial* (Fink, 2013). This Honduran man with English as a second language had begged staff not to leave him behind. Later, other staff from the facility stated they did not know the man was there or they would have attempted to evacuate him (Fink, 2013). In 2017, I had the pleasure of meeting Dr Sheri Fink, at the New York Times building where she is an investigative reporter. A qualified medical doctor, Fink was able to confirm further details suggesting that size, shape and weight were the main defining factors for some of the people who were left behind during these extreme weather events.

In NZ few accounts are publicly documented or reported in the media, although anecdotal accounts from emergency responders detail challenges involved with evacuating people with high body mass, such as using tractors and diggers in flood events to move people to safety (Bariatric Management Innovation Seminar Series, 2016). Responders at these seminars also spoke of walls and windows having to be removed to evacuate people following health events. One media report of the 2017 Edgecumbe flood did highlight how additional rescuers were required to assist people who had previously been left behind, including a woman estimated to be 150kg and a man who was a wheelchair user (Strongman, 2017). The examples above illustrate how a combination of width, size, shape and weight can place BBP at higher risk of harm in disasters and why there needs to be knowledge built to inform DRR considerations for BBP.

Disaster Risk Reduction

Leaving no one behind is a key tenet of the United Nations Office for Disaster Risk Reduction's (UNDRR) Sendai Framework for DRR (United Nations Office for Disaster Risk Reduction, 2015) and central to the sustainable development goals as part of the 2030 Agenda for Sustainable Development (United Nations Sustainable Development Group, 2022). The concept of DRR has evolved over the past three decades from a focus on pre-disaster preparedness to risk reduction and prevention alongside risk informed system approaches (Shaw, 2020). Aitsi-Selmi et al. (2016) assert that once information and assessments on risk are available, novel findings need to be effectively disseminated, stressing that new risk information needs to be "useful, useable and used" (p. 6). The role of science and technology in DRR has also shifted, including the increasingly important role of health sciences (Shaw, 2020) and public health in DRR (Murray et al., 2015).

In the last three years, the global emergence of the SARS-CoV-2 virus known as COVID-19 highlighted the complex hyper connectivity challenges for DRR (Handmer et al., 2021) and the need to understand emergent novel risks. The pandemic underscores the need for public health to be integral to the development of an integrated approach in disaster and risk sciences (Djalante et al., 2020) and highlights the need for sustained investments into global public health preparedness (Jacobsen, 2020). Transdisciplinary and interdisciplinary approaches are essential for practical DRR research and

effective evidence-based DRR policies and practices (Bellman, 2012; Peek et al., 2020; Shaw, 2020), and a vital component of my work as public health specialist.

Given that populations marginalised and discriminated against are known to be at higher risk in disasters, my knowledge concerning BBP naively led me to assume that factors particular for BBP would already be considered in DRR research and practice. I consulted international public health and DRR experts at various hazard and disaster meetings in 2017. These included a meeting at Public Health England, London UK, the fifth session of the Global Platform for Disaster Risk Reduction in Cancun, Mexico, and the Natural Hazards Workshop, Colorado, United States. I was surprised to discover that this was not the case, despite the increasing population prevalence of BBP in many countries (Non Communicable Disease Risk Factor Collaboration, 2016).

Over the last three decades public health approaches have focused on over simplistic approaches relating to individual lifestyle, body mass index (BMI) and "energy in equals energy out" (de Ferranti & Mozaffarian, 2008). These strategies ignore the colonial and racist roots of body measurement (Strings, 2015; Warbrick et al., 2018), repeatedly centre responsibility for increasing fatness related size at the individual rather than societal and political level (e.g. LeBesco, 2011). The overarching social and environmental factors relating to body size persist when a focus on individual change is prioritised over addressing health equity issues including, but not limited to, racism, education, income, poverty, housing and bias which would bring substantial benefits to health (Chin et al, 2018).

Such strategies have not stemmed the rise in BMI around the globe in this time (Mozaffarian, 2022) and in the process have caused significant harms to BBP (Warbrick et al., 2018; LeBesco, 2011), including the generally held and inaccurate belief that body size is easy to reduce and maintain, which has promulgated in hundreds if not thousands of diet books (e.g. Jaminet & Jaminet, 2012).

The increase in body mass (commonly calculated as height/weight m^2) continues on an upward trajectory in many countries (Non Communicable Disease Risk Factor Collaboration, 2016). More than half the increase in higher body mass in the last three decades globally has been recorded for those people living in rural areas (Non Communicable Disease Risk Factor Collaboration, 2019). For the first time in history, body mass of 35-39 (kg/m^2) in women is likely to overtake the number of women who

are underweight in the world by the year 2025, and the number of adults with body mass index of ≥ 40 (kg/m^2) is increasing (Non Communicable Disease Risk Factor Collaboration, 2016). The percentage of adults with body mass ≥ 40 (kg/m^2) in NZ increased by 70% in the ten years 2006-2016 (Ministry of Health, 2016). These increases levelled off and dipped a fraction in the next 2-3 years, before rising again 2020-2021 (Ministry of Health, 2021). Prevalence of body mass ≥ 40 (kg/m^2) currently sits at around 5.9% for the whole NZ adult population (245,000 adults) (Ministry of Health, 2021). This prevalence is amplified for Māori and Pacific Island populations (13.0% and 24.5% respectively) (Ministry of Health, 2021). These numbers are not small or rare for the NZ population and warrant exploration of disaster risks.

The risk of increased harm from disasters concerns the ability of individuals, groups, organisations or societies to withstand such impacts. Populations likely to be at increased risk in disasters have synergies with populations that are also likely to experience high body mass. These include people with disabilities (Wisner et al., 2015; Crozier & Dee, 2016; Stough, 2015; Wisner et al., 2004; Maja-Shultz & Swain, 2012; Stough et al., 2010; Hemingway & Priestley, 2014); older people (Wisner et al., 2004; Al-rousan et al., 2014); people with severe mental illness (Plough et al., 2013; Zakour, 2015); people with chronic medical conditions [Plough et al., 2013; Nomura et al., 2016]; and women (Enarson & Fordham, 2001; Parkinson, 2015). However, much of the literature pertaining to disasters for such groups is silent on considerations relating to body shape, size and weight.

The COVID-19 pandemic thrust body size front and centre of much media commentary and research arguing higher risk of infection and of more severe consequences from COVID-19 (Kassir, 2020; Lighter et al., 2020; Petrilli et al., 2020; Sattar et al., 2020; Stefan et al., 2020; Zheng et al., 2020) for BBP. Whether this increased risk is real or a feature of population demographics, social determinants of health, timely access to care or the type of care a person is given is yet to be analysed.

Heightened risk was also purported for high body mass in the influenza A(H1N1) pandemic of 2009 (e.g. Louie et al., 2011) although the actual risk has been challenged. For example, a systematic review and meta-analysis showed that after adjusting for delayed antiviral treatment and body mass, there was no increased risk (Sun et al., 2016). What is known is that BBP were placed at higher risk from proposed rationing of ventilators in 2020 when US states and UK health agencies proposed limiting

access for those with high body mass (Pausé et al., 2021). Such guidelines were challenged and subsequently overturned (e.g. California Department of Public Health, 2020; Pausé et al., 2021) although the triage and resource decisions still sit with the medical team and their decisions are open to biases that may still disadvantage BBP (Ward, 2020). This doctoral study will explore and identify the considerations and issues for BBP and DRR.

Research aim and scope

The overarching research aim for this study is:

To identify the disaster risk reduction considerations and issues for big bodied people in Aotearoa New Zealand.

To achieve the research aim, four research questions were explored and these form the basis of a number of planned peer reviewed publications. Three of these publications have already been published and are presented as separate chapters corresponding to the research questions as follows:

Research question 1: How are big bodied people constituted as a specific ‘at risk’ population with respect to disasters?

Explored and presented in Publication 1, Chapter 2, 4 and 6

Research question 2: In what way are big bodied people presently considered in emergency planning in New Zealand?

Explored and presented in Publication 2, Chapter 2, 6 and 7

Research question 3: What are the experiences, perceptions and preparedness for disasters of big bodied people and/or their whānau¹?

Explored and presented in Publication 3, Chapter 8

Research question 4: What factors could strengthen disaster risk reduction in relation to big bodied people and their whānau in New Zealand?

Explored and presented in Publications 2 and 3, Chapters 9 and 10

Scope of thesis

This doctoral study is based in Aotearoa New Zealand (NZ), focused around people identifying as big bodied and first responders, emergency managers, practitioners, health and humanitarian workers collectively referred to as Emergency Managers (EMs). Descriptive and qualitative interview data was

¹ Whānau is a Māori language word for extended family.

collected to identify current considerations for BBP in DRR, experiences of BBP in disasters, and aspects that require attention to ensure inclusivity of BBP in DRR planning and practice.

Structure of thesis

This thesis is presented as a thesis with publication (see Appendix 1 for Massey University guidelines). Thesis with publication includes multiple independently peer reviewed and published journal research articles each reporting aspects of this doctoral study. Each publication manuscript is presented as a chapter in the thesis. Thesis with publication provides an opportunity to rapidly disseminate novel research findings with the DRR sector in reputable journals in the field, in parallel with the development of research skills.

The journal articles presenting research findings from this doctoral study (Chapter 7 and Chapter 8) are provided in formats that uphold my professional values to communicate risk science in accessible language for practitioners and BBP and in open access journals where possible (National Academies of Sciences, 2017; Woolf et al., 2015).

The thesis includes formatting and citation style requirements based on Publications Manual of the American Psychological Association (APA), Seventh Edition (American Psychological Association, 2020). Publications were formatted to the reference style of each journal. The manuscripts are provided in APA style in the thesis. The original spelling of proper nouns is retained, for example “Joint Centre for Disaster Research” and “Centers for Disease Control”.

The nature of a thesis with publication means there may be some recurrence of content in different parts of the thesis. Linking chapters situate the research within a wider context, describe the research approach and methodology, expand on literature and provide an overall discussion.

Thesis chapters

Chapters begin with relevant whakataukī² or quotes and conclude with positive body images of BPP in daily activities of living and personal photographs relating to my work and doctoral research.

Chapter 1 - Introduction

This chapter introduces the impetus for this doctoral study thereby situating me as the researcher in this research. The research topic, significance of this study, research approach and scope, research questions, and the structure of this thesis are outlined.

Chapter 2 - Conspicuous invisibility in the DRR literature

This chapter contextualizes the population of interest and the sources of literature that catalogue the impact of disasters for BPP. The chapter examines the literature on disaster risk, including population groups identified to be at higher risk of harm in disasters and discusses how these intersect with BPP.

Chapter 3 - Research theory and process

The research philosophy and methodology of the doctoral study are presented in this chapter. This includes a discussion of the researcher's pragmatic philosophical worldview, ontological and epistemological positions shaping the methodological approach selected for this doctoral study. The methods employed to answer the research questions are detailed, including data collection and challenges that may be faced regarding persons from the intended participant groups. Approaches to data analysis are outlined. Treaty of Waitangi considerations for this research are addressed. Reflexivity, quality, and ethical aspects are discussed.

Chapter 4 - Intersection of big bodied people and disaster risk reduction

The first published journal article from this doctoral study is presented in this chapter. Publication 1 summarises the intersection of social determinants of health, disaster vulnerability and BPP. The paper argues that BPP may face a 'triple jeopardy' exposing them to disproportionate and potentially avoidable risk.

Chapter 5 - Names will ~~never~~ hurt you: Language and power discourse

² Whakataukī (proverbs) are very important within Māori culture.

The purpose of this chapter is to situate and reflect on the evolving language during this doctoral study and discusses the importance of terminology and language relating to marginalised populations, in particular the impacts for BBP.

Chapter 6 - Current arrangements for big bodied people in emergency management

This chapter presents the findings of an exploratory online survey intended to gauge existing considerations in emergency management relating to BBP and provides data to inform the subsequent qualitative interview schedule with EMs. The exploratory survey also facilitated recruitment of a number of EMs willing to participate in subsequent in depth interviews.

Chapter 7 - Emergency management planning

The second published journal article of this doctoral study is presented in this chapter. Publication 2 reports and discusses the findings of qualitative semi-structured interviews that explored planning considerations by emergency management, health, humanitarian and resource sector professionals for BBP in relation to DRR in NZ. This publication is believed to be the first to document and thematically analyse EM views regarding arrangements for BBP in DRR.

Chapter 8 – Voices of big bodied people in disaster risk reduction

The third publication in this thesis describes the lived experience, views, and perceptions of BBP in relation DRR. In this way voices are presented from an often marginalised and discriminated group who have remained largely invisible and silent to date in DRR research and narrative. Publication 3 is the first to present the thoughts and experiences of BBP through the analysis of semi-structured interview transcripts as they relate to DRR.

Chapter 9 - World views collide?

This chapter interprets the principal data collected in this doctoral study through triangulation and synthesis of both the EM and BBP datasets. Implications for DRR are discussed.

Chapter 10 - The positioning of BBP in DRR

This chapter presents a summary of how the research questions have been addressed before the impacts of the research are discussed. Strengths and limitations of the doctoral study are discussed. Next steps and future research are proposed, with conclusions presented.

Chapter summary

This introductory chapter described the impetus for this doctoral study and outlined the research topic, context, research questions, thesis scope and structure, situating me as the researcher in this study sitting within the pragmatism paradigm. The research philosophy and methodology of the doctoral study are detailed in the following chapter.



Image 2: Lesley Gray and Dr. Caitlin (Cat) Pausé (29 May 1979-24 March 2022)

Image credit: Luke Pilkington-Ching, University of Otago Wellington.

2

Conspicuous invisibility in the disaster risk reduction literature

“The Research Imagination”

Chris Hart, 2018, p.1

At the outset of any major research study the literature search usually shapes the direction of the study and contributes to the development of the research questions (Gall et al., 1996). The review is important to understand the topic, establish what has already been shown in the research and consider what is yet to be explored by research (Hart, 1998). The aim of the literature review is to identify what is already known in relation to the key components of the research questions, main theories in the topic area, inconsistencies, gaps and criticisms (Gall et al., 1996; Hart, 1998).

The literature review presented in this chapter scopes disaster risk reduction (DRR) as it relates to big bodied people (BBP), providing data to inform research question 1. and 2:

How are big bodied people constituted as a specific ‘at risk’ population with respect to disasters?

In what way are people with high body mass presently considered in emergency management in Aotearoa New Zealand?

Introduction

Several months before enrolling for this PhD I presented at a seminar series concerned with quality and ethical care for BPP in Auckland, Wellington, Christchurch and Dunedin. I was interested to examine and present DRR considerations for BBP but could find little research literature on the topic. An initial scan of the literature conducted at the time (Gray & MacDonald, 2016) located only one empirical DRR related research paper, the focus of which was health promotion advocacy for more physical activity on walking tracks for tsunami evacuation (Apatu et al., 2014).

The literature searches conducted as part of this doctoral study and results are described in this chapter.

Needle in a haystack

Search strategy

A mapping systematic literature review (Grant & Booth, 2009) was conducted in early 2017 and checked for updates in April 2022. A strength of mapping reviews is that they can provide a descriptive analysis, grouping published literature, in a limited timeframe to assist in identifying gaps and limitations to identify areas for primary research studies. Limitations of mapping reviews include that they may not assess the quality of literature (Grant & Booth, 2009). Medline and Scopus were systematically searched using the terms and strategies detailed in Table 1.

A manual search of the reference lists of selected papers sought to identify any studies missed by the initial search. Significant use was also made of the Google Scholar features: “cited by” and “related articles” which proved an efficient way to rapidly build “families” of related publications.

Table 1: Search strategy for literature review

Scopus search terms		
TITLE-ABS-KEY (obese OR obesity OR fat OR "body fat" OR "fat studies" OR "people of size" OR "big bodied people" OR bariatric) AND TITLE-ABS-KEY (victim* OR survivor* OR patient*) AND TITLE-ABS-KEY (disaster* OR evacuation* OR fire* OR earthquake* OR hurricane* OR tornado* OR "natural disaster*" OR volcano* OR "power failure*" OR flood* OR eruption*) AND TITLE-ABS-KEY ("risk management" OR "risk assessment*" OR "disaster planning" OR "disaster management" OR "emergency plan*")		
Medline search terms and results		
Step	Search terms	Number of results returned
1	exp Obesity, Morbid/ or exp Obesity/ or exp Overweight/ or exp Adipose Tissue/	334764
2	(obes* or fat or overweight or "fat studies" or "people of size" or "big bodied people" or bariatric or "body fat").ti,ab.	592171
3	1 or 2	675377
4	exp Patients/	75084
5	(patient* or victim* or survivor*).ti,ab.	7593913
6	4 or 5	7619572
7	exp disasters/ or Emergencies/	94613
8	(disaster* or evacuat* or earthquake* or fire or fires or ((building* or structure* or infrastruct*) adj1 collaps*) or avalanche* or landslide* or tsunami* or "volcanic eruption*" or volcano* or flood* or "power cut*" or "power outage*" or "power failure*" or "system failure*" or "infrastructure* failure*" or "major event*" or tornado* or hurricane* or "natural disaster*").ti,ab.	119864
9	7 or 8	187929
10	exp Risk Management/ or exp Risk Assessment/ or exp *Civil Defense/ or exp *Disaster Planning/	351333
11	("disaster risk reduction" or "emergency plan*" or "disaster plan*" or "evacuation centre*" or "evacuation center*").ti,ab.	3225
12	10 or 11	353090
13	3 and 7	389
14	3 and 6 and 9 and 12	27
15	3 and 6 and 9	492
16	3 and 9	1227
17	limit 16 to English language	1070

The relevance and suitability of topic specific grey literature, including posts on Facebook, Twitter and other online websites was also evaluated. Grey literature is a term applied to a wide range of material which may not have been published commercially or indexed by major databases (University of Otago, 2009). While these sources may be criticised for not being evidence-based, such literature is useful for contextualising BBP and DRR as they host fat friendly groups and blogs as well as a myriad of anti-fat rhetoric.

Results of the literature searches are discussed in the remainder of this chapter, with abridged literature presented as background and discussion material in the three publications presented in this thesis (chapters 4, 7 and 8).

Included and excluded items

A total of 1070 items were identified in the Scopus/Medline searches. After 123 items were excluded as duplicates, the remaining items were screened on title for likely relevance for this particular search. A further 861 records were excluded, and 86 records were identified for detailed assessment. Each item was located, searched for terms relating to obesity, weight, body mass index (BMI), body size, shape and relevance to DRR. A further 15 items were identified in the grey literature and added to the records for detailed examination. The full articles or reports were then either excluded or included:

After examination, 43 items were excluded as they:

- related to routine patient care, surgery, surgical complications.
- focused on the so called 'obesity epidemic' from a public health perspective relating to the global increase in those with high BMI.
- explored health changes including BMI increase post disaster.
- mentioned BBP related terms without providing further details and were not associated with DRR, emergency evacuation or emergency shelter.
- related to routine patient transportation or safe moving and handling in the normal course of patient care.
- related to climate change and air quality or pollution

After examination 58 items were included as they mentioned BBP and:

- natural hazards and/or disasters
- emergency management and/or planning
- disaster risk reduction
- evacuation and/or sheltering in place
- at risk, vulnerable or 'special' groups
- disaster preparedness.

Included items involved 43 articles or letters in peer reviewed journals; 3 reports; 2 training presentations or toolkits; 3 books or book chapters; 1 submitted manuscript, and 6 blogs, news items or social media reports.

Most included items were accounts of events involving BBP or commentary or perspectives that mentioned a term associated with BBP, rather than detailed empirical research specific to the topic of BBP and DRR. Given the dearth of empirical literature on this subject I did not locate any theoretical frameworks specific to BBP and DRR in the literature search. The remaining sections of this chapter detail the literature review findings, grouped into topics addressed in the literature. These include accounts of BBP left behind in disasters; whether, where and how BBP were included as priority populations in disaster planning or response; decisions to stay or go and associated evacuation and shelter considerations; health promotion to reduce risk; heatwaves; pandemics; and advocacy.

Left behind

A small number of accounts detailed BBP who were left behind or who were described as requiring significant time and resources in their evacuation: The earliest, in *Forces of Nature and Cultural Responses* (Hughes, 2013) was dated from AD79. The report describes the demise of Pliny the Elder during the eruption of Vesuvius that decimated Pompeii and surrounding areas. Having set out in his boat to rescue trapped friends at the coast, Pliny the Elder is reported to have died due to gas, ash and overexertion relating to his body size (referred to as corpulence in the book chapter).

In 2012, Superstorm Sandy wreaked havoc on the East Coast of the United States. In the 48 hours following the storm, all but two patients were evacuated from Bellevue Hospital Center (BHC) in New

York City. Reporting on these two patients, Ramme et al. (2015) specifically focused on the significance of one patient's size, shape and weight as the defining factors for her being left behind. Hospitalised for a knee injury, the patient had been deemed medically stable for movement but with a BMI of 81.4 kg/m² and weighing 263 kg she was too wide for the evacuation sled. This factor, along with safety concerns for the patient and evacuation personnel, prohibited evacuation down the 15 flights of stairs. In contrast, another report of the same two patients (Ofri et al., 2012) was excluded from this review as it made no reference to BBP, merely describing both patients as unable to be moved for medical reasons.

Perhaps the most detailed account concerning BBP in a disaster is provided by Fink (2013). Fink details a period of five days at Memorial Medical Center (MMC) where, in 2005, 34 patients died in the aftermath of Hurricane Katrina. Repeated miscommunications between MMC staff and emergency rescue services are documented, resulting in rescue services being sent away several times. Fink's detailed work, including associated news articles (e.g. Fink, 2009) has been particularly influential to my desire to pursue this PhD research in order to raise awareness of the need to plan with and for BBP to ensure no one is left behind because of their size, shape or weight. The account of Emmett Everett, a 61 year old Honduran man awaiting surgery at MMC for a non-life-threatening condition, especially resonated. Records show that Emmett, a BBP who was paralyzed and waiting for elective surgery, appealed to his nurse several times during the evacuation *"don't let them leave me behind"* [2] (p. 297). When discussing patient evacuations, it was allegedly concluded that, at approximately 170 kg, he was too heavy to be evacuated. Emmett was apparently alert and conscious when he was purported to have been administered a lethal dose of morphine and midazolam, drugs he had not been receiving for routine care prior. Other medical staff who led evacuations later claimed that they would have found a way to evacuate him had they been made aware of his presence. Such accounts raise moral and ethical dilemmas, communication gaps, and questions around prioritisation and triage decisions (Fink, 2013).

Another MMC patient, visually assessed as around 159 kg, was reportedly close to death and being treated for comfort only. The task of moving her down the stairs was considered impossible and two days after Katrina hit, an exhausted specialist is quoted as saying *"I gave her medicine so I could get*

rid of her faster” as the nurses were needed elsewhere (Fink, 2013, p.161). Another patient was in the MMC intensive care recovering from heart problems and multiple operations when Katrina hit. Described as obese, he lay motionless on a stretcher, covered in sweat and almost nothing else. He was left until all other patients had been evacuated because it was feared he would block the evacuation route. By the time it came to attempt his evacuation, staff initially believed he had died while waiting. On confirming he was in fact still alive, he was the last living patient to be evacuated from the hospital, going on to make a full recovery.

While a number of anecdotal accounts of BBP evacuations in NZ have been relayed to me by emergency management (EM) staff, such as an excavator digger being used to transport a BBP from their home during a Whanganui flood, and difficulties extracting someone in the Wellington region during a different flood event, I was not able to locate written reports for those incidents. A single journalist's report was located specifying details relating to a BBP initially left behind in volunteer evacuations of the residential streets most affected by severe flooding in Edgecumbe (Strongman, 2017). This person and a number of other residents overlooked by earlier evacuations were eventually evacuated on the back of a flatbed heavy goods vehicle when a volunteer rescuer came back to find their relative (Strongman, 2017).

Priority groups?

Dries et al. (2014) cite people with high body mass as one of the populations that are likely to be poorly defined in DRR's 'at risk' populations and call for more information in order to appropriately strengthen disaster preparedness. Geiling (2010) suggests that it is now becoming standard for relief organisations to include provision for BBP in shelters designated for special needs patient populations. However, there is no consistency in the designation of BBP as 'at risk' or a 'special population' group. While some documents suggested that people with high BMI may be included in other groups identified as at greater risk in disasters, most reports referred primarily to patient groups under some form of intensive hospital care at the time of a disaster. Kailes and Enders (2007) cautioned that the term 'special needs' may be viewed as offensive by some in disability populations. Dempsey et al (2019) note that the US Department of Health and Human Services' National Response Framework

includes patients with high BMI as part of a special population needing additional considerations such as transport, positioning (in bed), clinical trauma care, safe moving and handling and staff training. Prior to Dempsey, the Hawaii Disaster Medical Assistance Team (2010) set out treatment protocols for BBP in mass casualty events and formed one of the first bariatric patient response teams (Hawaii Disaster Medical Assistance Team, 2010).

Mace et al. (2018^{a,b,c}) presented a three part series of articles about disaster planning considerations for people with access and functional needs. Part one provides an overview that highlights additional needs of some people, including BBP, for sleep and recline position and potential for diminished lung capacity. Gillings (2010) and Devereaux et al. (2009) refer to similar considerations of upright positioning for patients in bed, although this does assume all BBP would have a similar body shape and positioning requirements. Mace et al. (2018^a) outlines legal aspects including that the American Medical Association, American College of Cardiology, and American Heart Association identified obesity as a chronic disease recently. Moving onto Mace et al. part 2 (evacuation and shelter) (2018^b) however, there are no details particular to BBP. In part 3 (medical considerations) there is scant reference to BBP, other than as a risk factor for chronic health conditions (Mace et al, 2018^c). Kailes and Enders (2007) highlight that while BBP may not ordinarily be captured within groups routinely identified as 'at risk' or 'vulnerable' BBP can present with a range of additional needs relating to accessible transport, chairs and beds that are appropriate, although this is not defined other than being able to support a person with obesity. Potentially this could be interpreted as supporting the weight of a person, although width and height of items are equally important for some BBP. It is unclear whether any of the considerations described by Geiling (2010) and Kailes and Enders (2007) were intended for BBP in the community who are not under direct medical care or classed as patients at the time of a disaster and none of this literature appears to include the identification of BBP needs.

Discussing the need to include disaster resilience in everyday patient-provider practice, Blackstone and Kailes (2015) provide a general overview of who might be included in 'vulnerable populations' and highlight additional groups recognised as 'at risk' following a range of disaster events. The list included people who were homeless and living in shared accommodation, some of whom were BBP, as well as people who were pregnant or those on kidney dialysis. Blackstone and Kailes (2015) point out this

effectively covers large numbers of the US population, thus rendering any notion of 'special groups' as redundant. In a presentation at the Diversity in Disaster conference, Melbourne (Gray, 2018, April 17-18), I raised the issues of why BBP should be included in specific planning, resulting in BBP being included as a priority population in a diversity and disasters issues paper prepared by Duncan et al. (2018).

Stay or go?

Gray et al. (2018) provides perhaps the first account of a BBP self-evacuation when hurricane warnings were predicting a direct hit in the area in the United States, where one of the authors (McAfee) lived. The account details the sheer effort it took for a BBP to prepare and execute a self-evacuation, including driving for many hours which caused much swelling of her legs. McAfee (Gray et al., 2018) also points out at the time she had the means to evacuate to another property (that option has since disappeared) and gives candid explanation of her concerns about going into a local shelter (discussed later in this section).

Non-ambulatory patients in hospitals and less mobile residents in aged residential care facilities rely on others for evacuation and often do not have personal choice on whether they stay or go. One account from a New Orleans hospital during Hurricane Katrina reported that 12 staff members took almost two hours to carry one patient with obesity down an emergency stairwell (Adkins in Gillings, 2010). A similar situation was described in a Tulane University Hospital report (Taylor, 2014) involving two patients weighing over 180 kg, and another two patients requiring 180 kg of equipment each. The Tulane patients were carried down six to eight flights of stairs in darkened stairwells in what was described as a *"Herculean effort by their caregivers"* (p.9).

An empirical study examining the built environment of three aged residential care facilities in NZ (Hales et al, 2019) identified in all three facilities that emergency doors had limited access and emergency exit doorways did not meet the recommended minimum width for BBP at two of the facilities. One staff participant commented *"I don't know whether I should be saying this, but they [a big bodied resident] cannot be taken out from the room - the bed can't fit through the door [and the resident is immobile]"* (Hales et al., 2019, p.29).

Drawing on disaster reports (including those from the Victorian bushfires of 2009 and evacuation egress reports from the Twin Towers during the terrorist attacks of September 11th, 2001 (9/11), Johnson et al. (2012) highlight that people are influenced in their decisions to stay or evacuate by factors such as having medical conditions, obesity or disabilities. This article also highlights issues relative to people movement and speed of travel during evacuation.

Gershon et al. (2007) list body size as a barrier for individuals in evacuation and describe how some individuals evacuating from the World Trade Center in 9/11 reported that BBP, those with poor level of fitness, or people with a disability slowed the evacuation process. However, subsequent research working with data from 9/11 does not support these views. Peacock et al. (2012) conducted research using video camera footage of fire drill evacuations of four buildings with between 10 to 31 floors. This study did not find an association between slowing evacuation speed and increased body size. Galea et al. (2012) utilised interview data from 271 people who evacuated the World Trade Center towers 1 and 2. Five percent of the interviewees from tower 1, and four percent of the interviewees from Tower 2 had a BMI of 40 or above. Using computer modelling to calculate evacuation speeds, his study found that high BMI and fitness level were neither indicators for rest stops nor travel speed. The authors do note that congestion on the stairways did slow everyone and will have brought about some forced rest stops for all people evacuating.

Taking shelter

Once evacuated, the needs of BBP may not be catered for in temporary shelters. In Florida, five hurricanes over 51 days in 2004 highlighted limitations at designated special needs shelters in catering for people with chronic diseases, including BBP (Baggett, 2006). For example, the military beds (cots) were not strong enough nor high enough for BBP who require beds that would support their body weight, shape and size which would not break and would be easy to get onto and off. Because the shelter beds were too low, additional staff were required to assist with lifting people and the metal edges of the beds caused many skin integrity issues. Similarly, Rios and Cullen (2006) reported that of the approximately 450 people who made use of a shelter in Texas following Hurricane Rita in 2005, six BBP required air mattresses and skin care. Lurie (2009) reports that in Hurricane Katrina, the

responders were "*caught off guard*" (p.844) by the numbers of people with additional care needs. Lurie (2009) also notes that after Hurricane Ike in 2008, high numbers of BBP pressured available evacuation and shelter resources, leading to some agencies specifying that BBP would need to be accommodated in special needs shelters. The global trajectories for increasing body mass mean provisions for BBP need to be mainstreamed in many countries and not limited to occupants in special needs shelters. These factors further underline the need to undertake this research.

Geiling (2010) described mobile Federal Medical Stations (FMS) in the US that can be sent to different locations and includes capacity for 250 beds. Noting that it was estimated that around 20% of critically ill patients after Hurricane Gustav (2008) were BBP, led the FMS to purchase five additional beds and other items weight rated for BBP for the services. These included beds with 270kg capacity, portable toilets with 450kg capacity, continuous positive airway pressure (CPAP) machines and masks, appropriate size clinical gowns, hydraulic lifts to 450kg capacity, a transfer bench (315kg capacity), mobility walkers designed for BBP (315kg capacity) as well as larger wheelchairs (315kg capacity) (Geiling, 2010). Similarly the Hawaii Disaster Medical Assistance Team (2010) hold weight rated shelter beds suitable for BBP.

Devereaux (2006) and Geiling (2010) highlight other issues relating to (but not exclusive to) BBP in shelters, including limited toilet and bathroom amenities and snoring and sleep apnoea that can disturb other evacuees. Sometimes BBP needed to use 2 cots (Geiling, 2010). However McAfee, a self-described super-plus size person highlighted the impracticality of two cots, exclaiming "*Are they kidding? I'd put one butt cheek on each bed and they would immediately open up a space between the beds I can conveniently use to fall right onto the floor, where I can't get up without the help of, literally, six people*" (Gray et al., 2018, p.52).

The lack of appropriate clothing for BBP following disasters is also an issue. Aid agencies commonly request that no clothing be sent in the aftermath of a disaster, due to huge volumes being sent immediately after events (e.g. Fessler, 2013). However, for BBP, finding suitable clothing that fits can be a general day to day challenge, which is then amplified in a disaster situation (Gray et al., 2018). Following Hurricane Katrina in New Orleans, McAfee (Gray et al., 2018) recalled seeing the image of one woman wearing taped together trash bags prompted the National Association to Advance Fat

Acceptance (NAAFA) to offer clothing but they had nowhere to send it. Similar responses are noted from agencies in Hurricane Katrina and other disasters (e.g. Lewin, 2005; NAAFA, 2017). When deadly tornadoes struck Kentucky (December 2021), one survivor needing 5X size clothes had no suitable winter clothing. A call went out across a fat advocate social network to provide suitable plus sized clothing (M. Wann, personal communication, December 13, 2021). Saunders (2007) also shared the account of one shelter user who happened to have incontinence and whose clothing was stolen from the shelter dryer.

Health promotion to reduce risk

Two papers sought to link emergency preparedness with health promotion activities intended to reduce people's BMI on the assumption that weight loss is a valid risk reduction strategy. Such assumptions are based on scant evidence that simple changes to one's lifestyle will in fact result in massive weight loss and corresponding health gain. The limitations and associated harms of these approaches have been outlined in the introduction of this doctoral thesis and in Chapter 5.

Based on multi-variate regression analyses of individual level data from the US Behavioral Risk Factor Surveillance System (BRFSS) for 2011 and 2012, An and Xiang (2015) argue that the Social Vulnerability Index (SVI) is a potential tool to aid obesity prevention initiatives, not just emergency preparedness. The quantitative survey calculated BMI from self-reported height and weight measurements from 661,360 participants. The SVI looks at 14 different variables including: proportion of people aged 17 years and under; people aged 65 years and above; one parent households with children aged 17 years and under; race and ethnicity; and those persons living in group accommodation; poverty; unemployment; education level of people aged 25 and over; persons with limited proficiency in English; housing with 10 or more units; households with more people than rooms; mobile dwellings; no access to a vehicle; and annual income (p.9). Limitations stated by the authors include that the dimensions of SVI were not explored to identify which SVI indicators contribute to BMI or the extent of association of dimensions to BMI status. Of importance to this doctoral study, BMI were only stratified for BMI ≥ 25 and BMI ≥ 30 in this study. In 2011-2012, the mean BMI for all of the United

States was already above BMI ≥ 25 at the time (Non Communicable Disease Risk Factor Collaboration, 2017), and this study was not sensitive to BBP (BMI ≥ 40).

Following the 2009 Samoa earthquake and subsequent tsunami, Apatu et al (2014) interviewed 300 adult residents from 12 villages on Tutuila Island and collected socio-demographic data on individuals and households. The data, categorised according to the phases of the Precede-Proceed theoretical model, showed that participants had excellent adaptive responses and were able to evacuate to safe areas following the earthquake and before the tsunami. Some 9.3% of participants mentioned physical mobility limitations associated with weight, disability or joint problems. Integrating obesity prevention and management principles to the model, the authors concluded that with adjustments to health promoting behaviours such as the introduction of fitness trails to higher ground and the development of community gardens would promote motivated people to develop a higher level of adaptive response (Apatu et al., 2014). While the authors did not cite any limitations to their work, the assumption that walking and consumption of foods grown in community gardens by motivated individuals will result in major body mass reduction and quicker movement to higher ground is hugely problematic as the global evidence does not support significant changes through these types of intervention for any population to date and is not particular to the cultural population of Tutuila Samoa (e.g. Lustig, 2013; Gard & Wright, 2005, p. 44).

Heatwave

Examining closed case records in Australia, Coates et al. (2022) found that for the 354 heatwave associated fatalities in Australia between 2001-2008, 34% of case records did not contain body size information, although 'obesity' was noted in 18% of those records. Semenza et al. (1996) found no association between high BMI and fatalities during the Chicago heatwave of 1995. This was despite noting that people with high BMI usually have less ability to acclimate to heat and that people with medical conditions were massively impacted in how they could manage during the heatwave (Semenza et al., 1996). For those who perished in the 1995 Chicago heatwave (Klinenberg (2002) there were strong associations with social conditions such as poverty which are also closely associated with prevalence of high body mass. Klinenberg (2002) also highlighted the heightened heatwave risk of

death associated with people living alone and those who were socially isolated. In a systematic review, Hajek and König (2021) found mixed results from studies wishing to explore BMI >30 as a factor in loneliness. Although an earlier study by Hajek et al. (2019) found an increased association of loneliness in men aged 40 years and above, with BMI ≥ 30 . So while body fatness or size may not be a direct marker of excess risk in heatwaves, there are a number of other associations that may contribute to a person's susceptibility and these need to be considered for all people, including BBP when addressing DRR.

It is also worth noting the Impact of hot and humid countries on BBP, not just in heatwave conditions: Geiling (2010) observed that following the 2010 Haiti earthquake there were no bigger bodied patients in the local population but notes that some of the responders were BBP. The hot and humid conditions did present some issues for the big bodied responders, many of whom were not acclimated to the heat or physical demands during the event. Geiling does not provide insight into the specific role body size may have played for the responders.

Pandemic

Health risks directly associated with body fatness and BMI remain contested with associations between body weight and risk often confounded. This has been the case relating to recent pandemics (Pausé et al., 2021). In the last fourteen years, a range of literature relating to influenza A(H1N1) and more recently SARS-CoV-2 (COVID-19) has been published connecting body size with pandemic risk (e.g. Louie et al., 2011; The ANZIC Influenza Investigators, 2009; Demeulemeester et al., 2021; Moser et al., 2019). Using public health surveillance data, Louie et al. (2011), assessed the relationship between BMI ≥ 30 and BMI ≥ 40 as independent risk factors for H1N1 in 534 adult Californian patients hospitalised for H1N1 infection. The study concluded that people with BMI ≥ 40 (BBP) had increased odds of dying from this flu. Age, race and ethnicity, pre-existing chronic conditions and body mass variables were included along with clinical findings and treatment approach and timing. Prior social factors such as poverty and other social determinants of health were not included yet these are important factors to consider.

Conversely, a systematic review and meta-analysis by Sun et al. (2016) showed that after adjustment for early antiviral treatment, the relationship between BMI and poorer outcome for H1N1 disappeared. Further, while BMI ≥ 40 doubled risk of serious complications there was no association between BMI ≥ 40 and death (Sun et al., 2016). A study by Yu et al. (2011) also highlights factors associated with delayed treatment issues for BBP and reported only two BBP cases in 783 H1N1 related deaths.

Triage

Fink's work (2013) highlighted issues that arise when usual health care triage (care for those most in need of medical attention) is replaced with military triage (save those most likely to survive). The difference between the forms of triage contributed greatly to confusion during Hurricane Katrina and planned efforts to evacuate patients out of MMC (Fink, 2013). At the time of Hurricane Katrina there were nine different triage protocols utilised in United States hospitals. Noting that prior to COVID-19 BMI was not part of any form of triage of patients in disasters, Dempsey et al. (2019) argue that the need for additional resources means BMI should be included in disaster triage. This was not necessarily a positive step for BBP as Dempsey highlights that because critically ill BBP require more and specialised resources, triage in times of scarce resources may well result in BBP being de-prioritised in favour of others.

This was the situation in early months of the COVID-19 pandemic when some countries and states made radical triage decisions about who would and who would not be given access to ventilators that were in short supply. In early triage plans BBP, older people and those with disability were to be denied access to ventilators should the need arise (Ward, 2020). Swift opposition to such prioritisation resulted in changes, such as the rapid revision of the California state guidelines (NoBodyIsDisposable, 2020; Pausé et al., 2020) with decisions on rationing moved to the medical teams in charge. However, Pausé et al. (2020) highlight that due to the extent of health practitioner bias toward BBP, triage judgements may still go against BBP. Bias is an important aspect to be aware of in relation to DRR and BBP, given the high levels of negative bias toward BBP in populations (Brownell et al., 2005).

Planning and preparedness

Very little of the literature located provide guidance on disaster planning and preparedness specific to BBP. Geiling (2010) notes a range of disaster scenarios and potential medical complications for BBP that can be planned for to address relevant care needs of patients to avoid crises, including suitable equipment supplies for BBP such as blood pressure cuffs for bigger arms. Geiling (2010) also signals that planning needs to take account of staff being BBP and the possible challenges and risk of injury this may present.

Studies of earthquake preparedness drills have revealed embarrassment and other barriers for BBP. McBride et al. (2019) applied a citizen-science observational method to collect observer accounts of barriers to people's response to the "ShakeOut" earthquake drill in NZ. Observers were recruited to note the actions of participants and weight or size was identified as a concern 15 times. This led the authors to suggest that high body mass could be considered when developing future campaigns, for example by improving access to safe spaces where those unable or unwilling to "drop" can "cover and hold". A more inclusive approach is recommended that addresses embarrassment and expands the "ShakeOut" campaign to address barriers for people, including barriers for people with additional needs, including BBP (McBride et al., 2019).

A substantive DRR planning and preparedness guideline for people in Australia with diabetes and other chronic conditions (National Diabetes Service Scheme, 2021) briefly mentions obesity as a risk factor for development of diabetes (p.30). Despite a widely publicised and commonly held association between diabetes and high BMI, no mention is made of the preparedness needs of people in relation to body size, shape or weight. This example highlights an issue raised by Gray et al. (2020), that local and regional emergency management agencies need to have a good understanding of the prevalence of BBP, actual needs in DRR and the role discrimination, stigma and bias play in order to better plan and prepare for disasters in an inclusive way.

Limitations

I did not specifically appraise the quality of evidence in the small number of primary research reports. The search was also limited to items published in English. This means important literature may have been missed and omitted that could provide valuable literature for this doctoral study. While one key purpose of the literature review is to identify main theories relative to the topic, I did not locate any literature outlining theories particular to BBP and DRR. Similarly, the limited literature did not allow me to identify many inconsistencies other than evacuation speed and the impact of heatwaves to BBP. A major gap in the literature relates to BBP and community contexts, as the majority of the literature concerned patients in hospital and transfer to hospital.

Chapter Summary

This chapter outlined the results of a literature search that located a small number of international journal articles reporting empirical data and accounts including BBP in disasters. By far the greatest proportion of items located were journalist and staff reports mentioning BBP and disasters, mostly from the perspectives of emergency medical service and health personnel. The search confirmed major gaps in the empirical peer reviewed research literature pertaining to BBP and DRR. Where BBP are mentioned, most items provided no substantive advice or conclusions particular to DRR planning and preparedness.

Given the paucity of literature on this specific topic, I expanded the search to population groups previously identified as being at higher risk in disasters (e.g. people with disability or those with severe mental health conditions) who may also be statistically more likely to have high body mass. This work is presented in Publication 1 (Chapter 4).

No items were located on the experiences and views of EMs or BBP in NZ relating to DRR. The next chapter outlines the methodology for this doctoral study.



Image 3: Lesley Gray and Levi Vaoga
Image credit: Lesley Gray personal collection

3

Research theory and process

"Two sides of the same coin."

(Morgan, 2014, p.1048)

This chapter outlines the research approach to this doctoral study, the researcher's pragmatic philosophical worldview and discusses the epistemological and ontological positions shaping the methodological approach selected for this doctoral study. Each part of the paradigm (worldview) is explained and my position relating to big bodied people (BBP) and disasters explored. The methods employed to answer the research questions are detailed. Finally, reflexivity, quality, ethical and Treaty of Waitangi considerations for this research are addressed.

The Sendai Framework for Disaster Risk Reduction (DRR) (United Nations Office for Disaster Risk Reduction, 2015) identifies that "effective DRR requires collaboration among diverse public and private stakeholders" (Nohrstedt et al., 2022). It is therefore incumbent upon the disaster science community to provide multidisciplinary evidence-based DRR research that addresses identified knowledge gaps pertaining to disaster risks in order to advance disaster management policy and practice (Cutter et al., 2015; Aitsi-Selmi et al., 2016). Researchers are challenged to set a research agenda that is "problem-focused and solutions-based" (Peek et al., 2020, p.1).

This doctoral study responds to these calls by setting out to address an identified gap (the problem) and conduct studies to respond to this gap. Effective and transformative DRR calls for governance models that capture diverse and previously unheard voices to ensure that DRR science is based on lived experience and that risk reduction actions are actionable (Handmer et al., 2021; Gaillard, 2019). In under-researched topic areas it is vital to include the voices of stigmatised and marginalised people to avoid marginalisation of knowledge in order to "*strengthen risk governance, policy and practice to best ensure justice and equity*" (Handmer et al., 2021, p.25). Underlining the focus of this research, Manokaren et al. (2020) posit that it would be unethical to conduct research about BBP that does not amplify the voices of BBP.

Completing a doctoral study during a 100-year global pandemic (COVID-19) has shown now more than ever that public health and emergency managers (EMs) have historically viewed their roles in a public health emergency differently, yet to be effective, any response requires both (Soujaa et al., 2021). My research and practice interests position me at a pivotal intersection of different fields of disaster sciences and research approaches that promote the effective knowledge production relating to BBP and DRR.

Research paradigm

A research paradigm is the worldview of the researcher and includes the components of ontology, epistemology and methodology which create the framework of a researcher's values and beliefs that in turn shape the methodology (Scotland, 2012). To determine the relevant paradigm for any research, it is important to understand the researcher's own belief systems to provide a detailed understanding of the position and biases a researcher holds and that will inform the research (Gray, 2014).

This section summarises the main elements of epistemology and ontology that locate me as the researcher and in turn shape the methodology within these parameters. Ontological and epistemological ideologies form the foundation for the way in which we view the world around us, how notions of reality are constructed and how we interpret meaning (Grix, 2002). These ideologies are perhaps best summarised as:

“If ontology is about what we may know, then epistemology is about how we come to know what we know” (Grix, 2002, p. 177).

I wish to highlight that the process of theoretical underpinning is a Western approach to research philosophy (e.g. Henry & Pene, 2001; Wilson, 2001). Colonial discourse is contested by indigenous and non-indigenous scholars (Smith, 2021; Matapo, 2021; Bishop, 1996).

“We know that there is a way of knowing, that is different from that which was taught to those colonised into the western way of thought. We know about a way that is born of time, connectedness, kinship, commitment, and participation.” (Bishop, 1996: 157).

Across many groups in the Pacific³ diaspora, the philosophy of *vā* is lived “a relational ontology of being” (Matapo, 2021, p. 119). *Vā* can be described as linking human and non-human worlds (Enari & Matapo, 2020) and relating to cultural ontologies (Matapo, 2021). Māori ontology combines spiritual, the cosmos, environment and the human connections of mind, body and soul (Henry & Pene, 2001). My belief is that there are multiple realities that shape people's construction of 'being' and how

³ Pacific is one term commonly utilised in Aotearoa New Zealand. The term includes many diverse Pacific nations each with their own histories, language, culture, beliefs, and practices.

knowledge is assembled. This research aims to include Māori and Pacific voices as part of the intended participant group, therefore my research approach must be relevant and true for my participants.

Epistemology

The word epistemology is derived from Greek – *episteme* – this translates as ‘knowledge, understanding or acquaintance’ and - *logos* – referring to ‘account, argument or reason’ (Steup, 2008). Epistemology is several centuries old and relates to the type and range of knowledge: how we know what we know; what is the truth; what is legitimate knowledge; and what we can know (Guba & Lincoln, 1994). Epistemology traditionally sets out how the research will be conducted, how knowledge can be acquired or produced and reproduced (transferability) (Moon & Blackman, 2014). Similar to ontology, an epistemological continuum can be visualised with objectivism epistemology at one end and subjectivist epistemology at the other end.

Objectivist epistemology involves the principles of knowledge being fact based and value free (Rand, 1990), thus allowing for unimpaired measurement of a phenomena to identify, map and predict. Objectivist epistemology looks for variables and constants to measure and establish cause and effect (Rand, 1990) and aligns well with quantitative research seeking to investigate the ‘what’, ‘when’ and ‘where’ to generate statistical models seeking to explain what was observed. The facts of objective knowledge are often studied at a distance without researcher interaction.

Objectivist epistemology as described by Russian philosopher Ayn Rand also rejected forms of faith, religion, supernatural or mysticism as means of knowledge (Sciabarra, 2012). Such views conflict with Māori and Pacific worldviews relative to cosmos, spiritual connections, research ownership and ways of knowing (Smith, 2021; Stewart, 2021; Alefaio, 2018; Henry & Pene, 2001). Denzin (2010) postulates that indigenist paradigms reject Western positivist and post-positivist methodologies as these approaches are commonly utilised to authenticate coloniser knowledge on indigenous peoples.

In the field of fat studies, scholars refer to fat epistemology. Fat epistemology posit that the people most appropriate to create and add to knowledge about body fatness are fat people themselves (Cooper, 2021; Pausé, 2012, 2020; Pausé & Taylor, 2021; Rothblum & Solovay 2009).

Ontology

The word ontology is derived from the Greek word for 'being' - onto - and the Greek word for 'science, study, theory – logica'. Ontology is the branch of science relating to the researchers' assumptions about 'being' (Crotty, 1998, p.10). It underpins the approach researchers will follow (Grix, 2002) and relates to the study of things or 'thingness' that comprise the researcher's reality of 'what is' (Cresswell, 2007; Patton, 2002). The researcher's ontological position describes what exists, the nature of reality and the type of relationships of being (Guba & Lincoln, 1989). This establishes the researcher's means of knowing and beliefs about how the world is constructed (Scotland, 2012). Within ontology there are two opposing views, relativism and realism (Field, 1982).

Relativism (also known as the constructivism or interpretivism paradigm) views reality as subjective with multiple realities constructed by the individual's experiences and perspectives, in other words reality is the human experience and human experience is reality (Gray, 2014; Levers, 2013). Reality is therefore relative and indistinguishable from subjective experiences (Creswell & Clark 2017; Young & Collin, 2004; Gray, 2014). In contrast, realism views reality as fixed, a single objective reality to the research phenomenon, external, objective and measurable irrespective of the researcher's beliefs and is not changed by our interface with it (Scotland, 2012; Creswell & Clark, 2017; Hudson and Ozanne, 1988; Krauss, 2005). Relativism ontology is aligned with qualitative research methods and the philosophical stance of interpretivism while realism is aligned with positivist and post-positive epistemology aligning strongly to quantitative research methods claiming objective knowledge, replicability and standardisation (Park et al., 2020).

Philosophical worldview

In this doctoral study my beliefs do not align solely with the positivist views that reality only exists outside social construction, nor do I subscribe to the belief that all reality is socially constructed. The pragmatic worldview is an alternative paradigm that sits in the middle ground between positivist and interpretivist worldviews and rejects choosing one over the other (Johnson & Onwhuegbuzie, 2016; Teddlie & Tashakkori, 2009). The pragmatist paradigm views positivist and interpretivist paradigms as "two sides of the same coin" (Morgan, 2014, p.1048). Pragmatists view an ideology as true if it works

and in turn produces practical knowledge and consequences (Rorty, 1998). Depending on the questions to be asked, this may involve single or multiple realities and both realist and relativist views as each offer legitimate views on 'what is' (Morgan, 2014).

The pragmatist worldview accepts that there are multiple truths and realities. Although it is most often associated with mixed methods, it does not subscribe to a single methodological approach but considers method(s) that will best answer the research question(s) posed to deliver value-oriented and problem-centred research with a pluralistic view (Creswell & Clark, 2017). This ability to justify a mixed approach to methodology has been suggested as a reason for its renewed popularity (Onwuegbuzie et al., 2009).

The pragmatist paradigm is a relatively old philosophy founded by Peirce (a mathematical genius), James (a trained physician), and Dewey (a psychologist). William James (1842-1910) wrote that the term 'pragmatism' originated from a Greek word $\pi\rho\acute{\alpha}\gamma\mu\alpha$ and that this meant 'action' from which were derived the words 'practice' and 'practical' (cited in Campbell, 2011). James and Peirce argued that knowledge and truth are never concrete; a highly contentious view at the time (Campbell, 2011). Debates around what is true overtook a key question of what truths mean (Woodbridge, 1921). Early pragmatist philosophers were themselves marginalised by those in favour of a professionalised philosophy (Campbell, 2011) and the influence of the pragmatist paradigm waned after the 1930's (Kelemen & Rumens, 2012).

Pragmatism has experienced renewed focus since the 1970's although criticism is ongoing for the paradigm's limited commitment to theory (Biddle & Schafft, 2015). A further criticism directed towards practitioners of pragmatism is that researchers employing mixed methods may disregard questions raised concerning ethical approaches and values, particularly by researchers working with vulnerable and marginalised populations (Mertens et al., 2010; Hesse-Biber, 2010).

As a researcher working with groups often marginalised in society, I must ensure that as I seek answers to the research questions through 'approaches that work' I must also ask 'will this work for my study population?' Dewey's view of research as a social undertaking with knowledge creation framed in the

context of advancing community and social good (Maxcy, 2003) aligns with my professional ethic and aims for this study.

Participants in this doctoral study each have their own realities based on their own truth and meaning, shaped by life course and subjective experience of disasters and disaster risk reduction, drawing multiple, and complex realities (Schuetz, 1945). This *kōrero* (Māori word relating to conversation) in the research domain begins by identifying and describe existing realities, truths and knowledge to explore and explain how such phenomena might contribute to meaningful DRR.

Table 2 illustrates my interpretation of a philosophical continuum and highlights where my own philosophy sits with methodology examples.

Table 2: Positioning of my philosophical worldview

	Positivist	Pragmatic	Critical	Interpretivist
Ontology	One reality/truth Objectivists	Reality negotiated	Multiple realities	Multiple realities Socially constructed
Epistemology	Measured Reliable & valid tools	The best method for the problem	Socially constructed & influenced by power relations	Interpreted Perspective
Theoretical	Positivism Post-positivism	Research through design/Action research	E.g. queer theory Feminist theory	Phenomenology Hermeneutics Critical inquiry
Methodology	Experimental Correlational Randomised control trials Mathematical etc	Whichever method(s) will answer question	Action research Critical ethnology Feminist research etc	Phenomenological Grounded theory Ethnography Discourse analysis
Data Collection	Usually quantitative measurement- sampling Questionnaires Statistical analysis	Often mixed or multi methods	Observation Interviews Focus groups	Observation Interviews Focus groups
Researcher position	Distant	Mixed	Close	Close

(Adapted from Biddle & Schafft, 2015; Creswell & Plano Clark, 2017; Crotty, 1998; Sweetman, Badiee, & Creswell, 2010; Wynn & Williams, 2008)

Methodology

The term methodology relates to the science and study of the ways knowledge is created and the rationale (logic) of the scientific investigation including the strengths and limitations of methods and approaches (Grix, 2002). Methodology considers the best methods to accomplish the aims of the research (Scotland, 2012). When considering and discussing methodologies there are three main categories: quantitative, qualitative and mixed or multiple methods. In long standing debates about their application, qualitative and quantitative methods are often presented as mutually exclusive opposites (Borgstede & Scholz, 2021). Much of the debates relate back to the philosophies and epistemologies underpinning rather than the method techniques employed (Yanchar & Westerman, 2006).

The natural or physical sciences are often referred to colloquially as 'hard sciences' compared to 'soft' social sciences although it is not clear where these terms first emerged (Biglan, 1973; Storer, 1967). Such delineation is based primarily on perceived differences in methodological rigor, objectivity and replicability. However, recent research has shown that as more women have become involved in science, technology, engineering and mathematics (STEM), these disciplines are increasingly labelled as soft science and therefore "deemed less rigorous" (Light et al., 2022, p. 1). The language applied to different research approaches thus positions quantitative research as the dominant and somehow superior methodology that is also gender stereotyped and likely to disadvantage women (Light et al., 2022). As a woman in STEM, often working with qualitative methods, this is of great concern to me that my research may be viewed as less rigorous when providing knowledge that other research to date has neither sought or secured.

A strength of DRR research is that the field spans many disciplines, including engineering, technology (e.g. Shaw et al., 2016), sociology, psychology, geography, development studies, and political science to name a few (Staube-Delgado, 2019). This aligns well to the field of public health which by nature is multi-disciplinary and my own background as an interprofessional educator and researcher.

Quantitative Methodology

Quantitative methodologies seek rigour through statistical analyses of numerical data providing mathematical confidence intervals, suggesting replicability and generalisability to the general population (Boutilier et al., 2001; Rajkumar et al., 2001; Phillimore & Goodson, 2004). In my professional discipline of public health, systematic reviews and large scale randomized controlled trials have long been held up as the gold standard of empirical medical research (Jones & Podolsky, 2015; Hariton & Locascio, 2018). Public health data often compare health or disease experience with a range of variables that may be associated with health risk factors.

In psychology, quantitative methods within a positivist epistemology are custom and practice (Madill et al., 2000) to investigate 'what', 'where' and 'when' questions (Jones, 2002) although statistical generalisation is both a strength and a weakness in their interpretation. For example, in relation to body mass, at global and national levels we most often see trends and correlations relating to two

body dimensions of height and weight reported (e.g. Non Communicable Disease Risk Factor Collaboration, 2016; Ministry of Health, 2021). Science relating to body mass in the last three decades has relied heavily upon quantitative methodologies for population level studies of these two measurements, often and erroneously referred to as 'lifestyle modifiable factors' (e.g. Guasch-Ferré et al., 2022). Statistical correlation at a population level of body mass and a range of health variables and risk factors are commonly misinterpreted as causation (e.g. Tylka et al., 2014). At an individual level such methodologies cannot be directly applied and much harm has been caused by popularising body measurement to the point that inferences around people's health, wellbeing and societal contribution have been reduced to sets of numbers and assumptions. How people interact with each other, how their own bodies function and interact with their environment provide complexity one cannot measure simply (Pawson & Tilley, 1997), nor should, without relevant participant voices (Creswell & Plano Clark, 2017).

Public health and emergency management are complex in nature and quantitative research findings are solely insufficient to support practitioners and administrators in making best possible evidence-informed decisions for communities most likely to be impacted in disasters. To understand the complex nature of DRR that involves the socio economic context, experiences and actions of people (Hills, 2000), researchers and decision makers need a deeper level of understanding than is possible to acquire through quantitative methodologies (Jack, 2006; Swanson, 2001).

Qualitative Methodology

Qualitative methods provide depth and context to allow for personal knowledge and experience to be studied so that the meaning and impacts of the phenomena of interest can be understood (Johnston & Onwhuegbuzie, 2016; Tuli, 2010) in ways that quantitative methodologies cannot (Denzin & Lincoln, 2000). Qualitative research methodologies in psychology focus on finding, describing and sense making (Laverty, 2003) as people make their own meanings of experience and interactions (Johnson & Onwhuegbuzie, 2016). Qualitative methodologies are especially fitting when wishing to understand a phenomenon in detail (Camic et al., 2003, p.11) and are aligned most closely with interpretivist ontology and epistemologies. Methodologies in fat studies are commonly qualitative in nature, with autoethnography a particularly favoured method to build theory in emerging fields of study (Pausé, 2020). Criticisms of such methodologies relate primarily the researcher's intrinsic biases and the inability to generalise findings (Creswell & Plano Clark, 2017).

Kiger and Varpio (2020) point to a lack of clear delineation for explaining qualitative analysis, which, according to Nowell et al. (2017) makes it difficult for readers to understand how the analysis was performed. Clarke and Braun (2013) also highlight how concerns about issues with data analysis have led to assumptions that qualitative research has less rigour than quantitative research. They argue that reflexive thematic analysis is a rigorous method for understanding experiences, thoughts and actions across a data set (Braun & Clarke, 2012). Thematic analysis is most aligned with, and deemed most suited to, the relativist and constructivist paradigms of epistemology (Kiger & Varpio, 2020; Joffe, 2011). However, the range of qualitative methods can arguably be applied as much to quantitative topical surveys (Sandelowski & Barroso, 2003) as to interpretive phenomenology (Smith & Osborn, 2003). Qualitative methodologies offer the inclusion of relevant BBP participant voices, experiences and beliefs particular to DRR, previously absent in the literature. They also allow deep exploration of topics when quantitative research provide little context relating to the circumstances of BBP leading up to, during and following disasters. Qualitative methodologies are also flexible, allowing for adaptation of question areas as new knowledge is identified (Sandelowski, 2000). Qualitative methods to be applied in this study are detailed later in this chapter (see Methods section).

Mixed or multiple methodology

The pragmatist researcher most often utilises mixed or multiple methodology (Creswell & Plano Clark, 2017), selecting the methods and design most fitting to answer the research question (Kaushik & Walsh, 2019). Mixed or multiple methods generally involve qualitative and quantitative methods and may also involve multiple quantitative or qualitative methods (Fetters & Molina-Azorin, 2017). Through abductive reasoning the researcher moves between induction and deduction to yield the best available or most likely conclusions from observations (Kaushik & Walsh, 2019; Sober, 2013). The nexus between EM and BBP relative to DRR requires breadth and depth to knowledge creation that may not be provided by one method. As this doctoral study is exploratory in nature it is important to have flexibility in the application of methods, for example with an exploratory survey and in-depth interviews (Merton, 1984).

Exploratory research seeks to scope out the magnitude of a phenomena (Sahin, 2021), determining things that are novel and noteworthy in a research topic and *"is the soul of good research"* (Swedberg, 2020, p. 17). This type of research is appropriate to topics that have not previously been subject to empirical research and is particularly useful when wishing to devote significant study time to a topic (Swedberg, 2020; Stebbins, 2001). Little is known about the history of exploratory studies but Swedberg (2020, p.19) notes that 'exploratory study' was first seen in books written in English language in the 1920's with the first sociology journal article claiming to be an exploratory study published in 1942 (Hayes, 1942). Stouffer and Lazarsfeld (1937) set down detailed and fixed process on how to progress collecting data in such a study. Conversely, the likes of Merton (1949) and Gouldner (1954) proposed less rigid approaches.

Swedberg (2020) cautions that exploratory research is perilous because we may uncover nothing of note or novelty in the process. While this may be true of many methodological approaches, Swedberg's caution resonated with my own concerns at the outset of this doctoral study. As noted in the introduction, when consulting DRR experts I was initially convinced that I would learn that this topic had already been explored or discounted.

Practical, descriptive and positional

As a pragmatist it is important to me that practical knowledge is produced (Rorty, 1998) and actioned as highlighted by William James (as cited in Campbell, 2011). Communicating science to non-scientific communities is a key challenge where science and policy will have different ontological and epistemological positions framing knowledge (Handmer et al., 2021; Albris et al., 2020). My approach in responding to these challenges is to ensure results from this doctoral study are published as descriptive accounts, with a practical focus so that DRR practitioners and BBP alike can take information from the publications, situate key points to their own circumstances and take DRR actions to ensure this group are included going forward.

Descriptive research addresses questions relating to "what is" delivering facts about the world (Niiniluoto, 1993) and relates to Bertrand Russell's theory of descriptions (1905). Russell argued truth through the placement and use of language. However, Russell's language analysis theory was criticised for being neither true or false and in fact incomplete (Strawson, 1950). Dulock (1993) proposed descriptive theory as describing and attempting to classify phenomena. Descriptive research includes quantitative and qualitative data and is most usefully applied when researching a phenomenon previously under researched to describe 'what is'. Grimaldi and Engel (2007) suggested that descriptive science is undervalued. Sandelowski (2000) adds that basic qualitative description lacks standing in the broader community of qualitative researchers. Chafe (2017) goes on to argue for greater acceptance of the methodological approach of qualitative description in health service and policy research. The lack of status of qualitative description has led to some researchers to seek "*epistemological credibility*" (Thorne et al., 1997, p.170), sometimes by naming qualitative description as ethnography, phenomenology or narrative study, to name a few, when the element of such qualitative methods is narrow and largely qualitative description. Descriptive and interpretive validity are central to this methodology, requiring the language of the participants to be so far as possible, in their own words and beliefs (Maxwell, 1992).

In describing the phenomena in this study, the language and positioning of participants are described in each set of results. In analysing these descriptive data, triangulation revealed multiple, dynamic and relationally constructed conceptualisations worthy of further analysis.

Methods

To explore and respond to the research questions as set out in the introduction to this thesis (Chapter 1), a multiple methods design was used comprising:

1. Desk based literature search/review
2. Descriptive exploratory survey of emergency managers
3. Qualitative semi-structured interviews with emergency managers
4. Qualitative semi-structured interviews with big bodied people.

Desk based literature search/review

The desk based literature review presented in Chapter 2 sets the direction of the doctoral study identifying what is already known and what the gaps are (Gall et al., 1996; Hart, 1998). As discussed previously, scoping literature searches were conducted in 2017 and 2022 using Medline and Scopus to systematically search using specific terms and strategies detailed in Table 1 (Chapter 2). From a total of 1070 records, after exclusions for duplicates and relevance, 58 items were included.

The literature review helped to shape the direction of this novel research and contributed to all stages of this doctoral study.

Exploratory survey of emergency managers

An exploratory survey of emergency managers was undertaken to provide context, and initial data to inform subsequent in-depth qualitative research. An online survey was selected as the most appropriate method in terms of time, cost and participant reach. Full details of the survey method, including sampling approach, questionnaire development and survey administration are provided in Chapter 6.

A 12 item questionnaire, comprising both multiple choice and free text questions (Appendix 2) was administered between May and July 2018 using the Qualtrics^{XM} © online survey platform (2018). The survey was evaluated and judged to be low risk, and did not require review by the Massey University Human Ethics Committee (Massey University low risk approval number 4000018662) (Appendix 3).

Using a variant of non-probability snowball sampling (Etikan & Bala, 2017), known or identifiable contacts in agencies such as regional emergency management organisations, health agencies, civil defence and first responder services were emailed an invitation to participate in the research and an information sheet (Appendix 4). Questionnaires were completed by 44 individuals from across NZ representing a range of organisations. Respondents who indicated that they were willing to participate in a subsequent interview were invited to provide additional contact details on completion of the questionnaire.

Semi-structured qualitative interviews

Individual semi-structured qualitative interviews were selected as an efficient and flexible method to collect data of people's experiences and interpretation (Patton, 2014; Tolich & Davidson, 1999). Semi-structured interviewing usually involves small numbers of interviews. The number of interviews continue to be conducted until no new topics are identified in successive interviews (i.e. saturation is reached). Interviews were conducted with fifteen emergency managers (EM's) and with seventeen people self-identifying as fat, big bodied, or as having high body mass residing in Aotearoa New Zealand (NZ).

Semi-structured interview schedules were created to guide the interviews which followed a conversational style to give participants the freedom to express their views in their own terms and to

introduce supplementary topics. Conversational interviewing can minimise power imbalances between the researcher and participant (Lavrakas, 2008), especially when the interview is conducted in a place of the participant's choosing (Liamputtong, 2009). The questions were developed based on the literature available at the time (see Chapter 2) and informed by my professional experience with the support and input of my supervisors.

The semi-structured interview guide for EMs (Appendix 5) reflected key themes of participant experience of disasters and DRR generally, and more specifically planning considerations and arrangements for BBP. The semi-structured interview guide for BBP interviews (Appendix 6) included questions relating to BBP participant experiences of emergencies and/or disasters, their own DRR preparedness, health and/or disability status, involvement in emergency planning, views on pandemic risks for BBP, and what individuals and emergency managers need to think about in DRR for BBP.

Interviews of approximately 45 min duration were conducted with 15 EMs between August 2019 and May 2021. Sixteen EMs who participated in the exploratory online survey outlined above expressed interest in participating in a semi-structured interview. Four of those EMs were able to participate in a semi-structured interview, providing informed consent to further participate. A fifth had moved roles but provided the name of the current role holder who was invited and after reading the information about the study, consented and was subsequently interviewed. The remaining eleven interviewees were selected through purposive sampling, a qualitative non-probability sampling technique that requires the researcher's judgement to select the cases, the number of which is usually small (Patton 1990; Patton, 2002) targeting EMs in different parts of NZ and including different types of EM. Most EM interviews took place in-person ($n = 10$), and five interviews were conducted via the video call system Zoom™ during the COVID-19 pandemic due to physical distancing requirements at the time, including one participant who was residing in New York City, United States at the time.

People identifying as big bodied were invited to participate in interviews through a modified snowball technique (Goodman, 1961; Baltar & Brunet, 2012). Snowball techniques can be utilised when researchers wish to access often 'hidden' populations or enable a wider reach to include people marginalised or stigmatised (Atkinson & Flint, 2001). A recruitment poster was disseminated through social media networks known to be 'fat friendly' and study information was circulated to known fat

scholars, activists, university and health care colleagues for onward distribution through their own networks. Prospective participants contacted me directly and were sent the information (Appendix 7) and consent forms (Appendix 8). Once consent was given, interviews were arranged at dates, times and locations convenient to the participants.

Seventeen individuals self-identifying as BBP consented to participate in the research and were interviewed between October 2018 and April 2020. No new themes were identified between the fourteenth and seventeenth interviews. Given time and resource limitations, interviewing stopped at seventeen. Sixteen of the interviews were conducted in-person and one interview was conducted via Zoom™ due to COVID-19 pandemic physical distancing requirements. Interviews with BBP were approximately 90 minutes in length. Each BBP participant received a grocery voucher to acknowledge their contribution to the research. All interviews were audio recorded with the explicit permission of participants and transcribed verbatim by a professional transcription service.

Table 3 provides a summary of all semi-structured interview participants. Full details, including percentage values, are provided in Tables 5, 7 and 8.

Table 3: Semi-structured interviews: EM and BBP participant characteristics

Experience of Disaster (BBP only)	BBP (n=17)	EM (n=15)	All (n=32)	Gender	BBP (n=17)	EM (n=15)	All (n=32)
<i>Earthquakes</i>				Women	12	6	18
Christchurch 2010-2011	4			Men	5	9	14
Kaikōura 2016	6			Age			
Seddon/Wellington 2013	6			20 – 39 yrs	7	1	8
Auckland	1			40 – 59 yrs	8	11	19
Edgumbe 1987	2			60+ yrs	2	1	3
Edgumbe Flood 2017	1			Not stated		2	2
Pacific Island ¹	2			Body Mass Index (Kg/m²)			
Tsunami evacuation	7			20-24.9		4	4
No experience	1			25-29.9		4	4
Location (Region)				30-34.9	1	7	8
Auckland	3	1	4	35-39.9	1		1
Bay of Plenty, Tairāwhiti	3	4	7	40-44.9	1		1
Hawke's Bay, Wairarapa	4	2	6	45-49.9	5		5
Manawatu, Whanganui, Mid Central	1	2	3	50-54.9	2		2
Wellington	5	2	7	55-59.9	4		4
South Island	1	4	5	60-64.9	1		1
Stated Ethnicity				Not available	2		2
Māori	3	2	5	Type of Organisation (EM only)			
Pacific, Māori	1		1	Health ²		2	
Pacific Islander, Polynesian	4		4	Government ³		9	
NZ European, Pākehā ⁴	8	12	20	Paramedic, Lay Rescuer		2	
Other	1	1	2	Humanitarian		2	

¹ Cyclones, Hurricanes, Earthquakes

² District Health Board, Health & Public Health Organisation

³ Civil Defence, Emergency Management, Local Government

⁴ Pākehā is a Māori term referring to New Zealanders of European descent

Data analysis

Survey analysis

The questionnaire comprised both multiple choice items and free text questions. Six of the multiple choice items related to participant characteristics (see Table 3) or asked about the groups for which organisations had specific disaster-related arrangements (see Table 6). Frequency analysis (total numbers and numbers for each classification) were calculated using Qualtrics^{XM}©. Two remaining multiple choice items yielded unreliable data due to a set-up error. However useful qualitative descriptive data was returned from the open text options for both questions. Consequently, the analysis focused on the content of the free text responses from these and the remaining questions.

Interview analysis

Audio tapes from each interview were professionally transcribed and uploaded to DedooseTM (<https://www.dedoose.com>), a web-based qualitative and mixed-methods data management application that allowed for efficient coding, recoding and grouping of data. There are many approaches to thematic analysis (TA) underpinned by divergent philosophical and conceptual assumptions. Boyatzis (1998) and Guest et al. (2012) position TA between positivism and interpretivism supporting coding reliability approaches that would be acceptable to quantitative researchers (Braun & Clarke, 2019). Others take code book approaches such as matrix analysis, template analysis and framework analysis (e.g. Gale & Heath, 2013; King & Brooks, 2016; Groenland, 2014). Braun and Clarke describe their approach to TA as wholly qualitative and reflexive, embracing the subjectivity of the researcher as a resource. The researcher, emphasising that it is vital that the researcher is clear about one's own theoretical and philosophical paradigms (Braun & Clarke, 2019).

Data from this doctoral study were analysed utilising reflexive thematic analysis according to Braun and Clarke's six-phase process encompassing data familiarisation, systematic data coding, generation of initial themes, theme reviewing and development, refinement and naming themes, and finally writing up the report (Braun & Clarke, 2021, p.331).

Through repeated reading and review of the data the researcher becomes increasingly immersed in and familiar with the data. A detailed line-by-line coding process generates initial codes which form the building blocks of themes which are identified, reviewed and defined. This recursive process ensures that themes describe coherent and meaningful patterns in the data, are reviewed against coded data and the full data set and are named and defined in a way that is useful and relevant to the research question (Braun & Clarke, 2006).

I conducted the first round of analysis with the EM transcripts generating 56 codes. Through discussion with supervisors, revisiting data confirming context I then refined these into 48 codes, comprising 5 main themes and 13 sub themes. The six phase reflexive thematic analysis process was then repeated with the BBP transcripts resulting in 62 initial codes. Following refinement, 43 final codes, comprising 3 main themes and 12 sub themes were organised.

The findings from each reflexive thematic analysis of the EM and BBP interview data were separately reported in highly regarded DRR international peer-reviewed journals (see Chapters 7 and 8 respectively). The aim being to share knowledge gained from this data with DRR practitioners and DRR researchers. The journal citations were also shared with fat scholar and fat activist networks, with the intention to develop suitable resources for BBP in post-doctoral work.

Triangulation of data

Finally, data from each source was triangulated. Triangulation is defined as the "*attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint*" (Cohen & Manion, 1986, p.254). It can be applied in a study of the same phenomenon with different sources of data providing different insights into the subject of study (Rothbauer, 2008). The data derived from the descriptive online scoping survey of EMs was triangulated with the EM interview data. Interview data from EMs and BBP was analysed separately then triangulated to give a more comprehensive understanding whilst maintaining separate worldviews (Morse, 2003). Triangulated data is discussed in Chapter 9.

Reflexivity

The Cambridge Dictionary (2022) defines reflexivity as:

"the fact of someone being able to examine their own feelings, reactions, and motives (= reasons for acting) and how these influence what they do or think in a situation"

Reflexivity is the acknowledgement by a researcher that their own experiences, biases and background may have an effect on how the research is conducted and the data analysed. Reflexivity assists with one's own validation of qualitative research at each stage of the research process. These include but are not limited to: how data is collected; the methods of data collection; the approach to data analysis; and the reporting of findings from the data (e.g. Finlay, 2002). Reflexivity supports that the qualitative researcher is aware of their own values, beliefs, and privilege and the perspectives, positioning and voices of participants (Patton, 2002).

The reflexive approach to TA detailed in the section above contributes to my overall research reflexivity. Reflexivity also requires acknowledgement of the researcher's own identity and their role in the research. I am an older researcher aged over 55 years of age, from a working class mining family in the North East of England and the first in our family to have had any University level education albeit part time, and usually while also working full time. As a white Pākehā woman, I also benefit from many privileges and inherent advantage.

Having lived in small and remote Scottish and Irish Sea Islands I am able to make some connections through Whakawhanaungatanga (Māori term for establishing kinship and connections) with many New Zealanders whose parents or grandparents are of Scottish and British Island descent. Whakawhanaungatanga provides reflexivity to support positive and collaborative relationships, exploring things that are important and co-creating what is important, and helps to co-construct aims and objectives of mutual interest that live and grow with the relationship. Having worked alongside Māori and Pacific colleagues and communities since 2008 on a range of community focused health promotion and health professional education programmes, I also benefit from some awareness and knowledge of appropriate customs and practices. Coupled with the fact that I am somewhat known already in NZ for challenging fat stigma (Sutherland & Wilkins, 2018), I may be deemed a safe researcher in the space of big bodied research.

While it would be visually apparent to the EMs interviewed in-person in this study that I was big bodied, the participants may not have been aware that I have a background in research and teaching related to weight and stigma, only that my current interest in this doctoral study concerned BBP. During in-person interviews, I recall one week that was particularly concerning to me because of the way consecutive EMs interviewed seemed to be dismissive of BBP. I felt very conflicted during those interviews. How could I remain a neutral researcher? I had to debrief with one supervisor about what had been said and how this had made me feel prior to approaching the analysis of EM data in a more neutral frame. In reality, the words typed on a page felt less confronting than the vivid memories of the sharp intakes of breath I felt I was taking during those interviews.

Treaty of Waitangi

The Treaty of Waitangi, with reference to partnership, participation and protection were upheld in this research. The research team included two experienced researchers of Māori descent who provided research oversight and assistance in preparing the qualitative ethical application.

Although participants comprise a sample of residents of NZ, voices of Māori, important to this research, have been included. This aspect of DRR has particular relevance for Māori who experience higher prevalence of high body mass compared to the average prevalence for NZ (BMI ≥ 40 kg/m² and above: Māori - 10% population prevalence; Pacific - 20%; NZ - 5.3%) (Ministry of Health, 2021).

Ethical considerations

This doctoral study included several different types of research ethical consideration. The Massey University code of ethical conduct for research involving human participation (Massey University, 2017) requires doctoral students to complete a screening questionnaire to determine the appropriate level of approval procedure.

The level of approval required for the exploratory online survey was deemed to be low risk. Low risk research projects are those where the nature of any possible harm is minimal and would be no more than likely to be experienced in day to day life. Research considered to be low risk does not require approval from a Human Ethics Committee. Through the Massey University electronic research

management information system (RIMS), a low risk notification record (number 4000018662) was created and reported to the Massey University Human Ethics committee (MUHEC). Samples of low risk notifications are audited from time to time to ensure compliance.

The qualitative semi-structured interviews required a full ethics application to be made to the Human Ethics Committee Southern A. This included considerations that participants may feel emotionally distressed talking about body size or talking about actual or planned for disasters. Arrangements were made so that participants could have a support person present in the interview if they wished and details of local support services were prepared, should a participant become distressed by the interview process or any issues raised in interview. If the participant (and/or family/whānau) became upset or showed signs of distress during the interview, plans were in place to offer to halt the interview and use unconditional positive regard for the participant to ensure the participant did not feel worried or concerned about the interview process. Safety concerns for the interviewer were also considered, including the need to ensure doctoral supervisors had a full itinerary of date, place, time for each interview and arrangements in place for me to call a named supervisor once I had departed the interview venue and on arrival home or at named accommodation. The qualitative interview components of the study required full ethical approval. Ethical approval was granted by Massey University Human Ethics Committee: Southern A (reference number SOA 18/59) at their September 2018 meeting.

Data security

While travelling and collecting data, I stored notes and associated paperwork in a locked case. The professional transcriber was aware of the importance of confidentiality and signed a confidentiality agreement prior to receipt of the audio recordings that were passcode protected and encrypted. Transcripts of the interviews were also password protected. All original signed consent forms are securely stored in locked filing cabinets and are kept separate from the transcribed interviews which are held on a password protected computer. Participants were each allocated a code, and transcripts were only identified by the code (e.g. EM1, P2). A password protected document linking participant names and identifying codes are held only by me. This document was stored electronically on a

password protected computer and was not located with either the signed consent forms, sound recordings or the transcripts. Two participants waived their anonymity during the consenting process as they were already well known for their body size in the public domain due to their sporting achievements. Their identities were not disclosed in the publications accompanying this thesis. The identity of one participant is discussed in Chapter 9.



Image 4: Parent and child enjoying outdoor activity
Image credit: Obesity Canada - Obésité Canada

4

Intersection of big bodied people and disaster risk reduction

Ki te kotahi te kākaho, ka whati; ki te kāpuia, e kore e whati

[If a reed stands alone, it can be broken; if it is in a group, it cannot]

Kingi Tāwhiao

The article presented in this chapter (Publication 1) explores the intersection between the social determinants of health and disaster vulnerability concerning big bodied people (BBP). In light of the limited empirical literature located (Chapter 2) I decided to investigate the wider disaster literature for population groups for which empirical literature does exist, to identify what if any reference is made to size, shape and weight. This publication provides data to inform research question 1.:

How are big bodied people constituted as a specific ‘at risk’ population with respect to disasters?

This publication also signals the start of a terminology journey from health, medical and public health origins to the harms of terminology for this marginalised and stigmatised population. When submitting this publication I nested the language of body size in the dominant health narrative relating to ‘obesity’ where this language and associated doctrine was the ‘norm’ for journal articles in this field. It became very apparent, that this dominant health language so familiar to my prior health service role is very problematic for meaningful engagement with BBP and to ensure no harm or further marginalisation of BBP in disaster risk reduction (DRR). Chapter 5 includes a detailed review of my terminology journey.

Publication 1 was an invited publication for a Special Issue of the International Journal of Environmental Research and Public Health. The manuscript was submitted on 30 September 2017, accepted after minor revisions and published open access online on 22 November 2017. Appendix The article citation is:

Gray, L. (2017). Social determinants of health, disaster vulnerability, severe and morbid obesity in adults: Triple jeopardy? *International Journal of Environmental Research and Public Health*, 14, 1452. <https://doi.org/10.3390/ijerph14121452Text>

Social determinants of health, disaster vulnerability, severe and morbid obesity in adults: Triple jeopardy?

Abstract

Severe and morbid obesity are associated with highly elevated risks of adverse health outcomes and the prevalence of severe obesity is increasing globally. To date, disaster literature has not considered severe and morbid obesity as a specific vulnerability, despite reports of people being left behind during disasters because of their body size, shape or weight. The complex causes of obesity are associated with the social determinants of health and one's potential vulnerability to disasters. The absence of appropriate considerations may lead to people being exposed to disproportionate and potentially avoidable risk. The intersection of the social determinants of health, disaster vulnerability, severe and morbid obesity is explored. Previously identified vulnerable groups are also represented in severe and morbid obesity data. This poses the prospect for 'triple jeopardy' compounding the social determinants of health, disaster vulnerability and considerations with and for people with morbid obesity. When working to reduce disaster risk for vulnerable groups, the author proposes specific consideration is required to ensure 'all-of-society engagement and partnership' in an inclusive, accessible and non-discriminatory manner, to ensure no one is left behind

Keywords: disaster risk reduction; disaster vulnerability; social determinants of health; severe and morbid obesity; health inequity

Introduction

The year 2017 may be remembered for a multitude of disasters around the world, not least category five hurricanes Harvey, Irma and Maria devastating Island nations in the Caribbean and the United States of America (USA), deadly earthquakes in Mexico killing hundreds and injuring thousands and some of the worst flooding to hit South Asia in decades. A 500 year flood also engulfed a town in New Zealand following a cyclone causing the Rangitaiki River to burst its banks and evacuations of Islands around the Pacific began in the wake of increased volcanic activity in Indonesia and Vanuatu.

The Sendai Framework for Disaster Risk Reduction 2015–2030 is a global strategy adopted by 187 United Nations (UN) members in Sendai, Japan in 2015 (United Nations Office for Disaster Risk Reduction, 2015). The Sendai Framework aims to reduce loss of life, livelihood and health from disasters through a range of disaster risk management (DRM) actions. The Sendai Framework built upon the Hyogo Framework for Action (United Nations DRR efforts 2005–2015, including the definition of vulnerability as the conditions determined by “physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards” (United Nations International Strategy for Disaster Reduction, 2005, p.1). This definition of vulnerability aligns closely with the World Health Organization (WHO) definition of the social determinants of health as the “circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness” (World Health Organization, 2022). These circumstances are shaped by the distribution of money, power and resources at global, national and local levels (Marmot et al., 2008). Priority one in the Sendai Framework is to understand disaster risk in all its dimensions of vulnerability [United Nations Office for Disaster Risk Reduction, 2015; p. 36].

Some authors have begun to consider the intersections between disaster vulnerability and the social determinants of health. Lindsay (2003) argues that the factors of disaster vulnerability and determinants of health align, presenting the opportunity for shared goals towards identification and management of risks. Plough et al. (2013) make the connection between those communities that experience disparities during non-emergency times and the need to build resilience which in turn can strengthen a community’s ability to rally from disasters (Plough et al., 2013). Naser-Hall (Naser-Hall, 2013) argues for reducing poverty outside of an emergency, so that vulnerable people can address their needs prior to, and in anticipation of, a disaster occurring. Biedrzycki and Koltun (2012) provide examples for homeland security and emergency managers to familiarise with the meaning of social determinants in order to integrate into practice and Phibbs et al. (2016) introduce the concept of hard-to-reach organisations, rather than hard-to reach populations. Others have specifically considered the intersection of disaster vulnerability and social determinants of health post disaster (Nomura et al., 2016; Moore et al., 2004), or related to specific vulnerabilities such as end-stage renal disease (Abdel-Kader & Unruh, 2009), older persons (Evans, 2010), mortality in tsunami (Aldrich & Sawada, 2015),

and climate change (Gamble et al., 2016; Few & Tran, 2010). The prioritization and progress of marginalised communities and populations is key to Disaster Risk Reduction (DRR) research, with the Sendai Framework (United Nations Office for Disaster Risk Reduction, 2015) aligning with and reaffirming sustainable development goals (SDG) (United Nations, 2015), the tenet of SDG being leave no one behind (United Nations International Strategy for Disaster Reduction, 2005).

People with severe or morbid obesity have been negatively impacted in disasters and left behind because of their body size, shape or weight (Gray & MacDonald, 2016; Ramme et al., 2015; Fink, 2013; Hughes, 2013; Apatu et al., 2014). Two illustrative examples are presented here: A patient in New York City was left behind following Superstorm Sandy in 2012 weighing 263 kg and was reportedly too wide for the evacuation sled. This, along with safety concerns for the patient and evacuation personnel, prohibited evacuation down the 15 flights of stairs. Evacuation drills had previously been conducted, although without representative shape and weight in the evacuation sled. This patient's relative size, shape and weight were reported as the defining factors for her being left behind. This patient was eventually evacuated several days after the storm when power was restored to enable elevators to operate (Ramme et al., 2015). The second example concerns a person with paraplegia in hospital for a routine procedure who became caught up in the aftermath of Hurricane Katrina in New Orleans (2005). At approximately 380 pounds (172 kg) it is reported that he was deemed too big to be moved for evacuation. Other staff from the facility later stated they did not know he and others were there and they would have attempted to evacuate him (Fink, 2013).

This article presents a perspective on the intersection of the social determinants of health and disaster vulnerability in relation to severe and morbid obesity in adults (aged 18 years and over).

Severe and morbid obesity

The examples presented relate to people who were left behind in relation to their body size, shape and weight. Epidemiological studies have shown substantial increased health risks in people with very high body mass index (Kitahara et al., 2014) and people with severe and morbid obesity are disproportionately affected by health consequences of obesity often experiencing premature onset of multiple morbidities (Booth et al., 2017). People with severe or morbid obesity can present unique

challenges in emergency situations in relation to rescue, evacuation, transport and suitable equipment (medical and shelter) (Geiling, 2010; Gardner & Gibbs, 2013; Baggett, 2006; Saunders, 2007) all of which may increase risk of harm.

To date, despite growing references to obesity as a public health epidemic and a raft of policy and intervention efforts to curb it, severe obesity continues to increase in most countries (Non Communicable Disease Risk Factor Collaboration, 2016; Roberto et al., 2015) and until recently, data for underweight, severe or morbid obesity were not routinely collected to identify global trends. Severe and morbid obesity are classified by body mass index (BMI) which is a proxy for indirectly assessing body fat (Ministry of Health, 2009; Sassi, 2010), measuring weight adjusted for height. Moderate to severe obesity is classified as BMI ≥ 35 , and a classification of BMI ≥ 40 represents the most significant population health co-morbidity risk group (morbid obesity). Terms commonly applied to BMI of 40 and above in health classifications include morbid obesity, extreme obesity, bariatric, class III obesity (WHO, 2000; WHO, 1995; Grieve et al., 2013; Prentice & Jebb, 2001; Sharpe & Bradbury, 2015). Routinely criticised for being a rather blunt instrument, BMI does not distinguish between fat and lean muscle and does not provide information about how fat is distributed throughout the body (WHO, 1995; Prentice & Jebb, 2001; Sharpe & Bradbury, 2015; Ashwell & Gibson, 2016; Wise, 2017). Despite these limitations BMI continues to be the primary index utilised in international medical diagnostic coding and classification and continues as the primary measure for global data on overweight and obesity (Non Communicable Disease Risk Factor Collaboration, 2016; Prospective Studies Collaboration, 2009).

It is important to acknowledge terms such as morbid obesity are actively contested by academics in the field of fat studies and by supporters of movements such as Health at Every Size® (HAES) (e.g. Health at Every Size Australia Inc, n.d). Indeed the term “fat studies” reflects the wish of this discipline to move away from medicalised terms (Wann, 2009). Whilst acknowledging this debate this publication utilises the terms severe and morbid obesity as the prominent discourse in public health and obesity studies and the direct relationship to classifications referred to in the publication.

Disaster vulnerability

According to Twigg (2004), vulnerability is the human dimension of disaster. Whilst everyone is potentially put at risk of harm in a disaster, some people due to their circumstances are at greater risk during and following a disaster (Ringel et al., 2011). These differential circumstances are at the heart of the concept of vulnerability. The characteristics and situation of a person or group are affected by the physical, social, economic and environmental factors or processes (United Nations International Strategy for Disaster Reduction, 2005) creating access blockages or limitations to a variety of different resources. There is increasing evidence that people who have existing vulnerabilities are at greater risk during and following disaster (Wisner et al., 2015; Crozier & Dee, 2016; Stough, 2015). More recently there has been a shift in the literature to include positive narratives of people and communities' capacities for self-protection, adaptation and for mobilized common effort (Gamble et al., 2016; Wisner, 2016; Ministry of Health, 2016; Kenney & Phibbs, 2015).

Intersecting the social determinants of health and disaster vulnerability with severe or morbid obesity

The causes of obesity are complex, involving a combination of influences including but not limited to individual genetics and behaviours (Butland et al., 2007). Social, economic and environmental influencers are contributing factors. The type of foods available and whether the environment supports physical activity play a part and these are influenced by our economic situation, education and skills (Butland et al., 2007; Swinburn et al., 2011; World Health Organization, n.d). Swinburn et al. (2011) contend that obesity is a normal response to the obesogenic environment in which we live.

Physical and environmental dimensions of vulnerability

Where people live and work are strong determinants for life expectancy as well as vulnerability and disaster risk. Living in seismically active locations or flood prone areas for example. In the USA, Cutter et al. developed an index to map vulnerabilities to environmental hazards (Cutter et al., 2003). Socio-economic and demographic data were applied to factor spatial patterns. The most vulnerable counties were clustered in south Texas and the Mississippi delta region, both hit hard by major hurricanes in the last 12 years and increasing rain and flooding along the Mississippi delta (Cutter et al., 2003).

Islands in the Pacific Ocean face some of the biggest challenges from natural hazards including but not limited to rising sea levels, volcano and seismic activity. Mexico and New Zealand also face significant natural hazards and these countries and states have some of the highest levels of severe and morbid obesity globally (Non Communicable Disease Risk Factor Collaboration, 2016).

Economic dimensions of vulnerability

Levels of vulnerability are closely linked to the economic status of people, communities and Countries. Being poor is a key driver of exposure to disaster (Twigg, 2004; United Nations Office for Disaster Risk Reduction, 2020-2022a; White et al., 2005; Wisner et al., 2004; UNISDR, 2009). Poor people are more likely to live in areas prone to hazards and be less able to take risk reduction measures (United Nations Office for Disaster Risk Reduction, 2020-2022a). The WHO highlights the most important factors shaping people's social position to influence the determinants of health include employment and working conditions (World Health Organization, 2007).

Morbid obesity is increasingly associated with lower socio-economic status in both men and women, with a social gradient observed in high-income countries for women (Booth et al., 2017; Devaux & Sassi, 2015). The burden of obesity shifts to low socioeconomic status groups and rural areas as a country's gross domestic product (GDP) increases (Monteiro et al., 2004; Mendez et al., 2005). Income and occupational status influence social inclusion or exclusion of particular groups of people to community life (WHO, 2007). There is strong evidence that obese employees experience salary penalties and face weight bias in work application and recruitment decisions (Puhl & Heuer, 2009). Bias and stigma is significantly stronger for obesity and persists compared with many other forms of bias including ethnicity and gender discrimination (Latner et al., 2005; Puhl & Brownell, 2001). Obesity bias and stigma pervades workplace employment, health settings, education and general society (Puhl & Heuer, 2009; Puhl & Brownell, 2001; Pomeranz, 2008; Alberga et al., 2016; Wang et al., 2004). People with obesity can hold strong biases against people with higher levels of obesity, whereas people in other groups that experience strong biases feel positive towards their group (Latner et al., 2005).

Social dimensions of vulnerability

The social dimensions of vulnerability involve the ability of individuals, groups, organisations or societies to withstand impacts, in this case from disaster. Groups previously identified as being more vulnerable in disasters include:

- people with disabilities (including those with intellectual disability) (Ringel et al., 2011; Wisner et al., 2015; Crozier & Dee, 2016; Stough, 2015; Wisner et al., 2004; Maja-Schultz & Swain, 2012; Stough et al., 2010; Peek & Stough, 2010; Hemingway & Priestley, 2014)
- older people (Ringel et al., 2011; Wisner et al., 2004; Al-rousan et al., 2014)
- people with severe mental illness (Plough et al., 2013; Zakour, 2015)
- people from culturally and linguistically diverse backgrounds (Ringel et al., 2011; Nepal et al., 2012)
- people with chronic medical conditions (Plough et al., 2013; Nomura et al., 2016; Ringel et al., 2011)
- children (Ringel et al., 2011; Peek, 2008)
- women (Enarson & Fordham, 2001; Parkinson, 2015).

The groups identified above have synergies with severe and morbid obesity: Increased weight may be more problematic for people living with disability compared to people with no disability (Froehlich-Grobe & Lollar, 2011). Associated factors for people with disabilities that may contribute to increasing obesity include lack of accessible environments for physical activity, lack of healthy food choices, medications, pain or energy levels, limited money, transport, social support (Centers for Disease Control & Prevention, 2017). In older populations (≥ 60 years of age) poorer lower extremity mobility is associated with increasing obesity severity in both men and women, with women at increased risk for mobility impairment. Walking, stair climbing, chair rise ability may be especially compromised with severe or morbid obesity (Vincent et al., 2010). Obesity is multifactorial in persons with serious mental illness, with low socio-economic status contributing to lack of affordable, safe physical activity and limited healthy food choices (Daumit et al., 2005; Dipasquale et al., 2013; Jerome et al., 2009). In addition, long term psychotropic medications cause weight gain (Allison et al., 1999).

People from culturally and linguistically diverse backgrounds face socio-economic inequity. A study by Fothergill et al. (1999) in the USA found there are issues specific to race and ethnicity such as culture, language, trust in warning messages and information sources, perceived risk, and level of preparation

all contributing to increased vulnerability in disasters (Fothergill et al., 1999). Disproportionate levels of severe and morbid obesity are experienced by different ethnicities and Indigenous populations in countries such as the USA, Mexico, New Zealand, Canada, and Australia (Sharpe & Bradbury, 2015; Schulz & Chaudhari, 2015; Gill et al., 2002; Tremblay et al., 2005; Freedman et al., 2002; Janssen, 2013). A very unequal pattern is seen in the prevalence of morbid obesity among adults resident in New Zealand: in 2011–2013, while the average prevalence of morbid obesity for all adults was 4%, Indigenous Māori prevalence was 7% of males and 12% of females. The prevalence was higher still for Pacific adults in New Zealand (11% of males and 21% of females) (Sharpe & Bradbury, 2015). In the USA, morbid obesity levels among non-Hispanic black adults are nearly double those of Hispanic or non-Hispanic whites (Sturm & Hattori, 2013).

There are well documented reports of indigenous population responses to transition from traditional lifestyle, food supply and physical exertion to “westernised” modern societies (Pontzer et al., 2012; O’Dea, 1991; Garriguet, 2008). One such example of an indigenous population experiencing extreme obesity are the O’odham (Pima Indians of Arizona) (Schultz & Chaudhari, 2015), representing a living example of such a transition from a traditional lifestyle with limited food supply and high physical activity to a modern, sedentary lifestyle with a consistent energy dense cheap food supply. During and following this transition, prevalence of type 2 diabetes and obesity soared to crisis proportions (Schultz & Chaudhari, 2015). While it is important to recognise the disproportionate exposure of obesity, Fee (2006) points out that ‘race’ and ethnic groupings in relation to obesity are a crude proxy and should not be interpreted to suggest obesity predisposition.

People with morbid obesity are disproportionately affected by health consequences of obesity, often experiencing premature onset of multiple morbidities and are more likely to live with chronic conditions (Booth et al., 2017; McCubbin & Antonio, 2012). Morbid obesity is stratified across ethnicities and affects more women than men worldwide (Booth et al., 2017; Non Communicable Disease Risk Factor Collaboration, 2016).

Triple jeopardy?

Maja-Shultz and Swain (2012) identified the concept of inter-related vulnerability and the potential for 'double jeopardy' during and after disasters. For example, compounded health inequities for already vulnerable people during and after disasters such as limited access or loss of access to usual care (Stough et al., 2010) or the ability to negotiate service pathways post disaster (Crozier & Dee, 2016). In relation to DRR not only do physical, social, economic and environmental factors increase the susceptibility of a community to the impact of hazards, these factors are also the drivers of ill health and contributing factors to severe and morbid obesity.

Research on those groups identified as being more vulnerable in disasters is silent on severe or morbid obesity in respect of each of the groups. The presence of severe or morbid obesity delivers 'triple jeopardy' adding a further and potentially complex layer of vulnerability that may be caused by or compound pre-existing inequities. For example, women and gender are a priority for action in the social determinants of health because gender inequalities harm the mental and physical health of millions of women globally (Ehrhardt et al., 2009). Women are already identified as more vulnerable in disasters and make up around half of the global population. The majority of elderly people, children, and disabled people are cared for by women (Dominelli, 2013; Adams, 2010) and in an emergency, their care roles can inhibit a woman's ability to escape and prevent harm to themselves (Parkinson, 2015). Women are more financially vulnerable than men and undertake unpaid care roles and domestic tasks, with careers that may be interrupted or limited by additional household and care roles. To add further complexity, women are disproportionately represented in severe and morbid obesity statistics and the trend is for more women to be severely obese than underweight by 2025 (Non Communicable Disease Risk Factor Collaboration, 2016). To date the disaster literature does not appear to have considered this additional and third layer of jeopardy in DRR considerations relating to women. If the adult obesity trend continues severe obesity will overtake underweight in women by 2025 (Non Communicable Disease Risk Factor Collaboration, 2016).

When looking at the example of the 2009 H1N1 Pandemic, three groups at greatest risk of severe or fatal illness were pregnant women (particularly in the third trimester), children under 2 years of age, and people with chronic conditions of the lungs. Historically marginalized, excluded and under-

resourced communities were most affected by severe disease and morbid obesity was present in a large percentage of severe and fatal cases. The exact role of obesity is not yet understood as obesity had not been identified as a risk factor in seasonal influenza or previous pandemics (World Health Organization, 2009; Ministry of Health, 2017).

Limitations

The quality of evidence in primary research reports was not appraised and was limited to reports and documents published in English. A limitation of this publication is that it is an individual perspective, based upon personal and professional experiences, key texts and literature, and following five months of field research across the USA, Mexico and Europe. While informed by the current literature, this perspective is not based on a comprehensive systematic literature review and the publication does not provide a detailed analysis of each of the issues as research on DRR and severe or morbid obesity is limited thus far. The intention is to widen discussion in the field of DRR concerning vulnerable groups.

Conclusions

Vulnerability to disaster is influenced by many factors including where people are born, how we live, our culture, ethnicity, education and employment. The concept of inter-related vulnerability has been described as a “double jeopardy” (Maja-Schultz & Swain, 2012) and the disproportionate harm or risk that may be faced.

People and communities have tremendous ability to prepare for and adjust to potential hazards if they recognise these and are alerted to specific issues that may be relevant to their circumstances. The Sendai Framework for Disaster Risk Reduction 2015–2030 (United Nations Office for Disaster Risk Reduction, 2015), requires ‘all-of-society engagement and partnership’ in an inclusive, accessible, and non-discriminatory manner.

Emergency planners need to widen the current conceptualisation of vulnerability to consider how people with severe and morbid obesity can be included in DRR planning and activities. Planners should be cognisant of the extent of bias and stigma concerning obesity and take appropriate steps to

mitigate against discrimination in all-of-society engagement and partnership. Research is needed to explore the role of severe and morbid obesity in vulnerability to disaster and to inform risk and risk reduction efforts.

This publication provided a perspective and illustrates ways disparities in health can coalesce and compound each other. Rates of morbid obesity and poor health are over-represented in many countries, regions and communities. Already vulnerable groups face 'triple jeopardy' and without appropriate consideration may be exposed to disproportionate and potentially avoidable risk.

Acknowledgments: No funding has been received for this work.

Conflicts of Interest: The author declares no conflict of interest.



*Image 5: Lesley Gray and Lynn McAfee
Sarasota County Emergency Operations Center, 2017*

Image credit: Chief E. McCrane

5

Names will never hurt you: Language and power discourse

Sticks and stones may break my bones

But names will never harm me.

[A children's rhyme. Earliest appearance in writing: Alexander William Kinglake, 1844]

Sticks and stones is an old English rhyme, versions of which have been chanted in school playgrounds for decades. While the rhyme is against name calling and intended to help children to be more resilient, many words can in fact be extremely hurtful and harmful to people.

From the outset of my doctoral study I grappled with language to describe size, shape and weight in the thesis for the population integral to this research, being aware that medicalised language can be harmful and stigmatising to big bodied people (e.g. Wann, 2009), adoption of fat as a descriptor is not well understood by the general population (Hales et al., 2019) and body mass measurements are a blunt indicator of anything other than height and weight (e.g. Prentice & Jebb, 2001). This chapter explores these naming challenges, complexity of meanings and positioning of power from language describing body size.

Labels ascribed to people for the way their body looks reflect complex community beliefs laden with colonialism, racism, neoliberalism, discrimination, stigma and marginalisation (Warbrick et al., 2018; Strings, 2019; Harrison, 2021), the origins and impacts of which many people will be unaware. Big bodied people (BBP) are often described in ways that dehumanise and pathologise fatness with words including 'obesity', 'overweight', 'obese' and 'fat' carrying implicit and explicit meanings (e.g. Wann, 2009). The language of obesity exposes and positions thinness as healthier, attainable, better than and preferred, depicting fatness as unhealthy, not to be aspired to and to be made thin at any cost (Rich et al., 2011).

Body Mass Index – origins and limitations

Naming classifications aligned to body mass index (BMI) categories are commonplace in health sciences. BMI, the most widely utilised index to classify, is a proxy for indirectly assessing body fat (Sharpe & Bradbury, 2015; Sassi, 2010) and measures weight adjusted for height (Table 4). Although the classifications have different names in different countries, the core groupings align to the same 'cut off' points for BMI. Table 4 presents a summary of the most common classifications and categories widely in use relating to BMI. The BMI range that is commonly referred to as 'normal weight' and deemed most likely to be healthy in statistical analyses is BMI 18.5-24.99. Any measurement outside this range is associated with 'abnormal' in some way. The population of interest in this study would be categorised as class III and above (BMI of 40kg/m² and over).

Table 4: Body Mass Index (BMI) - Classification for adults

Classification	Class	BMI (kg/m ²)
Normal weight		18.50-24.99
Overweight (pre-obese)		25.00-29.99
Obesity (mild)	I	30.00-34.99
Obesity (moderate)	II	35.00-39.99
Obesity (extreme, morbid, bariatric, severe)	III	≥40.00

Adapted from Grieve, Fenwick, Yang & Lean (2013)

The BMI was created around 200 years ago, by a Belgian mathematician and sociologist Adolphe Quetelet purported that a population's mathematical mean was the ideal and thus Quetelet index was born. It was not until 1972 when Ancel Keys and colleagues re-popularised the index and from that point it became known as the BMI (Eknoyan, 2008). Categorising and/or describing size in health sciences is commonly presented in relation to statistical calculations of health risk by BMI, even though correlation at a population level does not infer actual risk to an individual. Quetelet never created BMI to be used as an individual measure of health (Rossner, 2007) and despite the routine use of BMI in health statistics, it has many limitations.

The BMI is regarded by many as a blunt instrument that fails to reflect body shape or size, to distinguish between fat and lean muscle or provide information about how fat is distributed throughout the body (Prentice & Jebb, 2001; Sharpe & Bradbury, 2015; Ashwell & Gibson, 2016; Wise, 2017). The BMI has

been criticised for being a racist and sexist tool, not least because its creation was focused on the measurements of white European men (Strings, 2019). While Asian and Pacific Island variations of the BMI classification do exist (Duncan et al., 2004) a World Health Organization (WHO) expert consultation recommended retention of the current BMI cut-off points as the international classification (World Health Organization Expert Consultation, 2004).

Despite its limitations BMI continues to be the primary index utilised in international medical diagnostic coding and classification for adults and continues as the primary proxy measure of overweight and obesity globally (Non Communicable Disease Risk Factor Collaboration, 2016; Prospective Studies Collaboration, 2009) and in NZ (Sharpe & Bradbury, 2015; Ministry of Health, 2017). In recent years the waist circumference and height ratio (WHtR) (Sharpe & Bradbury, 2015) has been increasingly used as an alternative measure to complement clinical data relating to fat distribution and the calculation of population health risks. The WHtR claims to be responsive to race, ethnicity and age and a more discriminating health risk identification tool for health risks associated with central obesity (Ashwell & Gibson, 2016).

For some BBP, any form of measurement is repelled due to its associations with medicalised harms, such as missed diagnosis because of undue focus on body size to explain symptoms, delayed treatment seeking, size stigma by health professionals that can cause harms including psychological distress, and reduced quality of care for BBP (Phelan et al., 2015; Chrisler & Barney, 2017). Some movements reject focus on body size or weight. Health at Every Size (HAES) is one such movement that first appeared in the 1960's promoting wellbeing and health activities without focusing on weight loss or a number on a tape measure or weighing scale (Bacon, 2008; O Hara & Taylor, 2014). While many argue that size alone is a poor indicator of health (e.g. Nuttall, 2015), others continue to refute claims that you can be healthy at any size (Sainsbury & Hay, 2014).

Emerging fields of fat studies and critical weight science combine humanities and social sciences to consider how fat is portrayed and represented over time and how fat people are treated. Some scholars focus on the negative portrayal of fat in the medical and public health fields and the injustices fat people experience (Wann, 2009; Pausé, 2017). There is a strong alignment between fat studies and political activism (e.g. Chastain, 2014; Harrison, 2021). The research discipline of fat studies builds on

gender studies and queer studies and focuses on social, historical, cultural and political ways in which fat people and fatness are portrayed (Lupton, 2016; Rothblum & Solovay, 2009). The term fat studies specifically reflects a movement away from medicalised terms (Wann, 2009) which are deemed to focus on unhealthiness and disease (Lupton, 2016), positioning people into marginalised and negative groups. This negative positioning may have a bearing in the context of DRR planning for already vulnerable people, management and response. Those in the fat studies and fat activism fields have purposively chosen the term fat to "*reclaim it from the pejorative as well as carve out a political identity*" (Satinsky & Ingraham, 2014, p.145). The general population of NZ does not (yet) view the word fat as a useful or acceptable descriptor for a person's adiposity (fat tissue). In a recent NZ quantitative study, fat was viewed as very undesirable, stigmatising and blaming (Hales et al., 2019). This could be related to the fact that respondents had little or no engagement with the reclamation of fat as a neutral descriptor by fat activists (Cooper, 2021).

The 'O' words

The word 'obese' originates from the latin 'obedere' which actually means *to devour* and this is symbolic of common beliefs relating to the 'obese' body and a sense of disgust, compulsion, or lack of control (e.g. Lupton, 2013). This is reflected in the WHO definition of obesity as an abnormal or excessive amount of fat (World Health Organization, 2022).

It is common for public health specialists such as myself, to search on, and apply obesity terms as they are routinely used in healthcare and public health focused literature to categorise people with a BMI of $\geq 40\text{kg/m}^2$ (commonly classified as morbid or extreme obesity) or a BMI of 35kg/m^2 and above (commonly classified as severe obesity). A prelude article to this doctoral study was titled *Morbid obesity in disasters: Bringing the "conspicuously invisible" into focus* (Gray & MacDonald, 2016) and was followed by the first published article in this thesis with similar nomenclature of *Social determinants of health, disaster vulnerability, severe and morbid obesity in adults: Triple Jeopardy?* (Gray, 2017). However, as noted above, the terminology used to categorise and describe size is laden with inference. The terms overweight, obese and obesity are steeped in meanings of disease and risk (Hales, 2015) and negative moral perceptions about an individual (Hales et al., 2019; Trainer et al.,

2015, Strings, 2019). Many in the fat community refer to such terms as the “O” words and would prefer that they are not used at all, or at the very least are prefixed by a trigger warning

Studies that set out to gauge preferences for naming size also find that the general population does not like the suite of obesity related words and the terms severe and morbidly obese conjure up significant negative and diseased references (Puhl, 2020; Brown & Flint, 2021; Hales et al., 2019). As discussed earlier in this chapter, the medicalisation of body size and associated classification language has created considerable harm (Warbrick et al., 2019; Puhl 2020; Phelan et al., 2015). In particular, the word "obesity" is steeped in neoliberal medicalised healthism (e.g. Harjunen, 2017; Lee & Pausé, 2016; Mayes, 2016; Ayo, 2012).

Neoliberalism has been the dominant Western philosophy for economics and politics since the early 1970's among global institutions and successive Western governments. The key elements include privatisation, de-nationalisation and deregulation, and minimal public expenditure on social service supports and infrastructure (Barnett & Bagshaw, 2020). These are presented to the public as freedoms of choice when in reality, choice is not generally afforded to those who most need it.

In Aotearoa New Zealand neoliberalism looks like income inequity and negative determinants of health, shouldered in disproportionate measures by children, the poorest in society, and by Māori and Pacific Island peoples (Barnett & Bagshaw, 2020). In relation to body size, this translated into individual responsibility and obesity was touted as a preventable lifestyle choice. This proved a strong and misguided approach given the limited agency an individual has in relation to their body size trajectory and the myriad of social and environmental factors involved in obesity that are often beyond the individual's direct influence (Government Office for Science, 2007). Many health research papers refer to BMI as a modifiable factor (e.g. Guasch-Ferré et al., 2022). However, in approaches designed to encourage individual modification of lifestyle by reducing BMI, it is worth highlighting that one important part of the BMI calculation relates to height, a factor in adults that is generally not modifiable. The notion of personal responsibility, stressing the individual's ability to change self, make self smaller and thinner feeds into the neoliberal state. This proved to be a compelling belief for many and was enthusiastically adopted by the medical profession, enlisted into the notion of fighting a health war against fatness. There have always been fat people (e.g. the Venus of Willendorf figurine

from around 25,000 B.C), yet the so called 'obesity epidemic' is a relatively new phenomena (Gard & Wright, 2005) and the concept of worthiness associated with fitness became conflated with thinness (e.g. Campos et al., 2006; Jutel, 2005; Gard & Wright, 2005). In this neoliberal state, the fat body was recast as a drain on health care (Elliott, 2007, p. 136) and phobias relating to gender, racism, class, fatness and ableism entwine (Campos, 2005).

In an attempt to reduce harms of medicalised language, the use of 'person-first' language e.g. 'person with obesity' has been increasingly promoted by clinicians and researchers within the obesity community in the last 10 years (Kyle & Puhl, 2014; Wittert et al., 2015). Person-first language aims to avoid perceived and subconscious dehumanization, however those working in the field of fat activism and weight stigma research urge journal editors to remove an insistence on person-first terminology as this is still "*mired in the medicalization of body state*" (Meadows & Daniélsdóttir, 2016, p.2).

Finding the right term

Finding the right language to describe body size and accumulations of adipose tissue (fat tissue) in health settings is challenging with many health care professionals reporting this to be very difficult terrain, more so than discussing for example death, or terminal diagnoses (Claridge et al., 2014), with much interactional delicacy observed in general practice consultations (Stubbe et al., 2020). Meadows & Daniélsdóttir (2016) suggest that best practice in research, publishing, and healthcare would be to use neutral terms such as weight and higher weight and these were the more preferred terms in the NZ survey conducted by Hales et al. (2019). Whereas terms such as 'larger' 'bigger' 'overweight' or 'higher body mass' are common, it is unclear what reference point is being used – larger, bigger than what or whom? (Wann, 2009). While weight is consistently rated as a fairly neutral term, weight in health contexts does not solely refer to adiposity. For example, weight is used to measure fluid in the body (one kilogram increase in weight is equivalent to one litre of retained fluid). Congestive heart failure (CHF) patients are weighed daily in hospital to assess fluid retention that can signal changes needed in diuretic medications.

Recognising the harms that could be associated with terminology utilised in my earlier work I set out to determine appropriate terminology from this point for this doctoral study. Terminology would need

to be understood by health and emergency management practitioners and not add stigmatising harms to the population of interest, central to this thesis, while providing an accurate description. I revisited accounts of the people left behind in disasters and noted the terminology that was applied in those accounts. Most people in those accounts were in medical or health facilities at the time and therefore the dominant language related to BMI and the "O" words. In Superstorm Sandy (2012), a woman left behind was described as having a BMI of 81.4 kg/m^2 , and the article also refers to severe obesity and severely obese (Ramme et al., 2015). A tall woman at 5 foot 11 inches tall and 581 lbs, her width was described as the deciding factor against evacuation down a narrow stairwell. Obesity related health conditions were noted in the 2009 Samoa tsunami evacuations described in a paper, the purpose of which was to recommend activity to reduce body size (Apatu et al., 2014). In Hurricane Katrina (2005) three notable BBP left behind had been described as obese in detailed accounts by medically qualified Pulitzer prizewinning investigative journalist, Sheri Fink (Fink, 2009; 2013). These included Emmett Everett who, described as paraplegic and obese at 380lbs, was at some point deemed too big to evacuate. Janine Burgess was similarly described as obese and weighed down by fluids associated with her illness. Rodney Scott was the last living patient to leave Memorial hospital, he was similarly described as an obese intensive care unit patient and at some point there were concerns he may get stuck in the hole that had been made in the wall to evacuate others (Fink, 2013). In these accounts, fatness was not the sole reason for these individuals being left behind, a combination of overall size, weight and width was described.

Early emergency manager (EM) interviewees in this doctoral study told me that if a bus carrying a team of rugby players got caught up in an event such as a flood, the sheer size, shape and weight of those players would limit the ability to rescue or evacuate them. It was clear that I needed a term to capture the dynamics of size, shape and weight that would include, but would not be exclusive to, people identifying as fat that would be meaningful in the DRR context, whilst respecting individual preferences and not discriminating, stigmatising or further marginalising already marginalised people (Puhl, 2020).

I consulted world leading Californian fat activist Marilyn Wann, author of "Fat!So?" (1998) and well-known NZ based fat scholars Dr Cat Pausé (Massey University, Palmerston North) and Dr George

Parker (Victoria University of Wellington). We acknowledged that if writing about self or specific individuals we would aim to utilise whichever term that person preferred. For example, in an earlier autoethnography: “My grab bag is two suitcases: an autoethnographical view of a super-plus size self-evacuation from Hurricane Irma” (Gray et al., 2018), the participant, a founding member of the US National Association to Advance Fat Acceptance (NAAFA) chose to be referred to as super-plus size. For this thesis, involving many different people from many different settings, we agreed that the term big bodied people (BBP) most appropriately encompassed body size, shape and weight. Drs' Pausé and Parker also helped choose the title for the third publication (Chapter 8) and consented to being named and acknowledged here.

A reviewer of Publication 3, unnamed but identifying themselves as a fat/critical obesity scholar queried the BBP terminology, not knowing the background and origin outlined in the paragraph above and wondered if BBP was being applied as a euphemism to avoid naming fatness. The reviewer was satisfied with the explanation provided, the inputs from known fat scholars and edits made to the introduction of Publication 3 providing the reader with these details about the selection of the term.

Therefore, BBP in this study are defined as people with physical dimensions (weight, width, girth or height) that may exceed weight or width dimensions or safe working loads of usual health, emergency equipment or standard seating, beds or wheelchairs. In healthcare this would generally include people whose weight is 150kg and above, or people with a body mass index (BMI) of ≥ 40 kg/m² (ACC, 2011; ArjoHuntleigh, 2014).

Language as power

As outlined above, neoliberalism is a dominant political discourse and encompasses the many social endeavours and existences that may be viewed negatively (Monaghan et al., 2018). Language is a powerful tool to shape and define groups (Haller et al., 2006), with persistent disunion between what is termed as ‘normal’ and ‘abnormal’, othering and exclusion of incompatible persons (Foucault, 1977). Language associated with body adiposity conjures up a myriad of societal representations of failure, positioning thinness in preference to fatness (Schorb, 2021). Language related to obesity is strongly associated with power, the interactions people have and how 'self' is positioned (Allen & Wiles, 2013;

Maydell, 2010). The fat body is often depicted as an example of failing to self-govern (Harjunen, 2017). Obesity has been attributed to factors such as suburban sprawl, consumerism, working mothers, and social decay (Schorb, 2021). Words such as obesity and obese are, therefore, heavily weighted to societal and political factors that are framed as individual responsibility and do not merely act as a simple descriptor for adiposity (fat).

People who ascribe to the view that reducing size, shape and weight is all about individual will, self-care and improved health are likely to use the most stigmatising and blaming words to describe fatness in the belief that such 'shaming' will help motivate people to attempt weight loss (Hales et al., 2019). This false assumption about the power of language illustrates how weight stigma contributes to marginalisation, social and health inequities in Western countries (Schorb, 2021).

Finally, "a picture is worth a thousand words" is one of many paraphrased versions of a saying attributed to renowned Norwegian playwright Henrik Ibsen in the early 1900's. This maxim conveys the immense power of visual imagery. The majority of images relating to fatness, especially in news media in the last 20 years, have been drawn from a limited range of available stock images, and surreptitiously obtained street shots, often depicting a fat body with no head. The term 'headless fatty' was first coined by Cooper (2007) and has subsequently been discussed in detail (e.g. Hancock, 2015; Levitt, 2016). It describes the phenomenon where press reports depict fat bodied people as a symbolic body with no head, voice or agency (Cooper, 2007). Photographs may have been taken without permission or attribution, beheaded by press photographers thus dehumanising the subject. Such images are pervasive and reinforce the (mis)beliefs about the "obesity epidemic" and individualised 'failings' of fatness amplifying common stereotypes attributed to BBP. Despite news and media organisations routinely being asked to use positive imagery, often available free of charge, they frequently default to the headless fatty image.

Throughout this thesis, positive consented images involving BBP as active and contributing members of society are used to rebalance the usual narrative of BBP. At the time of undertaking research with Emergency Managers (Chapter 6 and Chapter 7), emergency managers may not have been aware of the impact of language, terminology and limitations of BMI or indeed the portrayal of big bodied people in the media or accompanying health narratives.



Image 6: Work colleagues chatting during lunchtime walk

Image credit: Obesity Canada - Obésité Canada

6

Current arrangements for big bodied people in emergency management

Managing [BBP] isn't something that's commonly discussed or probably thought about much during a disaster ... I have a sense that this will slowly change... as research and policies into the effects of disaster on these people becomes more mainstream

Participant 32

This chapter presents details of an exploratory online survey to gauge current considerations in emergency management relating to people with high body mass. The survey scopes and provides data to inform research questions 1 and 2:

How are big bodied people constituted as a specific 'at risk' population with respect to disasters?

In what way are big bodied people presently considered in emergency planning in New Zealand?

Preliminary, partial results (n=31 respondents) were presented at The Annual QuakeCore Conference in 2018 as a poster presentation (Gray, 2018, September 4-6). A verbal presentation was also made at the Joint Centre for Disaster Research's, 2020 Emergency Management Summer Institute to emergency managers and responders. Statement of authorship contribution is provided in Appendix 9. Citations are as follows:

Gray, L. (2018, September 4-6). *Preparing for the Big One: an exploratory study with emergency managers, planners and responders in Aotearoa New Zealand* [Poster presentation]. QuakeCore Annual Meeting, Taupō, Aotearoa New Zealand.

Gray L. (2020, March 9-13). *The Big Body in Disasters*. Emergency Management Summer Institute, Massey University, Wellington, Aotearoa New Zealand.

Preparing for the big one: An exploratory study with emergency managers, planners and responders in Aotearoa New Zealand.

Prior to this doctoral study the research literature was sparse regarding existing emergency management considerations for big bodied people in Aotearoa New Zealand (NZ) (Chapter 2). However, I did receive a number of anecdotal, mostly third-party reports of evacuations of BBP in disaster situations (e.g. flooding) in NZ. Because these incidents did not appear in published reports and could not be empirically substantiated, it was not possible to ascertain the degree to which BBP are included in current NZ DRR considerations. It was, therefore, important to undertake a stocktake of current emergency management (EM) practice to inform the next phase of the research: in-depth interviews with emergency managers (detailed in Chapter 7). This chapter presents the design and results of an exploratory online survey.

Method

"Exploratory research is an attempt to discover something new and interesting by working through a research topic and is the soul of good research"

Swedberg, 2020, p. 17.

I was surprised to discover in my preliminary discussions with international DRR experts (Virginia Murray, Public Health England, UK, February 2017; UNDRR, Global Platform for Disaster Risk Reduction (DRR), Cancun, Mexico, May 2017; Natural Hazards Center, 42nd Annual Natural Hazards Research and Applications Workshop, Colorado, USA, July 2017) that this topic of keen interest to me was absent in the DRR research dialogue. It was heartening, however, that the more I asked, the interest of others in the topic grew e.g. L. Peek, personal communication, June 2017 (Appendix 10).

Because I was venturing into a hither-to under-researched area, my research would by necessity be exploratory and would focus on the considerations and experiences relating to one country (NZ). This type of research is appropriate to topics that have not previously been subject to empirical research and is particularly useful when wishing to devote significant study time to a topic (Swedberg, 2020).

As the primary purpose of this exploratory survey was to provide context and initial data to inform subsequent in-depth qualitative research, an online survey was chosen as the most appropriate method due to the benefits it afforded in terms of time, cost and reach.

The execution and management of paper surveys are time-consuming and costly, whether administered in-person, mailed, or sent as an email attachment. Where time is a critical issue, online surveys provide a relatively simple, fast and cost-effective alternative. Administered via email or social media networks, the survey can be quickly and widely distributed enabling participants to respond almost immediately. The design capabilities of an online survey are flexible, data is collected automatically and the progress of the survey can be tracked in real time.

The target population is a critical factor in the decision to use a paper or online survey. If the intended research participants are not technically competent and/or do not have access to a computer or the internet, an online survey via email or on social media networks will have little success. For this research, the target population in NZ included employees and volunteers of organisations, such as Civil Defence, Ambulance, Health Board and Regional Councils, using email and digital platforms as part of their routine practice, with many, such as CDEM groups, maintaining a social media presence. This supported the rapid and widespread dissemination of the survey to a wide range of agencies and organisations across the country. It also meant that potential respondents would have access to, and be comfortable using, appropriate technology.

In the absence of a standardised or validated questionnaire tool, a 12 item questionnaire was developed by me with suggestions from my supervisory team. The questionnaire was piloted with health and emergency management staff at my workplace (University of Otago, Wellington) to pre-test (Baker, 1994), checking for timing, readability and flow under survey conditions to identify for example any questions that require modification or changes to the flow or question wording (Gudmundsdottir & Brock-Utne, 2010). The final questionnaire was administered between May and July 2018 using the Qualtrics^{XM}© online survey platform (2018). The descriptive questionnaire comprised multiple choice and open ended questions. (Appendix 2). Information was sought about specific disaster-related arrangements EM organisations have for populations identified as being more at risk in disasters and to establish if BBP were included in any considerations. Respondents were also

asked for their views about the inclusion of BPP in disaster related planning and arrangements. At the end of the questionnaire respondents were asked to indicate if they were willing to participate in an interview to take place at a later date. If so, they were invited to provide contact details.

The survey was evaluated and judged to be low risk and did not require review by the Massey University Human Ethics Committee (Massey University low risk approval number 4000018662) (Appendix 3).

Recruitment and respondents

Due to the funding limitations and time restrictions of this doctoral study, it was not possible to construct a statistical sampling frame for the intended participants. The high level of voluntary and transient nature of some agencies at the time of the survey made the challenge of estimating actual numbers of EM, let alone contacting them, even more difficult. An invitation to participate in the research was emailed to known or identifiable contacts in agencies such as regional emergency management organisations, health agencies, civil defence, fire, police, and ambulance services. An information sheet (Appendix 4) accompanied the email which also explained that consent was implied once participants opened the link and completed the online survey.

Recipients were asked to forward the invitation and accompanying survey link through their own networks. A number of key informants utilised existing organisational digital platforms to disseminate the information about the research. This approach, a variant of non-probability snowball sampling (Etikan & Bala, 2017) was chosen in an attempt to reach potential participants whose direct contact details were not known to the me.

To protect participant confidentiality and identity, names and specific employer details were removed from the data prior to analysis. Details such as age range, ethnicity, and type of employing organization (e.g. Fire, Civil Defence, Ambulance Service) were included. Questionnaires were completed by 44 individuals from across NZ representing a range of organisations. Almost one-third of respondents were in service leader or manager roles (Table 5). This could relate to one of the key disadvantages of snowball sampling in that the final sample is heavily influenced by the selection of initial recipients and their choice of who to forward the invitation to.

Table 5: Online survey participant characteristics (n =44)

Location (Region)	n	%
National	3	6.8
Auckland	4	9.1
Bay of Plenty/Tairāwhiti	2	4.5
Hawke’s Bay/Manawatu/Whanganui	11	25.0
Wellington	11	25.0
Marlborough/Canterbury	3	6.8
Otago	9	20.5
Not provided	1	2.3
Type of Organisation		
Civil Defence/Emergency Management	15	34.1
District Health Board/Health/Public Health Organisation	13	29.5
Local Government/District Council	6	13.6
Ambulance	5	11.4
Humanitarian/Search and Rescue	3	6.8
Fire and Emergency	2	4.5
Role		
Service Leader/Manager	13	29.5
Advisor	8	18.2
Officer	6	13.6
Coordinator	5	11.4
Research/Education	4	9.1
Registered Nurse	2	4.5
Director/Controller	2	4.5
Other/Not provided	4	9.1

Data Analysis

Most of the multiple choice items in the survey related to participant characteristics, such as role, location and type of organisation (see Table 5) or the groups for which specific disaster-related arrangements exist (see Table 6).

Respondents were asked about their views on including people with extreme obesity in their organisations’ disaster-related arrangements (questions 7) and written disaster-related documents (question 9). Unfortunately, a set up error for these two questions did not force a selection from the

primary responses (yes; no; unsure). However, respondents even those who did not indicate a primary response, were able to provide open text comments for both questions.

Given the primary purpose of the survey was to guide subsequent in-depth qualitative interviews, it was always the intention to focus on the free text responses. These proved to be most informative and form the basis of the results section.

Results

Participants most commonly reported that their organisations had specific disaster-related arrangements for people with disabilities, children, people with chronic medical conditions and older people (Table 6). As participants could indicate as many groups as they wished, percentage values are not relevant.

Table 6: Groups for which organisation has specific disaster-related arrangements

Group	n
People with disabilities	27
Children	23
People with chronic medical conditions	19
Older people	18
People with mental illness	13
People with high body mass	7
Other	16
None of above	4

Although seven respondents indicated that their organisation had disaster-related arrangements that included people with extreme obesity/high body mass and/or big bodied people (collectively referred to as big bodied people), responses to a supplementary question make it clear that this was neither deliberate nor specific. Rather big bodied people (BBP) were included in hospital or as part of the wider community or in terms of routine business-as-usual arrangements. Key points are illustrated with extracts from survey responses (identified as P1-P44).

They are not specifically planned for, just seen as part of the community therefore if they require assistance then we have to try and provide this. P20

In the hospital environment we routinely manage extreme obesity - these management considerations will continue to be adhered to post disaster as best as possible. P4

Such sentiments were confirmed by content analysis of all open-ended responses in the survey. A common view emerged that BBP are not, or do not need to be, the focus of specific disaster arrangements or plans because of a belief that they are covered by broad policies and procedures that account for vulnerable groups generally and/or a view that they should not be treated preferentially to others in the community.

Its [sic] important for us to consider people with all kinds of vulnerabilities, including people with extreme obesity, we are prepared to support the diverse range of people making up our communities. P31

Those with extreme obesity are not planned for per se they will come under general provisions of those with vulnerabilities. P20

We have processes in place for looking after obese patients however these are not specifically disaster related and are more a BAU consideration. P11

A number of comments related to BBP having not been identified as a priority group in terms of disaster-related arrangements or planning. For some participants the view that this was not warranted was underpinned by perceptions of low to very low prevalence of BBP in their region/area.

People with extreme obesity have not been identified as a high priority group that need separate plans... [they] are not currently seen as requiring special consideration. P3

We are a rural district with a very small population. I don't know to what extent extreme obesity is prevalent in the district, and where. I'd want to know a bit more about this issue and how it actually affected us. P43

There is limited information available about people with disabilities in an emergency and such information tends to focus on 'visible' disability. We're trying to improve that in our region. P30

As far as I am aware we do not have, or have very low numbers of, people with extreme obesity in our community. P44

Participants were asked to indicate if they thought their organisation should consider BBP in their disaster related arrangements and written disaster-related documents. As a result of an oversight creating the questionnaire, it is not possible to report the frequency of those who responded yes, no, or unsure to these two questions. However, many of the participants ($n=35$) shared comments ($n=51$ in total) in the second part of both questions. This provided rich descriptive data. While some participants were clearly either in favour or opposed to doing so, the uncertainty of others highlighted the complexity of this issue.

A number of participants queried the extent to which specific groups can, or should be, identified and accommodated in disaster arrangements or plans.

There are numerous different sectors of the community which need specific consideration and this is only one. It is difficult to impossible to cater for them all with specific and targeted plans and funding and resources. P24

Managing people with extreme obesity isn't something that's commonly discussed or probably thought about much during a disaster unless they're classed as vulnerable in some other way, e.g. elderly. P32

... we cannot write individual plans for all at risk groups. We need to generalise persons with vulnerabilities for planning purposes.... P20

If you write specifically in plans for extreme obesity when do you stop with other issues such as visually impaired, hearing impaired, people with diabetes etc, the list could go on and on P23

Some participants commented that planning for vulnerable/at risk groups is the responsibility of other agencies or sectors, in some cases with support and guidance from their own organisations. In particular, the health sector was seen as having a primary role in this regard.

Specific arrangement for the groups listed above are in place through the DHB (their responsibility); Ministry of Education and schools in relation to children, and Oranga Tamariki for unaccompanied children in an emergency. P30

We interact with all facets of the community but no specific planning other than to support organisations and institutions who have responsibility in relevant areas. e.g schools. P24

Yes, in terms of considering their [BBP] additional/differing needs in an emergency response, but this is likely best to be done by guidance provided by the Ministry of Health and DHBs as the subject matter experts P39

... because the organisation is a national organisation, we tend not to have specific plans for supporting different types of communities... If you consider it a predominantly health issue though, the Ministry of Health is more the organisation that would advise in this case ... So it's relevant, but we might not be the people for advice. P21

Sixteen respondents indicated a willingness to participate in a follow up in-depth semi-structured interview. Subsequent invitations and follow up email or texts determined that 6 survey respondents had changed roles in the intervening time period. Five survey respondents did not respond to the follow up interview invitation and four went on to participate in interviews. One survey respondent who had since moved roles was able to link the primary researcher with the new post holder who was subsequently interviewed. Details of the interview process, analysis and findings are presented in Chapter 7.

Strengths and limitations

This exploratory survey sampled 44 EMs from across NZ, representing a range of EM agencies. As mentioned earlier however, a key limitation was who the initial contacts decided to forward the survey invitation to, meaning the sample of participants relied upon decisions made by the initial recipients.

A limitation of the survey tool was a questionnaire set up error. Questions 7 and 9 did not force a selection from the primary responses (yes; no; unsure) and allowed open text responses regardless of any response to the primary options. It was possible to deduce what the primary response ought to

have been from open text comments for some and by providing an option for an explanation did mean that rich data was obtained for this question area. Further, the findings of that data were confirmed by additional comments and further reflections emailed to me by some participants following the interview.

Discussion

Despite the limitations of the use of data derived from small non-probability samples such as that reported here (Fricker, 2008), the responses of participants provided a valuable snapshot of current practices and beliefs of EMs across NZ and from a number of EM agencies. The overarching exploratory data provided good direction for the next stage of the research by highlighting areas of enquiry that may benefit from in-depth exploration.

Having knowledge about stigma and discrimination of marginalized, excluded and under-resourced populations, such as BBP (discussed in detail in Chapter 5), some participant comments raised the possibility that their individual understanding and prioritisation of 'vulnerability' may be influenced by biases about BBP. The notion of specific planning for BBP elicited some negative and/or somewhat defensive responses, including one participant who asked, "where do we stop?" (P27). Another stated that if extreme obesity was included in planning "then should we not address those who are extreme under-weight as well?" (P37). EMs commonly listed other groups who would or should be considered inferring that such groups would need to be considered before BBP. For others, the simplest solution was to take a common denominator, 'one size fits all' approach, potentially delivering an approach that would be suitable for few with specific needs and may exclude those most at risk. The notion and nature of who is vulnerable in disasters remains contested. While Harrison et al. (2021) determined that hazard data was "systematically collected, documented, and used in New Zealand for many purposes" (p.4), disaster social vulnerability indicators remain much less structured, despite a range of work on indicators of social vulnerability and natural hazards (Mason et al., 2021).

The analysis of open text responses highlight a number of issues that demand further exploration in the in-depth semi-structured interviews to follow. For example, while respondents from the hospital/health sector stated that considerations were made for BBP in this environment, comments

suggested that such considerations were probably related to routine care and equipment rather than emergency management. In addition, comments from non-health respondents suggest an assumption that BBP would be under the 'care' of health services and therefore would be identified and managed by health agencies in any disaster situation. Such a view reflects a strong global narrative aligning high body mass with illness and high health needs. Plus an assumption that the responsibility of EM for BBP lies with health agencies.

These, and other issues identified in the analysis, were explored in greater detail through the semi-structured interviews detailed in Chapter 7 and Chapter 8 and triangulation of data associated with the narratives in Chapter 9.

Conclusion

The responses to this exploratory survey suggest people with extreme obesity are not specifically considered in disaster-related arrangements in NZ. Rather, the results of the survey responses from EMs suggest a common perception that BBP would be adequately catered for by generic community-wide approaches or are included by proxy within specific disaster-related arrangements for other vulnerable/at risk groups, such as people with disabilities, and people with chronic medical conditions. It was also clear that the survey respondents strongly aligned BBP with 'health issues' and assumed that, as a consequence, they would be considered within health EM arrangements and plans. This is problematic in the context of disasters as this approach assumes consideration and inclusion of BBP by agencies, when this is unlikely to be the reality. The survey highlighted issues that are worthy of further investigation via qualitative means, which are discussed in Chapter 7.



Image 7: Winter Games

Image credit: Obesity Canada - Obésité Canada

7

Emergency management planning

It is invisible. We haven't considered it, and if it does happen, we don't have a plan.

Emergency Management semi-structured interview participant 03

This chapter presents Publication 2 from this doctoral study. It examines in-depth how emergency managers and responders constitute big bodied people in 'at risk' groups and in what way big bodied people are considered for emergency management planning and disaster risk reduction (DRR). Four of the participants had completed the exploratory online survey described in Chapter 6 and indicated willingness to participate in a further in-depth qualitative interview; one participant was recommended by a participant of the exploratory online survey; the other participants were independently recruited. The findings from fifteen semi-structured interviews provide data to inform research questions 1 and 2:

How are big bodied people constituted as a specific 'at risk' population with respect to disasters?

In what way are big bodied people presently considered in emergency planning in New Zealand?

The manuscript was submitted to the International Journal of Disaster Risk Reduction on 29 June 2021 and following revisions submitted on 18 October 2021 it was accepted and first appeared 'early online' on 20 October 2021. Statement of authorship contribution is provided in Appendix 11. The article citation is:

Gray, L., MacDonald, C., Becker, J. S., & Johnston, D. (2022). A qualitative study of emergency management considerations for big bodied people in Aotearoa New Zealand. *International Journal of Disaster Risk Reduction*, 67, 102646. <https://doi.org/10.1016/j.ijdr.2021.102646>

A qualitative study of emergency management considerations for big bodied people in Aotearoa New Zealand

Abstract

Due to their circumstances and resources before, during and following disaster events, some people have higher risk of harm in disaster requiring specific disaster planning considerations. The prevalence of big bodied people is increasing in many countries and big bodied people are potentially at higher risk in disasters in direct relation to their size, shape and weight. This study explores planning considerations by emergency management, health, humanitarian and resource sector for big bodied people in New Zealand. Qualitative semi-structured interviews explore emergency management considerations particular to big bodied people. A purposive sampling recruitment technique was employed. Fifteen individuals were interviewed in-person or via Zoom™ between July 2018–April 2021. Interviews were audio recorded and transcribed. Data were thematically analysed. Five themes were identified: Prioritising People; Overlooked and left behind; Whose job is it anyway?; Practical and resource issues; The way forward. Participants were readily able to identify a range of ‘groups’ likely to be at higher risk in disasters, however big bodied people were not identified as at-risk and no specific planning was in place. A one size approach was more likely to overlook specific needs of big bodied people with lack of clarity over who would be responsible for planning. While concerning that big bodied people were not currently included in planning, emergency managers were open to education. The emergency managers interviewed expressed a desire for information, education and training to build the knowledge base concerning this sector of the population.

Keywords: disaster risk reduction, disaster vulnerability, high body mass, big bodied, emergency management, qualitative research

Introduction

The poorest and most historically marginalized and excluded people in society with the greatest socio-economic disadvantage prior to a disaster are at greater risk than the general population during and following a disaster (Hallegatte et al., 2020; Blake et al., 2017). Such circumstances are at the heart of the concept of disaster vulnerability (CORDAID & Partners for Resilience, 2020; United Nations Office for Disaster Risk Reduction 2020-2022b; Blaikie et al., 2005; Oliver-Smith, 2004). Big bodied people (BBP) are over-represented in statistics of disadvantage by social and economic determinants. In England, for example, adults are nearly twice as likely to have high body mass in more deprived households compared to least deprived households and the gap for children is even larger (Batterham, 2021).

Body mass prevalence has been increasing globally over the last 30 years (Non Communicable Disease Risk Factor Collaboration, 2016), yet there is no consistent measurement for BBP. For this research, BBP are defined as those people who have large physical dimensions (weight, width, girth or height). Global statistics frequently utilise body mass index (BMI) to calculate population body mass although BMI is a limited homogenous tool with racist and sexist origins (Strings, 2019; Byrne, 2021), unable to distinguish a person's actual body fatness, shape, size, height or width. For the purposes of comparison to population statistics, and despite its limitations, the BMI remains the primary measure to date with the two largest categories of BMI being $>35\text{kg}/\text{m}^2$ (Class II) and $>40\text{kg}/\text{m}^2$ (Class III).

In Aotearoa New Zealand (NZ), after adjusting for age, sex and ethnicity the rate of adults with a body mass of $>40\text{kg}/\text{m}^2$ is four times higher than compared with those living in the least deprived areas (Sharpe & Bradbury, 2015). Indigenous Māori and Pacific peoples experience high body mass at much higher levels than the general population of NZ: unadjusted prevalence of those with a body mass of $>40\text{kg}/\text{m}^2$ is 20.7% (95% CI 16.1–26.2%) for Pacific peoples and 11.2% (95% CI 9.4–13.2%) for Māori, compared to 5.0% (95% CI 4.5–5.6%) for the total population of NZ (Ministry of Health, 2020a).

People viewed by society as having excess fatness are marginalised and subjected to systematic and symbolic oppression, discrimination and stigma (Prohaska & Gailey, 2019; Schwartz et al., 2006). Barriers include denied or delayed medical care (Lee & Pausé, 2016), negative portrayal and outcomes

in legal proceedings (Beety, 2012), ineligibility for certain transport employment roles, transportation for BBP (Lynch, 1996), and weight bias in employment (Fikkan & Rothblum, 2005). BBP may not fit (width or length) or exceed safe working loads or weight capacity of standard equipment such as waiting area chairs, blood pressure measuring cuffs, or hospital beds. BBP may generally not find suitable sized clothing in regular stores.

Populations previously identified at greater risk in disasters are also more likely to have higher body mass (Gray, 2017). For example, people with disability and those with severe mental illness are more likely to have body mass greater than 30 kg/m² compared to the general population (Froehlich-Grobe & Lollar, 2011); Altman & Bernstein, 2008; Weil et al., 2002). Some literature suggests a shared pathophysiology between high body mass and mental health disorders (Elman et al., 2006; Lopresti & Drummond, 2013). People with mental health disorders may be on medications which play a role in weight gain (Allison et al., 1999; Correll et al., 2011; Huthwaite et al., 2017; Elmslie et al., 2000) and high body mass is also common in people with mood disorders and non-affective psychoses (e.g. schizophrenia) (Papanastasiou, 2012; Faulkner et al., 2009; Levine et al., 2001; Haw & Rowell, 2011).

Gray and MacDonald (2016) conducted a literature search and located reports of people impacted in disasters in direct relation to their size, shape and weight in staff accounts, books and journalist reporting (Ramme et al., 2015; Geiling, 2010; Fink, 2013; Fink, 2009; Taylor, 2014; Hughes, 2013). Most notable are reports from health care facilities that illustrate the heightened risks BBP face despite being in a facility that would have had prior knowledge of the person's size, shape and weight. Outside the hospital environment, only one research article was located concerning a 2009 earthquake (magnitude 8.1) and tsunami that shattered American Samoa (Apatu et al., 2014). While many people were able to evacuate quickly, some were unable to do so because of body mass related issues for individuals or family members. Walking, stair climbing and chair rise ability contribute to evacuation challenges in disasters and may be compromised for people with high body mass (Vincent et al., 2010).

Oppression against fat bodies was brought into sharp focus during the influenza A (H1N1) pandemic of 2009 when fat bodies were associated with higher risk of severe infection and risk of death (e.g. Louie et al., 2011; Moser et al., 2019), however when adjusted for access to early antiviral treatment the relationship between body fatness and worse outcomes disappeared (Sun et al., 2016). Similarly,

the Covid-19 pandemic was accompanied with severe risk attributed to BBP resulting in blame, re-stigmatisation and proposals to exclude and deprioritise BBP for health care (Pausé et al., 2021).

The lack of inclusion of BBP in the disaster research literature highlights a gap in understanding of and planning for disaster risk reduction (DRR) capacities and needs of BBP. Research is underway with BBP by the current authors. Emergency management, health and response sectors (EMs) in NZ have a central role in DRR planning. Research to date does not appear to have been conducted with EMs to identify the ways in which people with high body mass are currently considered in emergency planning. This study sets out to explore emergency management disaster planning concerning BBP in NZ.

Methods

In light of the limited research on this topic, this is a descriptive exploratory study. A qualitative approach was employed with semi-structured interviews to explore EM considerations particular to people with high body mass. Given the dearth of research literature concerning EMs and BBP it was important to scan the EM environment in NZ. This study aimed for a purposive heterogeneous sample by EM type (e.g. Local Authority, Health, and Humanitarian) and geographic location spread to provide a diverse range of responses to the phenomenon being studied (Patton, 2002). Common themes found across a heterogeneous sample are more likely to be more widely generalisable than common themes across a homogenous sample (Robinson, 2014).

This research was approved by Massey University Human Ethics Committee: Southern A Ethical Approval SOA 18/59 (Appendix 12).

Interviews

Semi-structured interviews of approximately 45 min duration were conducted by the lead investigator (LG). A semi-structured interview guide (Appendix 5) was developed to reflect key themes of participant experience of disasters and DRR generally, and more specifically planning considerations and arrangements for BBP. The interviews followed a conversational style enabling participants the freedom to express their views in their own terms and to introduce supplementary topics. Interviews

were audio recorded and transcribed verbatim. Identifying details for participants were removed prior to analysis. Age range, ethnicity, job role and geographic region were included. EM health status, weight and height measurements were optional for disclosure to the researcher. These were collected to determine experience of chronic conditions, mobility impairments and body mass measurements as smaller framed people may hold biases towards larger framed people (Schwartz et al., 2006).

Participants

A purposive sampling recruitment technique was employed (Patton, 2002). In total, fifteen individuals were interviewed in-person or via an online video call through the Zoom™ platform between July 2019 and April 2021. Interview participant characteristics are described in the results section below.

Data analysis

Audio tapes were professionally transcribed and uploaded to Dedoose™, a web-based qualitative and mixed-methods data analysis application (<https://www.dedoose.com>). Data were analysed utilising reflexive thematic analysis according to a six-phase process encompassing data familiarisation, iterative data coding, and theme development (Braun & Clarke, 2021). Through repeated reading and review of the data the researcher becomes increasingly immersed in and familiar with it. A detailed line by line coding process generates initial codes which form the building blocks of themes which are identified, reviewed and defined. This recursive process ensures that themes describe coherent and meaningful patterns in the data, are reviewed against coded data and the full data set, and are named and defined in a way that is useful and relevant to the research question (Braun & Clarke, 2006). The lead investigator (LG) conducted the first round of analysis, generating 56 codes. LG and CM then refined these into 48 codes, comprising 5 main themes and 13 sub themes through discussion, revisiting data to confirm context and reaching consensus.

Results

The participants (6 women and 9 men) were aged between 36 and 66 years, located throughout the North and South Islands of NZ, representing a range of EM organisations including Emergency Management, Local Authority, District Health Boards, first responders, and humanitarian

organisations. Most participants were of NZ European ethnicity or identified as Pākehā (Pākehā is a Māori term referring to New Zealanders of European descent), two participants identified as Māori, and one has been categorised as 'other' to ensure anonymity. Nine participants reported their own height and weight. Where height and weight details were not available, the interviewer, trained in body anthropometry, visually estimated height, weight and body mass. All participants were estimated to have a body mass under 35 kg/m², more than half of participants had a body mass under 30 kg/m². A summary of participant characteristics is provided in Table 7.

Five primary themes were identified from the data: 1. Prioritising people; 2. Overlooked and left behind; 3. Whose job is it anyway?; 4. Practical and resource issues; 5. The way forward. These are presented below with illustrative quotes from participants' semi-structured interview transcripts (identified as EM01 - EM015).

Table 7: Emergency management participant characteristics (n =15)

Location (Region)	n	%
Auckland	1	6.7
Tairāwhiti	2	13.3
Bay of Plenty/Hawke's Bay	3	20.0
Whanganui	2	13.3
Wellington/Wairarapa	3	20.0
Marlborough/Canterbury	2	13.3
Otago	2	13.3
Type of Organisation		
District Health Board/Health/Public Health Organisation	2	13.3
Civil Defence/Emergency Management/Local Government	9	60.0
Paramedic/Lay Rescuer	2	13.3
Humanitarian	2	13.3
Body Mass Index (Kg/m²)		
20-24.9 (4 reported)	4	26.7
25-29.9 (1 reported, 3 estimated)	4	26.7
30-34.9 (4 reported, 3 estimated)	7	46.7
Stated Ethnicity		
Māori	2	13.3
NZ European / Pākehā ¹	12	80.0
Other	1	6.7
Gender		
Women	6	40.0
Men	9	60.0
Age		
35-39yrs	1	6.7
40-49yrs	2	13.3
50-59yrs	9	60.0
60-69yrs	1	6.7
Not stated	2	13.3

¹ Pākehā is a Māori term referring to New Zealanders of European descent

Theme 1: Prioritising People

In order to contribute to effective DRR it is important to have good knowledge of the population, including associated risks and vulnerabilities in order to appropriately prioritise people. In these interviews, participants talked about different types of population groups as if such groups were homogenous. Two sub themes were identified: People at high risk; and Bias, discrimination, shame and stigma.

People at high risk

Hazard risks were discussed in terms of geographic areas deemed vulnerable to hazards such as flooding and tsunamis and a range of population groups believed to be at greater risk in disasters for the region each participant lived and worked in. Population groups frequently mentioned included, but were not limited to, people with disability, people with specific health or mental health needs, and older members of the community (including residents of care facilities).

BBP were not identified by any of the participants as a specific 'at risk' group. Some participants thought BBP would be included under a broad category of 'vulnerable communities or groups' such as people with mobility and/or health issues.

We would normally consider them broadly as a vulnerable population. EM09

it [plan] does not specify vulnerable clients/groups - yet, but I am sure this clause would include the BMI + clients we discussed if it was fleshed out. EM03

if its vulnerable it doesn't really matter if someone has a physical disability, if they're blind or hearing or you know we would include restricted movement or so if they were large, we would sort of include that as well. EM07

Many EMs expected 'health' would know BBP in their geographical area and these EMs would expect 'health' to let emergency services know where BBP needing support would be in an event. However, 'health' participants felt sure they did not know all BBP in their area and deferred to other agencies/specific work groups. Even if 'health' was aware of BBP, issues of data privacy were mentioned meaning agencies were not sure that they would be able to provide such data. Health

participants added that body mass documenting is not compulsory and even if recorded it could be far from accurate and was unlikely to be relayed along with health conditions in an emergency.

For example two months ago we went to a cardiac arrest with this guy that weighed 200 kg, in a car. And it took five of us pushing and pulling, dragging, to get him out of the car and just onto the ground. But we didn't know that till we got there. EM06

Some participants spoke of how they would expect to gather information in the early response stages and some mentioned people who would have a 'list'. Some participants felt they had good people networks to inform prior planning and would easily and quickly acquire information during an event. All participants recognised that lists/databases are notoriously difficult to maintain and keep current. Sharing information requires a high degree of knowledge (who has the list or relevant information), relationships, trust and coordination, that may not exist between agencies and varied between regions. One EM recognising the pitfalls of lists, still wondered if there should be a cross sector shared vulnerabilities database for their Region.

If someone's in the care of the health service, health and disability services, then we're reliant on health and disability services telling us where those people might be. EM01

So we're reliant on the registers that either the District Health Board maintain, or the electricity providers maintain. Because when you connect to an electricity supply you state whether you're dependent or not. And that process has been abused a bit in the past, so they've certainly tightened up on the processes around that. EM04

I don't need the list; I need the person who has the list, so that they can tell me what their priorities are, and where the best bang for the buck is ... and what their immediate needs are. Because the other professionals that are assessing these people, they know them, they know the individuals. EM05

I think we need to have a national database for vulnerables ... we just need to somehow create some system where, I know privacy is an issue. EM14

Piecemeal networks of knowledge and participant relationships with knowledge holders relating to people most likely to be at higher risk was in itself vulnerable, as experienced in the COVID-19 pandemic.

it wasn't until there was a fall down with Pasifika [during COVID-19] that were supposed to being looked after out of [region name] that didn't happen that we even realised that Pasifika weren't being looked after. So, I guess the short answer is its very much relying on our key network people to then filter down through their networks. EM08

When asked about people at risk in pandemics, four participants said they were aware of a heightened risk concerning BBP and influenza A (H1N1) 2009. Eight participants were interviewed during the COVID-19 pandemic and of those, four indicated that they were aware of links to higher risk and severity of COVID-19 for BBP. One participant aware of associations for BBP and COVID-19 had been unaware of any link to the 2009 H1N1 pandemic and was surprised to learn of reported links, especially as they had been working with BBP at the time and sitting on the health board's H1N1 Task Force. Nine participants were very certain that they had never been informed of, or heard, any discussion of increased risk for BBP in relation to H1N1 and/or COVID-19. Those who were aware relayed that there was no DRR information or actions specific for BBP passed through to their service.

I definitely knew that that was one of the high risk factors was people with higher body weight ... but in terms of actions or targeting those as a priority group, I was working on the public information management desk and we had targeted messages to a lot of people but none to people with higher body mass. EM15

Bias, discrimination, shame, stigma

The potential impact of biases and shame relating to people with high body mass was recognised and acknowledged by seven participants. A wide range of views from participants reflected common assumptions about BBP in terms of lifestyles, choices, presumed comorbidities and high health needs. Participants highlighted the role that misconceptions and bias could play when applying military style triage (most likely to survive) to potentially disadvantage people with high body mass.

Yeah. Subconscious bias, without an understanding of what the background is, or not having the time to do it. Particularly with people who aren't used to doing the T system of triage, which is the military ... 'most likely to survive' it's very hard to fight your unconscious bias.

EM05

Again, because I feel it's like the implicit bias comes before anything. And "It's their fault", and "It's in the too-hard basket, and I don't want to go there." EM10

There was also recognition that BBP would be dealing with the impact of living as a BBP including guilt, shame and discrimination. One participant mentioned a range of strategies employed to support people in difficult and traumatic situations including food parcels and emergency clothing for BBP.

and [in] the emergencies often we will take people to the [type of] store when its closed so that they're not shamed, whether it be people who have just had their houses burned down or something like that, we'll take them and we'll say, you just find what's comfortable for you. EM14

Several participants talked about weight through a frame of guilt and shame in relation to their own body size. COVID-19 also played a significant role in heightening bias, discrimination, stigma and shame for BBP.

I am heavier than I should be, which is shameful, but I have arthritis issues. EM05

I'm sad. I'm very sad, because a lot of the fat activists have made a really good impact, and this COVID-19 is taking that backwards. EM10

Theme 2: Overlooked and left behind

Theme 2 concerns key factors associated with why BBP are overlooked in DRR prioritisation activities that in turn may lead to BBP being left behind in an event. Theme 2 comprised three sub themes: experience and knowledge; one size planning; triage and prioritisation.

Experience and knowledge

Most participants lacked any experience with, or knowledge of, BBP. Low estimation of BBP numbers in some regions, led several participants to believe BBP would not be an important consideration in their area.

Numbers in our region are unlikely to be sufficiently high to warrant a separate focus. EM01

We did have a couple of morbidly obese people. They were in the 235–280 kilo range. They died. So they're off the books. I don't know of anyone else here at the moment who is in that range. They were an issue EM03

So I don't know how many people are in the community that are in that situation that are not being seen. EM10

Six participants talked about BBP being 'invisible' in the community and to EM planners in particular. This was attributed to a number of factors, including a tendency for emergency management to focus on visible disabilities and assumptions that BBP are not present in the community, are likely to be housebound, and that they only come to the attention of agencies, such as health care providers, in times of personal crisis or in emergency situations. Conversely one participant talked about a homeless man who had been very visible to many agencies for a time.

the people that are already linked in on those existing groups or networks, they will be, they're not so much the worry as you say, it's the invisible ones and it's like unfortunately for us there's people are invisible for many, many reasons EM13

he was so invisible to his community that it literally took me two weeks to be able to get somebody to go in EM10

A gentleman who was up and down our main street, who was morbidly obese, and obviously homeless. We were all well aware of him in the agencies that were working to help him. But

he's now no longer visible, so I'm not sure where [he is]. But I do know, as far as [that] individual goes, there were at least nine agencies tracking him and trying to assist. EM05

Eight participants had knowledge about BBP in their region, some with experience involving BBP relating to previous or current roles and generally reporting poor experiences. Most participants with prior experiences relating to evacuation involving BBP recollected harrowing stories in emergency situations.

she would have been round about 150 kgs. And her husband was there, and it was just those two. So we had to go and get her. Six of us had to hold onto her, [the flood] was pretty swift. So if any of us lost our footing, we all would have gone under. I'm not saying we would have drowned, but something seriously would have happened to her, because of trying to get her up, you see. EM11

One that caused quite a bit of hassle for a couple of years has died ... that caused major drama because [the fireman] got bilateral hernia's from lifting EM06

We had this lady, she was over 250. And she arrived in ED, emergency department, on the floor of the ambulance. And she was lying on a canvas sheet, a tarp, and we had to ... it took six of us to drag her into ED, then eventually six of us, at least, to get her out. EM03

Paradoxically, the same participants reported an ongoing gap regarding specific emergency plans for BBP. However, one participant who had been directly involved in evacuating people with high body mass from houses and motor vehicle accidents in a former role felt that this had contributed to a greater appreciation of requirements and challenges for BBP in their current EM role.

When [partner name] and I were running [facility name] up in [City], we had standard sized beds but we always kept a stock of king sized beds for bigger people ... we tried to do was make sure that they were kept for people who needed them ... we were very, very much about meeting the needs of the person, not them meeting our centre needs. EM14

When thinking about BBP, participants were most likely to think of body size and weight in terms of the challenges posed for emergency responders, particularly in relation to mobility issues.

... in a disaster related event ... Moving an extreme obesity person may take specialist equipment and trained emergency personnel that are simply unavailable. EM05

Participants with limited knowledge and experience regarding BBP mentioned stereotypical ideas relating to extremely large people's lives, abilities and general health status.

And these people- random guess- I'd say they're probably housebound EM03

So there'd be diabetes and those sorts of issues ...? EM04

My thing was that people with heart conditions or sort of physical health issues would be more vulnerable and that larger people may have more, be more likely to have health issues.

Correct assumption or just size alone regardless of health? EM12

So do these people generally work with some sort of health organisation? They obviously must be working closely with doctors, if they've got illnesses and things? EM13

Conversely one participant had experience of seeing such an assumption about size and health upended.

... the doctor eventually called up his paperwork, because I'd done the initial medical screening and said he was fine; the doctor looked at the BMI and went, "Hell's bells, I need to see this guy. He's unfit to be in the military." So I personally took him up there, and the doc ... then paraded this man around the entire medical facility. Because he was into body-building [name of person] was a very, very fine physical specimen, at about 160 kilos, and five foot nine, maybe. And he was all muscle, and the doc had never seen anything like it ... But I still ... you wouldn't want to lift him. And that's the main concern. EM05

One size planning

Consequently, and perhaps unsurprising, there was little or no planning in place specifically for BBP in any of the participant regions. When specific groups were mentioned in relation to planning that was in place, for example people with disabilities, most participants had not accounted for the possibility such groups may include BBP. This reflects a general blurring of the way in which 'at risk groups' were viewed by participants, whereby considerations for BBP appeared to be equated to issues of disability and/or poor health.

I'm not aware of us having thought about if [we] have to order evacuations for the population, any population, making provisions for very large people EM02

This 'invisibility' of BBP unsurprisingly extended to planning.

It is invisible. We haven't considered it, and if it does happen, we don't have a plan. EM03

... but there are bound to be people and like yes we would then be reliant on whoever the agency is that would have responsibility for them. EM08

Some EMs also highlighted that their guiding documentation omitted provision for BBP and so provided justification for no planning. This included participants from regions commonly known to have higher numbers of BBP.

Well I can assure you it's not something that has been considered. And I mean from the Health perspective, and I'm on the emergency services committee here, we haven't even talked about it. Haven't even thought about it. EM03

Nothing specific ... there's nothing documented as such ... they wouldn't be factored into our thinking EM04

I'd say it's really one size tries to fit all, there's no specific target apart from this disability project I'm working on at the moment. EM15

A number of EM's reinforced a one size planning approach that assumes considerations for 'at risk' groups generally will extend to BBP.

If you can't fit, then ... A lot of information I would give would be the same that I'd give to anybody else EM01

when I raised this with [name of regional council] they weren't interested and just said, "No, we're just going to open one sort of Welfare Centre" and then I was thinking well how is that going to work ... EM07

In some instances, a one-size approach was also evident where no plans were in place.

So that's ... we haven't focussed, or done anything specific, for people that meet that; but the same, we haven't for elderly either, to be honest. EM02

Left behind

Without prior planning and consideration, participants felt that BBP were likely to have lower priority in a major event that may place BBP at higher risk of harm. There was also a great sense of inevitability that BBP would be left behind.

this cohort is going to get triaged to the bottom of the pile, because it's in the too-hard basket. EM10

If you have the choice of taking about eight people out, or one large person, you know which way that's going, I'd say. EM03

What would you do? A mother and two kids, or one fat person? Yeah, There's a pretty simple answer if you're being honest with yourself. EM05

Theme 3: Whose job is it anyway?

This theme relates to processes and planning functions that would be employed to accommodate the needs of BBP in DRR and in the event of a disaster occurring. Important to this study was the complexity of “who does what” and at what point in a disaster. This complexity was compounded by different roles and services available from one region to another. Two sub-themes were identified: Not our role; and Health as lead.

Not our role

Some participants spoke of proactive coordination and support roles, whereas most participants, especially those in areas with no field resources such as response teams, viewed their role as a coordinating agency in a disaster, a conduit through which other services with responsibility would flow or be directed. There was a common belief that ‘other agencies’ would know the people most at risk, including BBP.

this strong focus on people who are obese. That’s not a focus of mine. EM03

The services have got limited resources, we’re just a coordinating organisation EM04

... we can’t ourselves, we don’t have a group ourselves or anything like that that we can activate and say go in and get them, that’s outside of our mandate EM13

my engagement with them has been very interesting because when I’ve tried to get a plan response from them, they just keep on saying, “Well you just do what you do,” and I keep on saying to them, “No, no, you’re the lead agency, we will operate to your taskings.” “Oh well no, we won’t tell you what to do.” EM14

Many participants talked of the role of communities to organise themselves and identify their own local arrangements. However, a former Emergency Management employee cautioned:

So that approach and view to disaster risk reduction is going to backfire and have more problem than good. We need to... work with the community, but you still need to lead the emergency preparedness and disaster risk reduction cos you can never get a hundred

percent preparedness level from the community, number one you're not trained to do it, number two that is not their primary responsibility. EM09

Eleven EM participants indicated that people with high body mass did not feature in their role, detailing that such responsibility would sit with health, ambulance or fire services. Some participants did not appear to have a good understanding of current health, ambulance or fire service roles and responsibilities, crucial to effective collaborative working. It is worth noting that participants interviewed during the COVID-19 pandemic (n=6) generally reported networks and collaboration between agencies were much improved in relation to the COVID-19 response and welfare functions significantly strengthened.

And then we also have our ... Welfare Coordination Group. So that is all the sort of Government agencies and local organisations that we work with in readiness and activate in a response. So the idea of that is that between us we have a good understanding of the issues, we understand what each other's doing, its coordinated, any issues are sort of escalated or worked through between us and any gaps or potential things coming up to plan for a kind of part of the overall response plan and ... imbedded into that we have our network of networks, which is a reasonably new way of working ... it's much more formally integrated into the welfare response. So that was developed during COVID and ... it's become a national way of working. EM12

Participants specifically mentioned the role of Fire and Emergency New Zealand (FENZ) and St John (charity funded ambulance service) to assist with movement of BBP.

We've got a chap in [town] who falls quite often, and Ambulance and Fire don't want to pick him up. They both say, "Actually no, he's too big." Well someone will always do it, but there are some real issues around that. EM01

But that was the one I told you about. ... That caused major drama, ...And the Fire Service do ... we have a memorandum of understanding with the Fire Service, between St John and FENZ, and they do help us. EM06

I understand that the Fire Service is often called to help just with lifting sort of daily medical type issues for those obese people. EM07

I know we've got a guy with Prader-Willi, the fire brigade just picked up and used to put him back in bed or whatever and so there was systems around him, we would be very reliant on those [services] putting their hand up and saying, yeah. EM08

Whether EM participants saw their role as including considerations relating to people with high body mass was also linked to available skills, capabilities and capacities, in particular the capacities relating to any form of welfare function such as temporary accommodation, food or clothing needs, which varied across different regions. The welfare functions were made up of different organisation networks including but not limited to the local health board, Ministry of Social Development (MSD), Local Authority and National Emergency Management Agency functions.

Health as lead

Eight non-health participants felt that the role of identifying BBP requiring assistance in disaster would fall to "health."

I feel like we would work probably with our DHB contact to support anything that we came across that needed that kind of assistance. We've got a really, really strong relationship with them and we have a health and disability network, which they are the sort of the liaison agency for. EM012

This view was not necessarily shared by the health participants who highlighted that unless a person with high body mass was under active care, or had previously required evacuation for health purposes (and was therefore potentially visible to a range of agencies), it was unlikely that BBP would be identified as requiring assistance or identifiable to other agencies, even in locations noted for higher prevalence of BBP.

I guess our base position is we've not considered it, we've never had to. It's not in our identified risks, which is always risks for the population for [Region]. No. EM03

One participant felt that moving BBP would require specialist services and deferred to St John.

St John do. For that one there, we'd bring in a specialist, because our role primarily is coordination, as opposed to response. EM05

Theme 4: Practical and resource issues

There were many practical and resourcing issues identified by participants in relation to BBP. Three sub themes were identified: Evacuation challenges; Accessibility; and Resources.

Evacuation challenges

Thirteen participants identified challenges that might be faced in evacuating people with high body mass. Key considerations included when to evacuate, where to evacuate to, and how to evacuate. General questions were raised by EMs about whether the general population (including BBP) were sufficiently aware of when they should stay or leave their usual residence and if evacuees would be expected to be self-sufficient following evacuation. When asked, EM participants had physical evacuation components for BBP front of mind, although no provisions had been made.

the physical evacuation aspects of people in bigger bodies. I think that the details and the nitty gritty of that would be really interesting to look at cos I think it's something people really don't know and I think the rescue equipment is not going to be suitable for people with bigger bodies, especially the kind of people that you're talking about. EM15

But just off the top of my head, I'm not aware of us having thought about if we had to order evacuations for the population, any population, making provisions for very large people. EM02

I have done many deployments, many evacuations and many exercises and things like that and it wasn't until you popped up (laughter) with this particular subject that, to be honest, I have even actually considered it. EM13

While eleven participants deferred the role relating to BBP to health agencies (as discussed previously), FENZ or ambulance services, two EMs pointed out that in a disaster situation it just may not be possible to access or evacuate BBP relating to the resources and time that would be required

given that emergency services would either be required elsewhere or not allowed to enter risk areas during an evacuation.

Limited mobility is an issue with extreme [obesity] - in a disaster related event normal mobility services are unavailable and back up or emergency services are overwhelmed or tasked to other priorities for extended periods. Moving an extreme obesity person may take specialist equipment and trained emergency personnel that are simply unavailable. If a person is in an evacuation zone for a rapidly emerging threat, there may be a particular risk, and may also put rescuers or the public at risk. EM05

we're very clear with people that in a tsunami evacuation, which we always plan for, that there will be no one coming to help you, that you will be on your own, that you will need to do your best to get as far inland or up high as you can and every step counts and that is just the reality of living in tsunami evacuation zone. We just kind of have to wear that and be honest about it. And that applies to everybody who's gonna struggle to move quickly. EM12

Accessibility

Participants frequently referred to centres that would be activated in response to an impending or actual event e.g. tsunami warning, fire, flood. Depending on the circumstances and severity of an emergency, EM staff along with agencies such as MSD may establish one or more of the following: Emergency Operations Centres (EOCs) or Emergency Control Centres (ECCs) primarily for EM staff; Welfare Centres for the community (during emergency and potentially extending to recovery process and may also include places for evacuees to go to in the short term); locally Marae (a complex of buildings and open space serving religious and social purposes, with facilities to cater for and accommodate a community and its visitors) are opened in response to local emergencies by indigenous Māori; Longer term evacuees may be found temporary housing provision. Set-up of centres depends on regional arrangements and the nature of the emergency. Local centres known as Community Emergency Hubs are unique to certain places such as the Wellington region and activated by volunteers situated in community locations, such as schools, community centres or Marae when there is need for the community to help itself.

Participants reported accessibility issues for some centres intended to be accessed by the general population related to physical accessibility or geographical accessibility. It was clear that for most participants little, if any, distinction was made between the accessibility needs of BBP and those of other people whose mobility was impacted by other factors. It appears that planning is focused on catering for 'people with disabilities' as a heterogeneous group rather than on the needs of any specific groups.

it's not specific to that group ... centres are required to be easily accessible. Some are, some aren't. And realistically, when you have a hall that's the only public building in an area, you take what you got. EM01

So, during the Christchurch earthquake, there was actually someone that was turned away from the [Welfare Centre] ... because they were in a wheelchair and what we would do in that situation is well we would actually advocate on behalf of those vulnerable people and actually help sort of I guess educate (laughter) and inform others and try and provide support. EM07

While participants highlighted accessibility issues, it was unclear whose responsibility it would be for addressing accessibility issues.

We use the school hall, and they're more likely to be accessible than the school buildings. So you know, you work around it ... We have two marae here that are [centres]. No ... actually it's probably reasonably accessible. Might be a bit of a hiccup getting [in] they've got a very low deck. EM01

We're consciously aware of accessibility issues with the venues, but that would be the sum extent of it. EM04

A participant with prior experience in communities with high levels of BBP had considered accessibility of centres for BBP in relation to seating.

I think in some of our redevelopments, maybe architects actually worked in our favour because we've tended to go with like big square dumpies [cube seating] so you can have sort

of have a couple of people ... but trying to make sure there's space and also that tends to be our drop in areas too, recognising that we have size vulnerable people. EM14

In the event of a major disaster resulting in people unable to remain or return to their usual residence, most participants relayed that people need to have their own plans in place to stay with friends or relatives, with no discussion around how do-able or accessible people's own networks might be. The next level would be those with no other options to be supported through welfare processing and would generally involve agencies arranging temporary accommodation in commercial motels. Perhaps unsurprisingly, no participants had previously ascertained whether any motels in their area could accommodate BBP even though some participants had conducted due diligence by identifying motels likely to be enlisted in their area for people requiring accessible rooms for disability access and those motels willing to accept accompanying pets.

So they had the disability toilets there, which was really useful. A hotel like that is really good. Because it was all ground-level. EM05

So we've got, for example, maintain a list of motels that are pet friendly ... but we wouldn't have an idea of which motels would easily accommodate people with a larger body frame, or have access issues and things like that. So yeah, it's about thinking those things through.

EM04

Resources

There was confusion over who would set up or open emergency centres and when this would occur, for example welfare processing for access and allocation to motel space.

what they're driven by is they're just taking the easy option and they don't want to open a [Centre] because it involves a large Council resource ... the next level is for people to be in motels and they're actually, there's funding for that and so that sort of mindset has sort of shifted but at some point in our future history, we are going to get another large event where those options aren't available and you are going to have to set up a [Centre] and that's sort of, they just don't like talking about that. EM07

With the arrival of COVID-19, participants recalled that the process of resource allocation became much clearer, with separate funding streams opening up.

Yep. I know in COVID we were providing clothing to larger people. We never saw them because we just dropped it at the gate but we definitely had very, very large sized clothing being organised. EM12

COVID, so the week before we were starting to think, who do I need to ring and so I've done a whole ringing around all the motels to ask them are you prepared to have people isolate here. EM08

In the absence of high level planning, individual participants were resourceful and able to identify readily available equipment and scale up to reasonable numbers for specific areas of NZ through their own networks. Temporary beds and bedding were talked about. Portable toilets and disability access toilets were mentioned although no thought had been given to suitability of those particular resources for BBP.

We've got 150 normal beds with the Red Cross local team. If we had to go to a mass shelter, effectively we'd be going out and buying mattresses straight off the shelf from the [retail store name]. EM05

Participant EM05 was so resourceful and shared they had between 50 and 100 portable chemical toilets (with chemical supplies). Although when asked, agreed they would not be suitable for BBP.

We also have a backup in my shed. I've got a number of Portaloo toilets. Not for the extra-heavy, but they're standard camping toilets, and they're normally ... they're reserved really for those people who have mobility issues. EM05

Participants recognised that local resources, or services that might have the right resources for the disaster or hazard event would need to be identified. Many recalled times when local vehicles (farm and commercial) were utilised to evacuate people. Respondents recognised that in a severe emergency event, there were unlikely to be enough resources to assist everyone and would be even more limited for BBP. Ultimately, most participants stressed that people within a community were their own resource. In the 2017 Edgumbe floods, a flat-bed trailer and truck were utilised to evacuate people who had been left behind in one street, including a person in a wheelchair and another person described as large. Paradoxically, the person leading this rescue was from out of the area, as was the driver of the truck. Additionally, this occurred some time after initial evacuations when previous searchers had believed everyone was already evacuated.

So I had to drag all these other ... more young guys, so there was about five or six of us, and we had to go and get her EM11

The disjoint in planning for those with unspecified disability or mobility needs and BBP noted in several themes above was apparent in terms of resources for higher weight requirements. Even when health participants had experience with BBP in their local community, planning and procurement of suitable required resources did not occur.

... and I needed a chainsaw to actually get her back ... take out a wall to get her into her house. So she's almost the ... her and the other woman I mentioned, they were unique in our experience. Like we didn't have beds, we didn't have ... to accommodate that weight. We didn't have ... can't fit a wheelchair, so how do you transport her around the place, you know? We haven't been there since [no callouts], to my knowledge. EM03

Like a Ministry of Health task force came back and said to us that we needed to change our seating, and we needed to be more ... hear our people's voice. That was five years ago, and nothing has changed. They have not changed the seating. Like really simple things that could say to our clients that "We see you", they refused to do. EM10

Some participants felt sure Marae had bedding resources to accommodate people with high body mass, although none of those participants could say for sure that resources were actually width or weight appropriate for BBP.

A couple of the marae have got their own beds and cots and mattresses, and a lot of them are designed for larger people. EM05

Some participants had access to equipment suitable for BBP, others had knowledge of equipment even if they did not carry such equipment themselves.

as far as some of the equipment and that they have at the hospital now covers a lot of the large people. And I think that's an issue I can recall a St John's ambulance paramedic we have a lot to do with making some comments about some of the equipment and stuff. EM02

Where equipment resources for BBP were available, these were often in short supply. Even if resources were available, such as a power lift stretcher, their utility was limited by access to people's homes, sometimes requiring additional resources from other services.

So the sides are adjustable, and you could leave them down if they were in the way ... The down side of these is, they work great on level ground; if they're on the side of a hill or something, they're not so good. The unit itself is quite big and heavy, so getting it in and out of a house is nearly impossible, which is why that lifting-sheet the Fire Service have is really good. EM06

Non-health participants were unfamiliar with BBP specific equipment or how to access such resources, with many EMs asking the interviewer for more information about resources for this particular population group (presented in theme 5).

Theme 5: The way forward

Despite expressed limited knowledge and lack of inclusion of bigger bodied people in prior planning for most of the participants, many acknowledged that some considerations were required. Participants more frequently talked about the need to build community resilience and individual responsibilities of BBP to have their own plan and support network. While the landscape of EM consideration for BBP to date were sparse, there was hope in the fact that participants felt the interviews themselves had planted seeds and triggered many participants to express interest in upskilling on this topic. Three sub themes were identified: Building Resilience; Upskilling; and Personal Responsibility.

Building resilience

Most participants spoke about the important role community groups and agencies play in building resilience and supporting vulnerable individuals during crises. Comments reflected the importance placed on building community resilience and the critical role of local knowledge and networks for individuals and communities. Emergency Management staff roles were seen to have shifted significantly in recent years from rescuer to resilience builder. EMs tended to see their role as identifying and supporting key groups and agencies to work together, engaging more actively in planning.

our approach in New Zealand is to encourage whole of community to be more resilient, and for communities and stakeholders to be responsible in some way for reduction, readiness, response and recovery. EM09

cos it's very much, we're not the, unfortunately we're not the lone ranger arriving on the horse, it's very much how we can best prepare them to be able to look after themselves the best they can until the help can come. EM08

The process of building resilience was mostly articulated by participants in terms of people and communities developing their own plans and support networks.

One is the workstream around increasing understanding and resilience of the community to be able to respond themselves and look after each other and so to that end we do public education sort of activities and community resilience planning. EM12

I would plan beforehand, being community resilience, I would encourage people with bigger body masses to work on plans before something happens. EM15

Participant EM09 was very clear that the word resilient was used liberally without a clear framework for how communities' resilience would in fact be built.

The community's just not positioned to pick all the diversity issues of vulnerability issues that would need building resilience for or having disaster risk reduction measures in place to address. EM09

Upskilling

The interview process highlighted gaps in current planning and thinking with respect to BBP for some participants. The challenge of trying to include everyone and every eventuality in plans had resulted in 'blind spots'.

I think the immediate thing is identifying the issues that we may not have considered, and probably also identifying barriers that that sector of the community might have that again perhaps we haven't considered. EM04

My role is emergency management planning for the DHB. So I'm required to have plans, guidelines, responses, lined up for any and all emergency events that might come over the horizon. It's just about not possible to do everything. EM03

Much of our extensive disaster documents and plans are treated as guides and aide memoires, as experience has taught us that if documents are too big or detailed they can rapidly become outdated, inflexible and/or lead to a rigid decision making process that fails in complex events. EM05

Many EMs, aware that a lack of knowledge about BBP in the community hampers planning efforts, expressed a desire for advice and information, especially relating to population prevalence in their own areas. The interview process also allowed for the exchange of some information relating to population prevalence of BBP and practical information relevant to planning challenges and resources for BBP. Participants agreed that such information would be valuable to assist their efforts to learn more about this group and ensure that they are considered in future planning and response activities.

that's the sort of information that's often really valuable for us to have, in terms of how are we going to manage. EM01

So particularly for us, when we're looking at the response planning, it's around so what are specific challenges that we may not have considered. So things like accessibility and what-have-you, yeah, that's already on the radar, but we wouldn't have given any specific thought to the seating, or bedding arrangements and things like that, but it could be an issue. EM04

During interviews some participants stated they were keen to upskill relating to BBP so that those considerations could be included where appropriate moving forward. The EMs also reported a desire for guidance and training to manage and understand biases.

I want people to be able to have a little bit of understanding about their biases- because we've all got them- and to understand how that might affect you, particularly in an emergency, where everything's heightened, and your tolerance is decreased. EM01

Yeah, I think that would be really good [bias training]. EM15

I'm looking at our welfare forum this year in July/August-ish is actually going to be on people with disabilities and emergencies. I might have to tap back into you for some information and advice on that one. EM13

Some participants believed that progress is being made in relation to training and thinking about assisting people at higher risk in disasters with an inclusive approach.

Personal responsibility

Many participants stressed the importance of personal responsibility for emergency readiness and identified that the job of DRR sat with individual BBP (and anyone who would have specific needs in a disaster). They emphasised the importance of encouraging personal responsibility by identifying their own needs and making plans for themselves and their families for how they will manage in an emergency and how they might evacuate if they need to leave their homes. This includes the importance of communication within families, with neighbours, and where relevant, those providing support or care services.

And so it's putting a lot of emphasis on personal responsibility, if you like, but also us providing them with the resources to find out how best to do that, or where to go for extra assistance. EM04

that it's basically ... everybody's got to have a plan for them and their families. EM02

Who are the people who ... who are your friends, and who do you rely on, and do they know how to get hold of you, and do you know how to get hold of them? EM01

EMs saw their role as providing individuals with the information and resources so that people know where to go for help if needed. Examples were provided of the types of messaging that is used to convey this to the general public and to specific groups identified as higher risk. Public messaging tended to be generic, with a focus on preparedness.

More around, yeah, how we can make sure that they are getting the emergency preparedness advice, rather than specific actions that would be taken during an event. EM04

So, [Emergency Management] isn't like the people on horseback that come flying over the hill and rescue everybody and it's been years trying to get that messaging out, that the best [Emergency Management] that you're gonna get is what you can administer yourself and that's that personal preparedness. EM13

Finally, one participant highlighted the limitation of individual BBPs being isolated, ignored and overlooked in their DRR needs, stressing that collective action may be required to ensure agencies pay attention to their needs.

... there's already a platform for engaging people with vulnerability, disaster management in New Zealand and everywhere, this is a good opportunity to build on that. So my advice would be, there should be some more organised platform to have the voices or the concerns of people with high body mass heard. EM09

Discussion

In previous disasters when people have been left behind, a major contributing factor has been body size, shape and weight (Ramme et al., 2015; Geiling, 2010; Fink, 2006; Fink, 2013). Where BBP people have been evacuated, significant resources were needed and evacuation personnel faced serious challenges (Taylor, 2014). Despite such examples which receive high media attention, few EMs are aware of these issues and consequently, there is little specific DRR planning for BBP.

The EM personal experiences and knowledge relating to BBP were limited, and for many, understanding of BBP needs and capacities was minimal. Most of those with prior experience of evacuating BBP, generally reported negative experiences and failed to apply those learnings to risk reduction planning for BBP. Sometimes this lack of planning was associated with the guidelines EMs were required to work within which are unlikely to specify BBP as a priority group, such as health emergency plans required for each health board in NZ by the Ministry of Health (2015). More often for EMs the lack of planning was because BBP were invisible. The extent to which invisibility related to implicit and explicit biases of the EMs was not explored in this study, although some participants raised the relationship of their own biases in interviews. This is potentially very important for BBP as while some decisions are purposeful and explicit, other decisions are unconsciously made (implicit). At a time when implicit bias relating to sexual orientation, race and ethnicity move towards a more neutral stance, age and disability biases remain stable, implicit bias has increased for BBP (Charlesworth & Banaji, 2019). Consequently, BBP may be deprioritised and/or overlooked.

Fundamentally, 'not being left behind' relies on prior planning by EMs, local communities and individuals in non-disaster times. EMs saw communities as playing a key role in building resilience and supporting vulnerable individuals during crises. However, this emphasis fails to recognise that support networks for some BBP may be especially difficult if a person is already socially isolated or marginalised by society, given the levels of stigma, bias, and discrimination for BBP (Puhl & Brownell, 2001). People at higher risk already identified in EM priority planning will include some people with high body mass who may have additional requirements over and above their health or disability needs (Fikkan & Rothblum, 2005). In addition, while there are many BBP who are generally active, fit and well, some BBP identify they would have additional needs in a disaster event, such as reduced speed of mobility,

clothing, seating, bathing and sleeping arrangements (Gray et al., 2020^a). Such needs, associated with size, shape and weight, are unlikely to be met by more generic planning efforts that do not include size, shape, weight considerations. BBP need to be involved in the planning process with other disaster vulnerable populations as advocated by the Sendai Framework for DRR (United Nations International Strategy for Disaster Risk Reduction, 2015) and Kako et al. (2020) to identify the local factors that will facilitate DRR for BBP. Specific inclusion of BBP needs in education and training for stakeholders is warranted.

EMs in this study recognised the limitations of representativeness in current local community planning delivered by committee rather than being representative of the diverse populations in any one town or city as highlighted by Becker et al. (2020). EMs in this study spoke at length about the need for individuals to identify their support network and to have a plan. Yet individual disaster planning is patchy (Becker et al., 2020) and many people are not materially and psychologically prepared (McLennan et al., 2021; Levac et al., 2021). If plans are in place they are rarely tested or verified (Uscher-Pines et al., 2021). BBP have struggled to take protective actions to certain events such as 'drop, cover, hold' in an earthquake due to their size and weight (McBride et al., 2019). BBP recognise that if they fall or need assistance evacuating, they would require other resources compared to smaller sized people and would expect emergency management to be considering them in disaster planning and response (Gray et al., 2020a). Discovering that emergency services were unlikely to be able to assist, as occurred in the recent earthquakes and tsunami sequences of March 2021 (Binning, 2021) may prompt more BBP to re-evaluate their own disaster planning within the capacities of their social and economic capital. There are opportunities for EMs to identify how and where they can support and facilitate individual preparedness planning, through person-centred, capabilities and adaptive capacities focused approaches to include BBP (Doyle et al., 2015; Villeneuve et al., 2021).

Many participants were aware of which individuals and organisations would be able to identify who the priority at-risk people might be in a disaster event. However, this was largely ad hoc, reliant on other agencies and the EM's own networks and reach, and assumed that BBP would be included as one or other 'risk' category. This raises the question of what would happen to this knowledge if one or other person were not available during an event, or access to their software, paperwork or

whiteboard was not possible. Some EMs wondered if there should be some sort of cross agency database of people who might be vulnerable in a disaster. Increasingly there are calls for disaster practitioners and researchers to work in a more interdisciplinary, or ideally, a transdisciplinary way. Peek et al. (2020) argue that a transdisciplinary approach to risk reduction with and for people at risk increases depth, breadth and integration of knowledge. The coordinated incident management system (CIMS) 3rd edition in NZ (National Emergency Management Agency, 2020) supports a transdisciplinary approach and encouragingly in this study EMs reported a more collaborative way of working in the ongoing COVID-19 pandemic. Planning for the needs of BBP relied heavily on EMs own resourcefulness. By building upon collaborative ways of working it is possible to incorporate planning for BBPs to identify key resources and responsibilities for EMs going forward.

The COVID-19 pandemic highlighted the complexity of a major disaster event and the multiple layered impacts for people. EMs in this study reported that COVID-19 highlighted vulnerable populations, such as Māori and Pacific people's and yet also enabled strengthening of cross agency working. COVID-19 has identified fatness as a central risk factor globally for COVID-19 (Demeulemeester et al, 2021), raising the profile of risk for BBP to many EMs around the world. While there are confounding aspects that may mean body size itself is not a risk factor alone, the association has reignited strong anti-fat attitudes, stigma, shame and discrimination (Flint, 2020). Triage decisions to implement rationing of ventilators and treatment including do not resuscitate orders for certain groups including fat and disabled people in the United States (US) and United Kingdom generated an uproar from fat activists and disability advocates in many countries (Cortese, 2020). One example saw fat activists and disability activists band together in the US to raise awareness of the injustices of early COVID-19 triage and treatment plans including a challenge to triage guidelines in California resulting in them being re-written (NoBody is Disposable Coalition, 2020; Disability Rights Education & Defense Fund, 2020). While this 'win' was celebrated there is still much to be done in relation to equity and the problematisation of fat and disabled people in relation to COVID-19 (Pausé et al., 2021).

The interviewing process prompted many EMs in this study to request education and training about BBP to inform their planning decisions. Dispelling myths and assumptions about body size and health status and likely needs or issues in disasters, as well as imparting information about equipment and

aids to moving and evacuation are warranted. Participants felt bias training would be beneficial, although the extent to which training would mask stigma and discrimination attitudes and behaviours toward BBP rather than eradicate has not yet been measured in emergency management. Education for EMs about the importance of pets in disaster over recent years resulted in pets being increasingly included in DRR strategies as a way of reducing potential risk behaviours of their owners, such as refusing to evacuate or breaching cordons to rescue or tend to their animals left behind (Heath & Linnabary, 2015; Taylor et al., 2015; Squance, 2011). Friends and family of BBP may be inclined to remain behind and/or put themselves at risk in a disaster if a BBP cannot be moved or moved quickly (e.g. Apatu et al., 2014) or believe they are less likely to be appropriately accommodated in an emergency shelter (Gray et al., 2018).

The challenge for EMs is to determine how to support BBP to build disaster resilience and to identify ways in which organisations can meet the needs of BBP in their communities to reduce disaster related risks.

Strengths and limitations

While this sample is not be representative of the EM population, the researcher has drawn a heterogeneous prospective sample and identified common themes. Results cannot give a level of statistical confidence that could be generalisable to the whole population of emergency managers and responders. Despite these limitations, the qualitative reflexive thematic process used involving a heterogeneous sample identified five main themes that were common across different types of EMs and in different geographic locations across NZ.

Conclusion

This study set out to describe considerations for people with high body mass in disaster risk and reduction. To the authors' knowledge, this study is the first to seek the considerations for BBP from EMs in NZ. This qualitative study highlights that BBP may not be specifically considered or planned for by EMs in relation to DRR. Importantly, there were some assumptions of inclusion in provisions for those with pre-existing health conditions or disability, although this was somewhat vague and this

assumption may give rise to heightened disaster risk for BBP. On a positive note, this study signals that EMs are receptive to education and training on the needs of BBP and, with appropriate information, be able to identify what planning, equipment or provisions may be required in NZ. It is equally important that BBP are empowered to take an active role in their own disaster readiness by improving their knowledge of the risks in disasters and the realities of the limited resources and services during disasters, and by encouraging BBP to proactively identify networks, develop communication strategies and personal emergency plans.

Declaration of competing interest: The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Julia Becker reports financial support was provided by New Zealand Tertiary Education Commission. Lesley Gray reports travel was provided by New Zealand Tertiary Education Commission.

Acknowledgments: The authors are grateful to all interview participants for giving their time and sharing experiences, beliefs and values relating to DRR and people with high body mass. Also, to the people who kindly shared our invitation with their EM networks. Special thanks to Dr Denise Blake and Dr Christine Kenney who provided advice to this study. Dr Blake also contributed to the human ethics application SOA 18/59.



Image 8: Workout time

Image credit: Obesity Canada - Obésité Canada

8

Voices of big bodied people in disaster risk reduction

I mean my biggest fear if something is going to happen is, I'm going to get left behind, because I actually can't move like everybody else can move.
Big Bodied Person semi-structured interview participant 10

This chapter presents Publication 3, a novel qualitative analysis describing the lived experiences and perceptions of big bodied people (BBP), amplifying their voices relating to disaster risk reduction (DRR). The semi-structured interviews provide data to respond to research question 3:

What are the experiences, perceptions and preparedness for disasters of big bodied people and/or their whānau?

Knowledge presented by BBP is frequently ignored or devalued, held as value-laden or biased and silenced in favour of epistemic views from non-fat people (Cooper Stoll & Thoune, 2019). This publication presents data from seventeen BBP, about BBP in a format that is descriptive and practical.

The manuscript was submitted to the International Journal of Disaster Risk Reduction on 7 February 2022 and received very favourable reviews. Following light revision, the manuscript was accepted on 21 March 2022 and first appeared online on 1 April 2022. Statement of authorship contribution is provided in Appendix 13. The article citation is:

Gray, L., Becker, J., MacDonald, C., and Johnston, D. (2022). Sizing up disaster risk reduction: a qualitative study of the voices of big bodied people in Aotearoa New Zealand. *International Journal of Disaster Risk Reduction*, 74, 102922

Sizing up disaster risk reduction: a qualitative study of the voices of big bodied people in Aotearoa New Zealand

Abstract

The principles of disaster risk reduction include understanding of disaster risk in all dimensions including meaningful inclusion of marginalised populations. This research sought to hear and record the voices of big bodied people and to answer the question “What are the experiences, perceptions and preparedness for disasters of big bodied people and/or their families?” and inform disaster risk reduction considerations in Aotearoa New Zealand. Purposive sampling recruited seventeen people identifying as big bodied. Qualitative semi-structured interviews were conducted between October 2018 and April 2020. One interview was conducted via Zoom™ during the COVID-19 pandemic, all others were in-person. Audio recordings of the interviews were transcribed and data were reflexively thematically analysed. Three main themes were identified: Being big in a disaster; Harsh realities; and Ready or not. Advocacy is required to ensure that the concerns and needs of big bodied people particular to size, shape and weight are heard and included in disaster risk reduction and planning. Emergency managers should be supported to ensure that engagement with big bodied people is appropriate, not stigmatising or discriminatory.

Keywords: disaster risk reduction, fat; big bodied people; emergency planning; preparedness; qualitative research

Introduction

Disasters are a major disruption to communities or societies and whilst everyone is at potential risk of harm, there are with disproportionate impacts for the poorest and most marginalized people in society prior to a disaster (Handmer et al., 2021; Hallegatte et al., 2020; Blake et al., 2017; United Nations Office for Disaster Risk Reduction, n.d.). The circumstances and available resources before, during and following a disaster are central to the concept of disaster vulnerability and limited resource capacities (Wisner et al., 2004; Oliver-Smith, 1996).

Disaster risk reduction (DRR) aims to prevent new, reduce current and manage remaining disaster risks (<https://www.preventionweb.net/terminology/disaster-risk-reduction>). The 2016 UNISDR Science and Technology Conference on the Implementation of the Sendai Framework for Disaster Risk Reduction made a number of recommendations to achieve DRR, including expansion of the role of disaster social science to develop better understanding of behaviour and decision making relating to groups likely to be at greater risk in disasters (Aitsi-Selmi et al., 2016). To achieve this, effective stakeholder engagement is required (Handmer et al., 2021; United Nations International Strategy for Disaster Reduction, 2015).

Earlier studies have identified a range of communities and populations at greater risk in a disaster compared to the general population. These include, but are not limited to, people with disabilities (Alexander et al., 2012; Stough & Kang, 2015; Kelman & Stough, 2015), those with severe mental illness (Eisenman et al., 2009; Jankowski & Hamblen, 2010), people with cultural and linguistically diverse backgrounds (e.g. Nepal et al., 2012), older people (e.g. Tuohy et al., 2015) women (e.g. Zaidi & Fordham, 2021), children (e.g. Ronan et al., 2015), those in poorer socio-economic situations and those most marginalised by society (e.g. Hallegatte et al., 2020; Blake et al., 2017).

Gray (2017^a) argues such groupings also correlate with prevalence of large body mass, and that this presents 'triple jeopardy' for BBP in terms of DRR. Physical, social, economic and environmental factors are not only key drivers of ill health but also limit the capacities of such populations to mitigate the impact of disasters. Yet aside from relating body mass to disease risk factors (e.g. National Diabetes Service Scheme, 2021), the factors of body size, shape and weight have been principally overlooked in DRR to date (Gray, 2017; Gray et al., 2022^a). Fat bodied people are highly stigmatised, frequently marginalised and discriminated against. For many big bodied people (BBP), being fat is a stigmatised condition, frequently marginalised and discriminated against (Pausé et al., 2021; Meadows, 2018).

Accounts exist of people left behind in disasters in direct association with their size, shape or weight (Fink, 2013; Ramme et al., 2015). In this study, we wanted to capture the dynamics of size, shape and weight that would include, but may not be exclusive to, people identifying as fat. The first author consulted a leading fat activist Marilyn Wann, author of "Fat!So?" (Wann, 1998) and well-known fat

scholars⁴ regarding suitable terminology and title for this paper. We determined that for the purpose of this study, the term big bodied people (BBP) is an acceptable term that is not used as a euphemism to avoid naming fatness. For the most part published works relating to BBP relate to non-disaster specific emergency care (Augustine, 2007; Rios & Cullen, 2006; Cienki, 2016; Augustine, 2014; Patrick, 2004).

Disaster specific accounts focus on hospital evacuations (Fink, 2013; Ramme et al., 2015) and ongoing patient care during disaster hazard events involving people with high health care needs (Ramme et al., 2015; Geiling, 2010; Dempsey et al., 2019). Reports about transportation, access or egress for BBP deemed too heavy or wide to be safely removed from a facility are common (Fink, 2013; Ramme et al., 2015; Prottengeier et al., 2014; Busch, 2013; Stewart et al., 2019; Biles & Garner, 2016; Harwood & Farrow, 2008; Gable et al., 2014; Beebe, 2010). Slow self-evacuation for BBP and assisting close family or friends was evident in the 2009 Samoa tsunami (Apatu et al., 2014). Although impacts on BBP from disasters are seldom reported, they are not rare occurrences. For example, big body size was noted in 18% of all Australian heatwave fatalities between 2001-2018 (Coates et al., 2022).

Emerging literature shows limited DRR consideration specifically for BBP by emergency managers (EMs) (Gray et al., 2022^a; McBride et al., 2019). Effective and transformative DRR calls for governance models that capture diverse and unheard voices to ensure that DRR science is based on lived experience and that risk reduction actions are actionable (Handmer et al., 2021; Fatoric & Seekamp, 2017; Gaillard, 2019; Kamara et al., 2018). Everyday life experiences inform beliefs and perceptions of DRR and knowledge about what would be needed in a disaster. For example, Becker et al. (2017) explored how earthquake experience influences people's risk assessment and preparedness actions. People who are or who have been big bodied can situate, recount and draw on their knowledge and lived experiences to explain and help EMs to understand the impacts and limitations of specific disaster preparedness actions (e.g. practice drills), and to shape preparedness decisions and identify disaster needs. In under-researched areas or topics, it is vital to include the voices of marginalised people. However only one peer reviewed publication has been located to date presenting a first-

⁴ Dr Cat Pausé (Massey University, Palmerston North, NZ) and Dr George Parker (Victoria University of Wellington, NZ).

person account of a BBP self-evacuating during a severe weather event (Gray et al., 2018). Manokaren et al. (2020) posit that it is unethical to explore research concerning fatness that does not collaborate with the fat community to amplify these voices. This research set out to answer the question “What are the experiences, perceptions and preparedness for disasters of big bodied people and/or their families?” and inform DRR considerations in Aotearoa New Zealand. This paper presents a novel qualitative analysis describing the lived experiences, perceptions and preparedness of BBP relating to DRR.

Methods

To investigate this under researched topic area a descriptive exploratory study was selected with a qualitative approach using semi-structured interviews to explore experiences, attitudes and DRR preparedness of people self-identifying as big bodied. In this study BBP are defined as people who have large physical dimensions (weight, width, girth or height) that may exceed safe working loads, weight or width dimensions of health or emergency equipment or standard seating, beds or wheelchairs. In healthcare this would include people whose weight is 150kg and above, or people with a body mass index (BMI) of ≥ 40 kg/m² (Accident Corporation Company, 2011). While BMI is routinely utilised as one measure, it is a blunt instrument regarding assumptions of direct relationship to a person’s health and is not particularly well suited for non-white European body shapes (Strings, 2015).

Recruitment and Participants

A recruitment poster was created and circulated amongst the lead author’s social media networks in NZ and by direct email to contacts identifying as big bodied with a request to share the invitation with their networks. This modified snowball sampling approach (Goodman, 1961; Baltar & Brunet, 2012) is a non-probability sample often utilised when researchers wish to access often ‘hidden’ populations or enable a wider reach to include people often marginalised or stigmatised. Prospective participants could directly contact the lead researcher who sent the information sheet (Appendix 7) and consent form (Appendix 8). Once consent was given, interviews were arranged at mutually convenient times and locations. Each participant received a grocery voucher to acknowledge their contribution to the research.

Seventeen individuals self-identifying as big bodied were interviewed between October 2018 and April 2020. Due to physical distancing requirements of the COVID-19 pandemic response in 2020, one interview was conducted via Zoom™ video call, all others were conducted in-person.

A summary of participant characteristics is provided in Table 8. Age range, stated ethnicity, body size expressed as kg/m², geographic region, gender and disaster experience were sought. The participants (12 women and 5 men) were aged from mid-20's to 70 years of age. Most participants were located in the North Island of NZ at the time of interview, with one participant in the South Island. Four participants had been living in the South Island at the time of the 2010 Darfield and 2011 Christchurch earthquakes. Participant locations align to the main populations of NZ, with 77% living in the North Island and 33% in the South Island (New Zealand Government, 2017). Nearly half of all participants stated ethnicities as Māori, Pacific and Māori, and Pacific Islander. One participant identified as South African/English, with the remaining participants stating ethnicity as NZ European or identifying as Pākehā (Pākehā is a Māori term referring to New Zealanders of European descent). It should be noted that indigenous Māori and Pacific peoples currently experience much higher levels of BMI ≥40 kg/m² compared to the general population of NZ: unadjusted prevalence: Māori 13.0% (95% CI 11.1–15.1%); Pacific peoples 24.5% (95% CI 19.9–29.5%); total population 5.9% (95% CI 5.4–6.5%) [52]. Thirteen of the 15 participants who provided their last known height and weight had a body mass index calculation of 40 to 64.9 kg/m².

Table 8: Semi-structured interview participant characteristics (n=17)

Location (Region)	n	%	Body Mass Index (Kg/m²)	n	%
Auckland	3	17.6	30-34.9	1	5.9
Bay of Plenty	3	17.6	35-39.9	1	5.9
Hawke's Bay/Wairarapa	4	23.5	40-44.9	1	5.9
Manawatu/Whanganui/Mid Central	1	5.9	45-49.9	5	29.4
Wellington	5	29.4	50-54.9	2	11.8
South Island	1	5.9	55-59.9	4	23.5
			60-64.9	1	5.9
Experience of Disaster			Not available	2	11.8
Christchurch Earthquakes 2010-2011	4	23.5			
Kaikōura earthquake 2016	6	35.3			
Seddon/Wellington earthquake 2013	6	35.3			
			Age		
			20 - 40yrs	7	41.2

Edgecumbe Earthquake 1987	2	11.8	40 - 60yrs	8	47.1
Edgecumbe Flood 2017	1	5.9	Over 60yrs	2	11.8
Pacific Island: Cyclones/Hurricanes/Earthquakes	2	11.8			
Tsunami evacuation	7	41.2			
Auckland earthquake	1	5.9			
No experience	1	5.9			
			Stated Ethnicity		
			Māori/ NZ	3	17.6
			Pacific and Māori	1	5.9
			Pacific Islander/Polynesian/NZ	4	23.5
			NZ European / Pākehā ¹	8	47.1
			Other	1	5.9
Gender					
Women	12	70.6			
Men	5	29.4			

¹Pākehā is a Māori term referring to New Zealanders of European descent

Interviews

A semi-structured interview guide (Appendix 6) was developed by the authors to explore BBP participant experiences of emergencies and/or disasters, their own DRR preparedness, health and/or disability status, involvement in emergency planning, and views on pandemic risks for BBP and about what individuals and emergency managers need to think about in DRR for BBP. Semi-structured interviews of approximately 90 minutes duration were conducted by the lead investigator (LG) following a conversational style to support participants to share their views in their own terms and to introduce topics if they so wished. Interviews were audio recorded and independently transcribed verbatim. Details that might identify participants were removed prior to analysis although two participants gave explicit consent for their public facing roles to be identified.

Data analysis

Interview transcripts were uploaded to a web based application for managing qualitative and mixed methods data (Dedoose™). Following the methodology of Braun and Clarke (2020), we conducted a reflexive thematic analysis, an iterative a six-phase process encompassing data familiarisation, iterative data coding, and development of themes (Braun & Clarke, 2020). The lead author immersed in the data through repeated reading and familiarisation. In the first round of analysis, undertaken by

LG, codes were named and then refined (Braun & Clarke, 2006), resulting in 62 initial codes. These were further refined by LG and CM to order and describe themes and content. By revisiting the data and discussing context, LG and CM agreed and confirmed 43 final codes, comprising 3 main themes and 12 sub themes.

Results

As with most groups that are categorised in some way, in this sample, being big gave no consistent 'packaging' or point of reference relating to size, shape or weight. While the importance of intersecting identities is acknowledged (Gray, 2017), analysis by participant characteristics was not undertaken in this paper, the focus of this paper being the identification of strong, common themes from the voices of BBP. Three main themes were identified from the data: 1. Being big in a disaster; 2. Harsh realities; 3. Ready or not. Each theme is presented below with illustrative quotes from BBP participants' semi-structured interview transcripts (identified as P1 – P17).

Theme 1: Being big in a disaster

The personal views and perceptions of being big is an underpinning theme that highlights how prior lived experiences can shape the views and actions of individuals on a daily basis and in emergencies. As with most groups that are categorised in some way, in this sample, being big gave no consistent 'packaging' or point of reference relating to size, shape or weight. The candid experiences shared were grouped into four sub themes: i. Bigger, heavier, wider; ii. Abilities and dis-abilities; iii. Experience and engagement with health and emergency services; and iv. Prejudice and bias.

Big, heavy, wide

All participants in this study identified as big, with fluctuations in size over the years a common recollection. Some participants, concerned about being big, reported repeated efforts to reduce size. While many participants knew their exact weight and height, one had no idea what theirs might be and another chose not focus on weight. Some recognised the challenges posed by being bigger bodied and wondered how people larger than them managed daily activities of living. Even those who would be viewed as very active, fit and mobile were aware of issues relating to their size and width.

I struggle, day to day. Like I struggle with the fat deposits in my back to get... like I can't touch my hands behind my back. I struggle to get out of bed in the mornings. The weight is weighing me down. How do people that are [bigger]... how do they live... How do they get around? P1

I was 205kg when I was competing [active fit athlete]. Had to tie my knees together so I could fit in the MRI machine! P16

Some participants described a family history of BBP, including references to photos portraying generations of big bodied women relatives as far back as the 1800's.

I look at my family photos- in my mother's family there's a few greyhounds. Most of them look like brick outhouses. Like big frames, big people. P3

Abilities and dis-abilities

While some participants were adamant that being big bodied did not equate to any dis-ability for them, they believed that others made this link and based DRR decisions, such as those relating to building evacuation, on that false assumption. Other participants viewed their body size, shape and weight as a disability or saw a future inevitability of disabling conditions associated with being big bodied. Despite this, these participants had no idea if they were registered anywhere in the health and social care systems as having a disability or as person who may be 'at greater risk' during a disaster.

I'm the last to leave the building. Yeah. So because of my disability, which is ridiculous, because like I don't have a disability. P1

Well it is looked at as a disability isn't it. P13

I'm going to get older, and this is supposed to get worse- I was supposed to be in a wheelchair three years ago, but I'm not yet, and I'm fighting it. I think people see you as a disability, as being overweight, like "She'll be too heavy to lift." P3

I've no idea [if registered as disabled]. No. I don't have anything to do with the disabled people down there [in the main lounge, office and reception areas of the aged care

residential home], But I have a disabled thing for my... well I haven't got a car at the moment, but ... And then I have my scooter, so I don't know if that makes me look as if I'm disabled; but then I can get off that and walk. Yeah. I don't think I am, actually. P7

So because of my disability- which is ridiculous, because like I don't have a disability.... P1

Experience and engagement with health and emergency services

Most participants recounted past experiences and interactions with health services but reported little or no recent engagement, despite some having long and complex health histories. For some participants this lack of engagement related to poor previous interactions with health professionals in relation to their body size. One participant observed that in their community many Pacific Island people were not signing up to GP services. Another noted that when having an elective procedure, the health service, despite prior knowledge of them, were not able to cater to their big, heavy and wide dimensions.

...unfortunately, disproportionately Pacific people aren't signing up to a GP, even though in the long run it would benefit them. And either that's because they're just transient, and they're moving so often, or just because they really are only going there when it's worst-case scenarios. P14

I've had no involvement until recently with my doctor for quite some time. And that's only because of my health with my lap band, and that actually making me currently sick, that I've even been involved with my doctor. Like everything else was fine. So nobody would have a clue. P6

After my hip operation I couldn't fit between it [the walking frame] so went straight to crutches which only went to 180kg no 200kg crutches...the moral of my story is they [the health services] weren't prepared for me. P16

Some participants shared their experience of emergency services (ambulance and fire) following acute health events or vehicle accidents and related this to their likely needs in the event of a disaster.

Yeah. I mean I don't even think about that in regards to disasters. I think about that in my regular day life.... P6

I wouldn't need a wheelchair, but I would certainly need some helping with my weight. When I had my car accident...I was so big...I was trapped. So they were going to have to cut me out... I think three or four of them had to lift me. P7

When discussing body size in the context of pandemics most participants were unaware of any links having been made between body mass and pandemics such as influenza A (H1N1) in 2009 and the COVID-19 pandemic that began in 2020. While a number of participants believed that their body mass was a factor with respect to COVID-19, others thought it was *just another way health providers would use to challenge your weight.*

I can somehow understand that maybe your immunity is actually not as strong, because your body is fighting off all this extra weight that it's carrying. P10

for me, I'd just feel like it was another [way] I'm been told. "Your weight's a problem." P12

Prejudice and bias

Many participants recounted occasions when they experienced prejudice and bias as a BBP. Such experiences shaped their expectations about how they might be viewed or treated by health or emergency services and the local community because of their size, shape and weight. This resulted in internalised biases and self-blame for several participants.

I've had some doctors that... walk round the corner, take one look at me, and I can see it on their face that they're like "Whoa, okay, I wasn't expecting this." And then they'll just be really quite rude. P11

And the [care facility] staff, some, put me on a diet, and I was strictly told that I had to be on a diet. And it happened also at [another facility]. They stigmatised me more. P15

Because I've put myself in this situation- like I'm so big...It's only because I've had like 15 years of being told what to do, how to eat, and then when I've finished I just ballooned... You put yourself in this situation, you get out of it. P5

Like actually you're seen as an inconvenience, because you are in a bigger, higher body mass, and you require all these different things and stuff like that... So it's reminding [people] that

we just need the same sort of stuff as everybody else, and we need to be treated the same as everybody else. P6

Theme 2: Harsh Realities

For many participants the harsh realities of being big bodied have been brought sharply into focus by their experiences in major events, such as earthquakes. These experiences highlight particular challenges for BBP with respect to DRR. Experiences were divided into four sub themes: i. Experience and recollections; ii. Dignity; iii. Getting out; and iv. Left 'til last.

Experiences and recollections

Participants had experienced volcanic eruptions, cyclones, flooding, and hurricanes but the most concerning for them were earthquakes. Vivid recollections were shared by those who had experienced earthquakes centred in Darfield and Christchurch (sometimes referred to as the Canterbury earthquakes 2010 and 2011), Seddon and Cook Strait earthquakes (2013) or Kaikōura earthquake (2016). Many spoke about extensive damage to homes and infrastructure, such as sewerage systems. Some lost their homes and many lamented the loss of treasured belongings.

Well I come from Fiji, so natural disasters is... part of our life. Flooding, hurricanes. The only first experiences that I had with earthquake was when I was in New Zealand, when I was in Wellington, when that Kaikoura... the whole building shook... Yeah. Man, I tell you, I prefer cyclones and flooding and hurricanes way way better than earthquake. P5

... I knew it was going to be a big one, because we'd heard it first, and it was loud. I don't think I've ever felt like I was going to die, before that. And that's probably the only time in my life that I've felt that. And I really just... yeah, I didn't think I was going to make it out. So I just grabbed the chair. There was nothing else to do. And rode it out. Everything fell over, but the building stayed up. P2

We lost two houses. So the house we lived in a 150-year-old working man's cottage. It was... just gorgeous. And then during the September [Darfield] earthquake... the walls separated from the floor, and all the chimneys came in...it was horrendous. ...And then we found another house, and then during the February [Christchurch] earthquake the liquefaction just

come out from underneath the house, and the house sunk, to the point where we couldn't use the front door. P11

The memories and psychological impacts of experiences persisted, in some cases for many years. Some participants related how their previous experience and memories negatively impacted their mental health during subsequent, less dramatic events, such as a small earthquake. Indirect experience of events can also have an impact. Recollections of family stories following two major earthquakes (8.1 and 8.0 magnitude) minutes apart and subsequent tsunami in Lalomanu, Samoa in 2009 influenced one participant's thoughts about her own situation.

And people think oh, you should have forgotten it by now. But you don't forget it... like I'm bringing out all these things for you now; you don't forget all those things... All you wanted to do was get out and leave it all behind. But you couldn't, because things had to be dealt with. And it was terrible. P7

And then she [close family] said that not even within a minute, it just whammed through with waves. So she managed... she was safe. Her daughter... her mum, her father... along with her nephews... They all didn't make it... So all up there were like 31 of them, all close connected... So when she was telling us the story, it made me wonder... And I was like gosh, if anything was to happen, I have nowhere to go. P9

Dignity

It was clear that for some participants experiences in both daily life and emergency situations negatively impacted their self-esteem. Recollections included the loss of personal dignity resulting from the actions of others in circumstances over which they had no control.

I was at a refresher course for CPR. ...And I said, "I'm a big girl. How are you going to protect my dignity if I cardiac arrest? Like what are the steps that we take to ensure that we are all-encompassing?" ... And the little slip of a CPR nurse ... was shocked. She was like, "I've never once thought about obese patients." I said, "You can't call them obese...But also, all of our equipment is only geared for a hundred kilos. I said, "Well, I'm 110. Would you willingly put my life in danger, after you've saved it, by putting me on that stretcher?" P1

I know one of my best friends, she left uni because she couldn't fit in the seats any more, and so she was [too] embarrassed to come. P14

somehow they lifted me out and put me in the ambulance on the seat, and that was how I went into hospital, until they moved me onto the stretcher in hospital. And I remember being very embarrassed about that. P7

Getting out

The challenge of 'getting out' during an emergency was a concern for most participants. About half of the participants identified mobility limitations they related to their weight, in particular the impact on their joints. For one bed-bound participant, mobility was not possible at all due to the lack of a weight appropriate hoist to assist with lifting and moving.

it's a struggle now, walking to work. ...And I'm like I don't want to be one of those people, years to come, who's relying on a caregiver... So I want to be as independent as possible for as long.... The knees, and my feet as well. God knows my shoes don't fit now, because obviously I'm heavier. P8

No [facility has hoists] ... that will take my weight. [I can't get up] at the moment...Pretty well bound to my bed. P15

Many participants felt they would be able to evacuate from a building in an emergency such as a fire, earthquake, or tsunami, so long as they did not trip or fall because if they did, they would not be able to get up unaided. Others felt they would need help to evacuate especially if they had to climb a hill (in the event of a tsunami risk) or get into emergency or military vehicles (e.g. in the case of a flood). What was clear is that for most, they would not be able to evacuate quickly and several participants and their partners hoped they would be assisted to evacuate and not discriminated against and left behind on the basis of their size.

There's no way that two of them [ambulance crew] could have lifted me either... I mean you would realistically have to call a fire crew, and have a lot of different people come and help to lift you. P6

and they were talking about taking us out on Unimogs [military vehicles]. Yeah. Can you imagine me climbing on a Unimog? Apart from my bung leg? P7

I would want [rescue crews] to remember that, despite my size, despite the potential added difficulties my rescue might entail...and their potential biases...I am just as worthy a person to be rescued as someone smaller. P12

I talked with my husband about it and ... [he] said, "Well wouldn't emergency preparedness be the same for anybody else?" And then I had a think about it. P4

Most participants recollected successful evacuation efforts in the past from earthquake and tsunami. One referred to 'making a big run and heading for the hills' in a tsunami alert, although on clarification this was by vehicle and not on foot, as was the case for all participants that evacuated uphill in a tsunami alert. Getting out of a building was one thing but being able to move quickly away from a building to higher ground on foot was a significant challenge in drills and actual tsunami alerts following earthquakes. One participant in a major earthquake and tsunami zone felt well prepared for building evacuation at work. However, during the interview they realised that no thought or guidance had been given to tsunami, meaning if they could get out of the building they would have nowhere to evacuate to. Such challenges brought the harsh reality of being a BBP into sharp focus.

Yes, I [borrowed] my neighbour's car. Oh I could never have walked. No. I mean I have a walker, and I can walk up to the letterbox on my own, and to right next door... But the actual ability to get somewhere is another thing. P3

So one of the biggest shakes that we had... it was late at night... and I was somewhere... Mum's quite big, and we had no option. We just couldn't move her, and during the earthquake we thought, what the hell do we do here? P13

Even participants who generally viewed themselves as fit and able recognised that things can change quickly in an emergency situation (e.g. if they were to get injured, their usual route was blocked, or their health deteriorates), and create unique challenges that may require extraordinary responses. One participant described a gargantuan effort to escape their property during an earthquake, something they had not previously thought themselves capable of.

... you know, even though I look like I'm completely able-bodied, and in normal daily life[move] impressively fast and things, but that can change pretty quickly. P12

then the February earthquake...Like I ran the fastest running I've ever done in my life. I'm clearly not a runner. Just a bit too big... so I went out of the back door, and ran and climbed over the fence, which was an effort in itself, because it was a six-foot high fence. It's amazing what adrenalin does, isn't it. P11

Left 'til last

Participants who worked in multi-level buildings reported that they were always told to wait until last in an emergency drill. Several participants reported that they were the nominated health and safety or floor wardens due to that fact that, as a BBP, they had to wait until last to leave their floor anyway. One participant recalled running down the stairs as quickly as they could during the evacuation of their building, then remembering they were the floor warden running all the way back up the stairs to stay on their floor, laying bare the incongruity of such a rule that people deemed less mobile, slower, wider or bigger have to stay behind.

I'm the last to leave the building. Yeah. So because of my disability, which is ridiculous, because like I don't have a disability, I have to wait till everybody's gone. Because I have to

wait for someone to bring me a chair and then I have to sit on... and I don't want to do that. I just want to go downstairs in my own time. That's cool. I'm totally cool with burning. It's okay. P1

I mean my biggest fear if something is going to happen is, I'm going to get left behind, because I actually can't move like everybody else can move. P10

Theme 3: Ready or not?

Some participants had given thought to elements of planning, such as thinking about what items might be required in an emergency, but few had actually prepared essential items or had comprehensive emergency plans in place. In this study, participants with prior experience of major emergencies were some of the least prepared. Four sub themes relating to BBP were formed: i. Could be more prepared; ii. Reducing risks; iii. Social support; and iv. Suitability of resources and facilities.

Could be more prepared

Some participants had elements of general planning in place but these did not extend to specific needs relating to being big bodied. Any planning that had taken place related primarily to arrangements to meet family after a major event and/or arranging food and water supplies. Most participants had no size specific plans in place, only one participant, who could be described as 'super prepared', had plans that included needs specific to their own health, mobility, body size, shape and weight as well as their housing location.

Not to do with weight, no [self-preparedness]. Never had crossed my mind, funnily enough.... P4

... they say in Samoa "liliu a mata tauaso e", you can't turn a blind eye from this. Because you just never know what will happen. And if anything happens, you'd think, "Oh shit, I didn't do anything about it." P9

So I am quite prepared at home, I'm quite independent. I do have for example a rainwater tank outside. I have four 15-litre water containers in the garage, and the... in the garage

there's a wheelie bin, and it's got in there a blow-up bed, and a sleeping-bag, and a pillow, and some warm clothes, and... A chemical toilet. P3

For most, planning for a grab bag or container with essential supplies stopped at thinking about what to include or having a list of items to get together. Some participants were aware of the importance of ensuring supplies of vital medications. Another spoke of the reality of trying to stock and maintain supplies for the emergency box in a household with limited income and resources.

I'm on about 20 pills a day. I always make sure that I have enough. I have at least a week of my medication with me at all times. P17

What Mum would do was, she'd raid it... And then I'd go to check it, and see what was there... and in the end, I just gave up... because I just couldn't keep up with her, and the way that she would go through the stuff in the box. And it was just so frustrating. P7

Participants had different reasons for not having a plan in place, despite generally recognising that planning was important. One participant felt that whenever they were 'prepared' then events happened and yet with no emergency kit in the Canterbury earthquakes (2010 and 2011) they had survived, so while acknowledging these may not be rational thoughts, the notion of preparing evoked strong emotions of 'tempting fate'.

I want to prepare, but every time...but I don't want to prepare, because I don't want to poke the bear. P1

I know if we get stranded in our house, I've got enough food and liquid to keep us going for ages. Other than that... There's not much one can really do, because when it hits it hits, and you're not necessarily going to be at that spot. P10

Reducing risks

Planning for or taking actions to reduce risk were very limited among participants. Some were aware of how to reduce risk to treasured belongings but little or no thought was given to reducing personal risks relating to health, mobility or being big bodied. One person was actively planning for their retirement and had identified future limitations of living independently, including limitations in aged sector housing, such as frail elderly neighbours not being able to directly assist a BBP

we got proper locks on the doors in the cabinet, where it had burst open. And we learnt that things have to be screwed to the wall, and you don't get magnetic things. P7

To be honest I have no idea. That's something we haven't thought about at all. Yeah. P4

Now I'm starting to do my research with the retirement village... because I want to be closer to support services... the kids won't worry... and I'll live in a place that has the bell-pulls for contact. P3

In terms of more formal risk reduction activities, participants were asked about their involvement in local DRR groups. Although one participant said they would happily go along if they knew about them, none were currently involved in such groups and for most it was not a high priority at that time.

It's not at the top of my list of things that I'd want to do. P12

Being involved in formal planning, to be 'seen and heard' was important to some participants. However, being visible was a double-edged sword for one participant who wanted to be seen in terms of DRR planning but would wish to be as invisible as possible if needing to spend time in a community evacuation centre.

because this world is designed for the smaller people. Only slowly it's being more accommodating for larger people. ...well I think the thing for me that I'd find difficult would be lack of privacy. So if I had to stay [in a community hall or similar] I'd be like "Put me in a corner" Do you know what I mean? P8

Most participants had some experience of fire, earthquake or tsunami drills at their place of work or education, although for many these were some years ago and few saw any practical benefit of them. One participant suggested that when children do drills at school, they could be educated to think about who in their household might need assistance to then encourage those conversations at home.

years ago I volunteered at the Citizens' Advice Bureau, and we did a bit of work with Civil Defence, kind of learning what our role could potentially be, and things like that. So I guess I've done some thinking around things, but I've not necessarily put things into action. P12

I don't understand why I have to wait [upstairs until everyone else is out of the building] in the drill, because I wouldn't be waiting in real life. And the whole point of the drill is to practise, so that we all do it properly, calmly, so that if it does happen... it just makes me so mad. P1

when they're learning about the whole stop, drop, and roll in case of a fire, having these discussions of, "Well, do you have anyone in your household that is a lot larger and needs more mobility?" And then they might ponder, and actually have these discussions with their parents, and then they'll link in. P14

One participant had experience of beach community evacuation drill for tsunami, and while advice is to head away and uphill on foot, this participant had to evacuate in a vehicle.

I went up and practised [tsunami evacuation]. I went up in a Mule, like the four-wheel quad. P17

When asked about the 'drop cover hold' ShakeOut drill⁵ which practices protective actions for a large earthquake, some participants recalled outdated advice to shelter in a doorway and had taken such action in earthquakes. Most participants felt their ability to 'drop cover hold' would be hindered by their size and or mobility, that they would be slow, may not be able to get down or under a desk and would need assistance to get back up again if they did.

I can't drop and hold, because of my weight. P9

[unable to get under tables and chairs] as quickly as others, because besides being slightly overweight I have a massive back issue... I can get up, but not without having something to hold on to. P10

and that's the thing, like where's the biggest thing to go under? I mean we're lucky in this particular [work] room, because it has the bigger tables.... P6

Social Support

⁵ Aotearoa New Zealand ShakeOut is a national annual earthquake drill and tsunami hīkoi (hīkoi is a Māori term relating to a long journey and often refers to a protest march or parade) (<https://getready.govt.nz/involved/shakeout/>)

Most participants in this study reported that they had good social support networks, even if family were far away. Several participants recognised how important this would be for disaster preparedness and recovery and talked about how they might look after each other following a major event, some reflecting that emergency services would likely be stretched in such circumstances.

The girls take me everywhere.... And other family members take me to things. They don't leave me behind just because I'm... you know, a liability. Yeah. We still go and have fun. P3

a big [fear] for me is if I'm separated from my husband in a disaster, or if I can't get hold of my parents in Wellington... I know that I have said several times get to know your neighbours, but I do think that does help... we do live on a street that's very chatty and very loving and very close, and we're friends with some of our neighbours. And I think that will be good in an emergency situation. We can help each other out. But I think it would be good to discuss with them at some point what are we going to do if there's a big civil defence emergency. P4

I'd love to know how the emergency services would get around that whole thing of looking after everybody, taking care of everybody. P13

One participant recalled not knowing what to do during a strong earthquake to minimise risks for a big bodied close family member. Another participant with no obvious social support networks relied wholly on health and community service personnel to advocate for their needs. This was a significant concern for that participant who detailed a range of experiences over their lifetime that had left them feeling untrusting and extremely vulnerable with the very people tasked to attend to their personal care needs and all activities of daily living.

Suitability of resources and facilities

The availability and suitability of resources and facilities during an emergency was raised by most participants. In particular there was a concern about the ability of community centres to cater to the needs of BBP, including the suitability and accessibility of facilities, following a major event.

They said, "Oh, it's only three small ones." Only three small [steps] is like Kilimanjaro to somebody else. You know? Unless you've experienced it, I think you don't have as much understanding. But you can learn. P3

I mean I've watched people even sit down in like these chairs [in a community resource centre], and struggle to get up. P6

If we were to evacuate, and move this mum, the safest place for her and the best place for her, would be outside. We'd never get her into a normal-size door. Unless it was a sliding door that's wide enough. And then you'd have to make sure the floor would hold her, the furniture would hold her. And I don't know of any place that would cater... we work with some very big people. P13

I'd be too big to get onto a camping cot bed. I'm pretty sure I might just make it collapse. I'm very aware of my size, and I don't want to embarrass myself... So no I wouldn't, I'd far rather be uncomfortable and get down on the ground, and then have to struggle to get up. That's how I think. P10

Those with experience of major events related issues around lack of appropriate sanitation amenities. Some were able to access regular portable toilets or use 'backyard ingenuity' and one participant, aware of her particular needs had purchased her own chemical toilet.

"A chemical toilet!" said my brother-in-law. "Just pee in the garden." I said, "Yeah that's alright for you, but if I get down there, I can't get up. So I want one my height, thanks. You forget about the fact that I'm overweight., and that it is much harder to be.." ...And I went to this place, and I went to it and I thought well, it's a bit low. Well jeppers, it was so low, when I went to get up I leaned against the hand basin. And I know I shouldn't, because it could come out from the wall, but I was prepared for it to come out of the wall. But I thought, "I can't get up." P3

Months and months we didn't have any sewage...We had a portaloo, and it was right at the end of our drive, so it was really handy. But for some reason, we never got a chemical toilet.

I wonder if it was because we had the portaloos that we didn't need one, ...And we dug a hole in the back yard. ...And then we just put plastic bags inside the toilet. Yeah. P11

Continuous positive airway pressure (CPAP) machines were being used regularly by a number of participants. CPAP machines require a continuous power source so present a significant risk in an emergency. Participants had not identified these as essential items for their grab bag, and one recalled during a routine operation nearly forgetting to say that they were a CPAP user which the anaesthetist stated was an important information. This highlights that if people are not thinking about such items during regular life events, that they are likely to be overlooked in an emergency. Another participant said they went without using their machine during travel to their Pacific Island home, so felt they could go a few days without it in an emergency.

Other resources mentioned for BBP by participants included width extenders that are sometimes used on ambulance trolleys, temporary beds, and evacuation chairs. Another had read about, and liked the idea of, a long handled sponge to assist with washing and showering (called Ample Sponge and available in the United States). Some participants, aware that evacuation chairs had been used in workplace drills, questioned how useful they would be in an actual event. One participant said they would 'rather burn' than go in an evacuation chair that they knew has been tested with a tall person and someone around 100kgs. They did not feel confident that those holding the chair could manage their weight and that, coupled with embarrassment meant the prospect felt too difficult.

Access to suitable replacement clothing for BBP was voiced as a concern by the majority of women participants, yet most did not have any emergency clothing set aside. One 'super-prepared' participant recognised this could be a significant issue for them and so had purchased items specifically for cover, utility, warmth and dignity, storing these carefully in a large 'wheelie bin' emergency kit.

I've only got two bras, and there's only one place in [NZ] where I can get the fit. And they're [expensive] I never thought about that... But I can't live without a bra. Like I'm not having black eyes and bruised knees. P1

I was just thinking, if the house did burn down, I'd only have the clothes with me, one change of clothes; and to replace those clothes easily would be so much harder for me, in my size, than it would be for the average person. Yeah, that was a scary realisation. P12

Discussion

In under-researched areas or topics it is vital to include the voices of marginalised people. The link between marginalisation and vulnerability are widely accepted in disaster research (Blake et al., 2017; Baker & Cormier, 2014). It is clear that BBP are marginalised and that being big bodied intersects with many factors that are known to exacerbate disaster risk (Meadows, 2018; Prohaska & Gailey, 2019; Schwartz et al., 2006) is clear. Despite this, BBP have been invisible and silent in DRR narrative, research and practice. This research responded to this gap by capturing the experiences, views and beliefs of adult BBP in relation to their own DRR and preparedness. Through the participants' voices, this study also adds to the sparse empirical literature on the lived experiences of BBP (Manokaran et al., 2020).

Including the knowledge and lived experiences of BBP in DRR planning can be a mutual exchange between BBP and EMs. On the one hand EMs can better understand the likely needs and limits for BBP in disasters in the local community. BBP will feel heard and seen if their knowledge can be incorporated into local area planning, respecting that some BBP will not wish to be in the spotlight. At the same time, BBP may learn more about emergency planning and any limitations that might still impact reduction and response actions.

Participants shared the realities of living as a BBP, both in daily life and during disasters. They recounted personal experiences of prejudice, bias and discrimination, including situations where they felt embarrassed, shamed or stigmatised because health or emergency services had not been prepared for, or able to, meet their needs relating to being big bodied. Despite their own experiences, most were surprised and shocked to learn that in previous disasters, factors relating to body size and shape had contributed to people being left behind (Fink, 2013; Ramme et al., 2015; Gray & MacDonald, 2016).

Preparedness Paradox

Prior to their involvement in this research most participants had given little thought to their own disaster preparedness. While participants recognised specific needs related to being a BBP, when discussing DRR most had not considered factors relating to their body size or shape and/or had assumed that emergency managers or planners would already consider those needs, when that is not currently the case (Gray et al., 2022^a). Despite many participants having been ‘drilled’ about preparedness from a young age, most admitted to having no current plans beyond thinking about what essential supplies could be included in a ‘grab bag’ and ensuring access to essential medications and devices.

The general lack of preparedness reported by the participants in this research is not unique to BBP and has shown to be a widespread challenge for DRR planners and practitioners (Staupe-Delgado & Kruke, 2018; Wachinger et al., 2013; Wachinger et al., 2018; Paton, 2019). The findings also underline the paradoxical nature of DRR planning: that risk knowledge does not necessarily translate to preparedness action (Becker et al., 2017; Wachinger et al., 2018; Paton & McClure, 2013). If this paradox of preparedness is to be overcome, authentic participation of all stakeholders is essential to include the voices of marginalized groups and their representatives in all aspects of DRR planning and action (Handmer et al., 2021; Wachinger et al., 2018). By including and drawing on BBP knowledge and experience, appropriate DRR capacities, resources and vulnerabilities can be identified and by doing so, preparedness may be enhanced (Paton, 2019) and actions and resource availability can be ascertained. For example, a previous study that highlighted the limitations from BBP participants to take actions such as ‘drop, cover hold’ during earthquake shaking contributed to modifications being made to this commonly promulgated DRR advice (Becker et al., 2019). Participants in the current study confirmed the difficulties for themselves and also their big bodied children taking cover under desks or chairs and were receptive to updated and varied messaging such as “Stop, cover, hold” (Horspool et al., 2020; McBride et al., 2022).

Participant experiences of drills highlights the potential gap between ‘practice’ situations, official advice and the reality of disasters. Despite the usual tsunami advice to evacuate uphill by walking, running or cycling if at all possible (e.g. National Emergency Management Agency, 2022), participants

in this study involved in tsunami evacuation drills had to use vehicles. On 5 March 2021 when three earthquakes occurred near the East Coast of NZ and Kermadec Islands between 2.27am and 8.28am, with one triggering an official tsunami warning for the Eastern Bay of Plenty, East Cape and Northland (Vinnell et al., 2022), many residents evacuated by vehicle. The resulting lengthy traffic jams made national headlines (Mather & Lawrence, 2021). This would certainly impinge on those who needed to evacuate by vehicle and further education in tsunami prone areas will be required to emphasise the need to evacuate on foot for everyone able to do so, leaving the roads available for those who cannot.

During evacuation drills in multi-story buildings a number of participants recounted being told, because of their size and actual or assumed mobility difficulties, to wait on higher floors. This relates to a “blurring” in the way ‘at risk groups’ may be viewed by emergency managers and assumptions that BBP are situated by others as having disability and/or poor health (Gray et al., 2022^a). Such ‘wait behind’ advice raises ethical and discriminatory concerns. In an emergency it is unlikely that those who believed they could egress from a building, even if slowly, would willingly wait behind. Sadly, evidence to the inquiry into the tragic 2017 Grenfell Tower fire in London, UK concluded that the reliance on a “stay put” policy instead of having evacuation plans, meant disabled and vulnerable people along with their loved ones who stayed with them died because they were unable to escape the building. Lawyers described this as “a landmark act of discrimination against disabled and vulnerable people” (Booth, 2021). The inquiry recommended that disabled residents in high rise building should have personal emergency evacuation plans (Disability Rights UK, 2021).

Even evacuation resources intended to be helpful are problematic when not tested with or consulted with BBP. In many multi-storey buildings, stairwells now have evacuation chairs or sleds that can be weight and width rated for BBP. One account during Superstorm Sandy (Ramme et al., 2015) showed that the evacuation sled was not suitable for the width of one patient and the person was left on the 15th floor of the facility due to concerns about the safety to the patient and evacuation staff. A BBP in this study, familiar with an evacuation chair in their own workplace stated that, due to a feeling of vulnerability arising from prior embarrassing and stigmatising experiences, they would refuse to evacuate in an appropriately tested chair, even if it meant being left behind. Written resources intending to guide a person’s personal preparedness omit to consider BBP. Even in disease specific

guidance such as the Diabetes Australia guide for emergency guide “The needs of people with diabetes and other chronic conditions in natural disasters [*sic*]” (National Diabetes Service Scheme, 2021) other than briefly highlighting obesity as a risk factor for development of diabetes (p.28), no other attention to the DRR needs of BBP were made in what is otherwise a substantive DRR guideline.

BBP in this study believed that if they needed assistance during a disaster, such as help to evacuate, it would come. However, routine support services are unlikely to be available in the immediate event and back-up or emergency services are often overwhelmed or tasked to other duties (Gray et al., 2022a). For example, in the 2021 East Coast and Kermadec Islands tsunami evacuations in the eastern Bay of Plenty, the ambulance services were withdrawn from service within the 2 kilometre tsunami zone for several hours (Binning, 2021).

Resources

When discussing disaster-related resources, of most concern to participants in this study were clothing and temporary accommodation. Access to suitable clothing has been identified as a significant issue for BBP, a challenge that is amplified in a disaster situation (Baggett, 2006; Saunders, 2007; National Association to Advance Fat Acceptance, 2017). It is common for aid agencies to specifically request that no clothing is sent following disaster events, however there is increasing recognition that it can be extremely difficult for BBP to purchase or otherwise acquire such items. For example, following Hurricane Katrina in New Orleans, a picture of a woman wearing taped together trash bags because she had no clothes, prompted a group of women to offer clothing but they had nowhere to send it (Gray et al., 2018). Similarly, when deadly tornadoes struck Kentucky on 10 December 2021, one survivor who wears 5X size clothes was left at a campground in the middle of winter without suitable clothing. In response, a call went out across a fat advocate social network to provide suitable plus sized clothing (personal communication with Marilyn Wann 13/12/2021). Most women interviewed in this study identified the time and cost of replacing bras as a particular issue but also noted that going without a bra was not an option for them. Few had considered including suitable items of clothing, such as underwear, in a grab bag but when this was suggested to them by the interviewer, the idea

was well received (including placing bra's that were about to be replaced into the grab bag rather than disposing of the item).

In the event that temporary accommodation or temporary evacuation centres are required, best practice requires the identification of the needs of vulnerable populations and suitable venues (Kako et al., 2020). Planning for temporary shelters or mass evacuation facilities tends to focus on capacity, location, security and the provision of water and food. While there has been increasing attention paid to the needs of some vulnerable populations, this has not included the needs of BBP (Kako et al., 2020). BBP in this study identified factors that would impact on the suitability of arrangements for them. Any assumption that disability accessible facilities will automatically accommodate BBP is "limiting." In reality, not all BBP have mobility or disability related conditions. Where this is the case, DRR provisions for the disability community seldom attends to the weight, width and size aspects required by BBP (Gray et al., 2022).

BBP working in the field of DRR and emergency management along with local community groups can advocate for inclusion of the needs of BBP in their local, regional and national guidance and planning. Alliances with disability groups can also strengthen advocacy for size, shape and weight inclusion for disability specific arrangements. Details such as seating, bedding and toilet facilities would need careful consideration for weight, width and height capacities, including space for essential equipment or aids that a person may require. Some emergency managers in NZ have given thought to seating needs for BBP in their service (Gray et al., 2022), although none have considered temporary accommodation needs for BBP. This could be due to a need for education around requirements: as has been seen in recent years with education around reasons to consider pets in disasters that has resulted in emergency managers now incorporating planning for pets into temporary accommodation needs (Squance, 2021).

Individual Responsibility

Having close family, friends and co-workers and interaction with Emergency Managers increases the likelihood that people will evacuate and shelter when required (Nowlin & Wehde, 2021). Social support networks are considered an essential element of preparedness, as these are networks people

can rely upon in a disaster (Paton, 2019). NZ emergency managers in a related study placed considerable emphasis on the role of communities and personal networks in building resilience and supporting vulnerable individuals during crises (Gray et al., 2022^a). Most participants in this study were well connected with good family and friend networks and this may be a reflection of the recruitment methods adopted. Shame, stigma, discrimination, bias and mistrust can make it difficult for BBP to engage in social interactions and maintain social networks. People who are socially isolated or marginalised in this way may be at risk of reduced social capital (Nowlin & Wehde, 2021) and of becoming invisible' in the community and to emergency managers and planners in particular (Gray et al., 2022^a), as was highlighted by one interviewee. While good social networks are important, their value will be diminished where there is no shared knowledge about and preparation for disasters. This includes the recognition that there is a risk of being 'left behind' and that help may not come. BBP, through discussion with wider social networks, should develop plans and strategies to minimise risks to themselves but also to those people who may put themselves at risk to help them or stay with them during a disaster.

The COVID-19 pandemic has highlighted the increasing occurrence of bias against BBP (Pausé et al., 2021). American research shows that while implicit (unconscious) attitudes and bias about sexual orientation, race, and skin colour have all reduced in the last 10 years, negative implicit attitudes and biases towards disability and body size as well as older age have increased (Charlesworth & Banaji, 2019). The pandemic has also given rise to a novel form of BBP activism with disability and fat activists joining forces to oppose early guidance around proposed rationing of resources when it became clear these population groups would receive limited resources or would face withdrawal of resources in favour of non-disabled/non-fat patients (NoBody is Disposable Coalition, 2020). This was perhaps the first time such strong BBP activism was voiced and resulted in changes to the California state guidelines (Pausé et al., 2021). While this was most definitely a 'win' for such marginalised groups, it may be short-lived. The decisions on rationing moved to the medical consultant(s) in charge, and because of the extent of health bias toward people with disability and BBP, such decisions may yet go against these population groups (Ward, 2020). More recently, there has been strong advocacy for BBP to know that when receiving their COVID-19 injection, they should check to make sure they are receiving the

vaccination from the right length needle for what is an intramuscular injection to ensure best efficacy (Garrett, 2021; Pausé, 2021). Without information from advocates such as Garret (2021) and Pausé (2021), many BBP would have been unaware of this issue.

Supporting BBP to identify resources and to develop personal strategies and plans suitable to their needs in disasters requires a good understanding of BBP (with or without disability or chronic health conditions). It also requires emergency managers, communities, workplaces and support personnel to address their own biases and to understand the importance of non-stigmatising, non-discriminatory approaches. Emergency managers, planners and community leaders may benefit from education and training relating to the needs of BBP. Emergency managers in NZ have already identified a desire to better understand bias and discrimination relating to BBP to ensure engagement with BBP is appropriate and non-stigmatising (Gray et al., 2022^a). Authentic engagement is required with BBP to raise awareness of the importance of planning for needs particular to size, shape and weight. Strong advocacy by and for BBP will be required to support BBP to voice their needs and concerns in safe environments so that they can contribute to DRR planning and practice in a safe and supported manner.

Advocates are encouraged to engage with the DRR literature and meet with their local emergency management groups or agencies to find out what is already in place for BBP and discuss what may be reasonable and viable to include going forward. For example, when visiting the Sarasota emergency operations centre in 2017, Gray and McAfee (2018) met with the Emergency Management Chief to explore DRR for BBP residing in the Sarasota area. Gaps, limitations and possible solutions regarding the needs for BBP were discussed, including what might be needed to support a BBP required to evacuate to a temporary shelter and why a BBP may choose not to evacuate to a shelter.

Strengths and Limitations

We believe that this study is the first to bring into focus an understudied group by placing the voices, experiences and beliefs of BBP at the heart of research in the field of DRR. The heterogeneous prospective sample generated strong common themes. A potential limitation is that most of the participants had good social networks and were active in their local communities at the time of

interviews. This may not represent the social networks for other BBP. Qualitative results cannot give a level of statistical confidence that could be generalisable to the whole population of BBP, although the depth of qualitative interviewing permits a better understanding of the issues raised.

Conclusion

For this research we posed the question “What are the experiences, perceptions and preparedness for disasters of big bodied people and/or their families?” This paper amplifies the voices of BBP in exploring their experiences and preparedness actions.

All participants in this study identified as big and they shared the realities of living as a BBP, both in daily life and during disasters. They recounted personal experiences of prejudice, bias and discrimination, including situations where they felt embarrassed, shamed or stigmatised because health or emergency services had not been prepared for, or able to, meet their needs relating to being big bodied. Despite their own experiences, most were surprised and shocked to learn that in previous disasters, factors relating to body size and shape had contributed to people being left behind.

The findings of this study underline the potential for ‘triple jeopardy’ during and after disasters for BBP. Being bigger bodied has the potential to compound determinants of health and disaster vulnerability such as gender, age, ethnicity and economic status. For example, the women in this study highlighted how cost was a barrier to preparedness actions and thinking about the immediate aftermath of an event for the acquisition of appropriate clothing. BBP in this study experienced prejudice and bias in daily life and emergency situations. For many this impacted their beliefs about how they might be treated in a disaster and compounded a sense of marginalisation, of being ignored or ‘left ‘til last’.

It is clear that being big in a disaster brings unique challenges and considerations for DRR, for individuals and emergency managers. The harsh reality is that without appropriate planning BBP may be more likely to be left behind. Planning that does not include the voices of BBP is unlikely to be effective. To be ready and prepared requires the ‘invisible and silent’ to be seen and heard. Effective, transformative and ethical DRR involves those central to this research. The voices of BBP are documented in this research, one of the first to do so. By describing their views, perceptions, and

experiences, we hope this study assists DRR advocacy and planning to ensure BBP are no longer 'conspicuously invisible' in this field. We invite other researchers and scholars to join and strengthen this important conversation.



Image 9: Outdoor fun

Image credit: Obesity Canada - Obésité Canada

9

World views collide?

Nā tō rourou, nā taku rourou ka ora ai te iwi

[With your food basket and my food basket the people will thrive]

This chapter presents the triangulation and synthesis of the data from this doctoral research to develop a nuanced understanding of the different insights study participants bring to this topic, while maintaining the separate worldviews of participants (Morse, 2003; Rothbauer, 2008). This chapter responds to research question 4:

What factors could strengthen disaster risk reduction in relation to big bodied people and their whānau in New Zealand?

When triangulating and synthesising the research findings from both the Emergency manager (EM) and big bodied people (BBP) datasets, five themes became evident that reflect a number of fundamental assumptions and expectations. These provide a focus for this chapter, including discussion of practical implications of the research findings. Illustrative quotes from the datasets are provided with each theme discussion.

Needs, responsibilities and roles

Most of participants in this research had not previously considered their own or others' needs in a disaster particular to size, shape and weight. When asked, some BBP assumed that their needs, including for evacuation and shelter, would already be planned for by authorities and that if they required assistance, help would come and they would not be left behind. Most BBP participants were dismayed to learn that this had not always been the case in previous disasters. BBP participants were well aware of a dominant general population view of BBP as burdens on society and hoped this would not disadvantage BBP in disasters.

We are very much viewed as a burden and a liability, as opposed to just a regular citizen that needs help, just like everybody else. It is my hope that any rescue organisations, civil defence agencies, any health agencies, or rescue organisations would put their prejudices aside to actually try and help people BBP 4.

Several BBP voiced internalised biases about their own body size and this impacted their views about their individual needs and responsibilities in relation to DRR.

To me, it's... it (shouldn't) be the government's thing... Because I've put myself in this situation- like I'm so big But I put myself in this situation BBP 5.

When asked specifically about considerations relating to BBP, and if BBP should be included in disaster plans, a number of EM online survey respondents raised the issue of how vulnerable groups are prioritised and questioned that if BBP are included, where would the definition of 'vulnerability' end? The automatic or involuntary deprioritisation of BBP (Publication 2, Chapter 7) by both BBP and EM in this way could be related to more widely held (mis)beliefs about BBP as being somehow less worthy compared to thinner counterparts (Meadows, 2018; Puhl & King, 2013). This also overlooks the nature of body size being distributed amongst the population across many groups already viewed as more vulnerable in disasters (Gray, 2017) and speaks volumes about the value judgements made when body size is involved. Some EMs went as far as to make judgement calls about who might be deemed worthy or unworthy of rescue, placing BBP lower down a comparative prioritisation list (Publication 2, Chapter 7).

I don't think we would address this subgroup when others such as non-English speakers, people with disabilities and people with pets... EM survey 17

While EMs saw their role as providing all individuals with appropriate information and resources so that the general population are aware of where to go for help if needed, considerations of size, shape and weight were not included. EMs placed considerable emphasis on the role of personal responsibility for disaster planning and preparedness, stressing that everyone, including BBP should identify their own needs and make plans for themselves and their families for how they will manage in an emergency and how they might evacuate if need be. EMs also highlighted the important role

communities and personal networks play in building resilience and supporting vulnerable individuals during crises. During the interviews, BBP participants voiced a growing awareness that they had to take responsibility for their own personal planning and to discuss this with friends, family/whānau and local emergency services.

These assumptions and issues highlight the importance of raising awareness amongst BBP about taking an active role in their own disaster planning and preparedness and identifying who needs to be part of their network. While most BBP participants in this study had good social connections, the value of such networks can be diminished in the absence of a shared knowledge about and preparation for disasters, including the acknowledgment that there is a risk of being 'left behind' and that help may not actually come. Through discussion with wider social networks, BBP should develop plans and strategies to minimise risks to themselves and to people who may put themselves at risk to help them or stay with them during a disaster. The importance of personal networks resonated with most of the BBP interviewed but this was an issue of concern for those with the highest support needs.

This was the case for one participant who had no personal social networks and was highly dependent on professional caregivers. The reliance on caregivers in a disaster poses a significant risk as there is no certainty that they would be available to assist. Two participants resided in aged care facilities; one was aware of their care needs but the other had not considered their DRR plans relative to their facility. Neither had discussed their disaster planning needs, specific to being bigger bodied, with facility staff.

To assist person centred emergency preparedness, Villeneuve and colleagues in Australia created a process tool for people with disability and long term health conditions (Villeneuve et al., 2018). For those with disability and/or long term conditions it may be possible to collaborate with the likes of Villeneuve and colleagues to explore options to incorporate size, shape, weight aspects into such tools. However, a tool intended for those with disability and or long term conditions may not be something that a BBP with no disability or health condition would identify with. Therefore, a solution is required to assist individuals and carers to identify emergency preparedness needs that include considerations for size, shape and weight.

Implications for practice:

Assumptions about BBP are commonplace and can be very misleading. BBP have often experienced longstanding discrimination, stigma and bias and internalise some of the beliefs and assumptions which can lead EMs and BBPs to view the needs of BBP as less important compared to others. The result may be a flawed assessments of needs. EMs and BBP may benefit from education and support to reposition assumptions and beliefs about BBP in relation to DRR.

Literature, resources and tools designed to assist people to undertake self-assessment of needs and to support DRR planning (including self-evacuation and shelter considerations) should include information about planning relating to size, shape and weight in a non-discriminatory, non-stigmatising and culturally appropriate manner.

It's not a big issue

Most EMs in this study lacked experience with, or knowledge about BBP. Those who were aware of BBP in their region, and/or with experience involving BBP in their work roles generally reported negative experiences. While some EMs mentioned knowledge of a specific BBP in their locality, most had no idea of the actual prevalence of BBP in their region. Instead it was assumed that, in some regions, numbers of BBP would be low, and therefore no specific planning was required. The consequence of these assumptions is that size, shape and weight were not regarded as important DRR considerations, regardless of how valuable that might be for one or many BBP.

This assumption is compounded by a common belief that a 'one size fits all' approach to planning adequately addresses the needs of BBP who are assumed to be included under a broad category of 'vulnerable' communities or groups. This reflects a general blurring of the way in which 'at risk groups' were viewed by EMs. Ultimately one size planning fits no one well and excludes BBP by default.

And if you go to a shop and try and buy something one size fits all, well it isn't wise. Yeah.

One size fits all- so it obviously isn't my size it fits BBP 6.

Recent examples in the COVID-19 pandemic illustrate the limitations of a one size fits all approach. As part of the NZ COVID-19 response, single-sized body bags were ordered in bulk and while the Ministry

of Health advised the width of a bag was 0.8m, with 4 lifting handles, they were unable to provide me with their maximum lifting capacity (Appendix 14). Similarly, one size-one shape, personal protective equipment for health workers presents issues for small and big workers as they are not made to fit a woman's body, very small framed people or BBP (Fidler, 2020; Morrison, 2009). In the COVID-19 vaccination roll out, most vaccine manufacturers recommend intramuscular injection of the COVID-19 vaccine for best efficacy. To achieve this, BBP may require a longer needle, however vaccinators have anecdotally reported that these are not routinely available or easily accessible in all vaccination centres (C. Timu-Parata, personal communication, June 10, 2022). This presents structural barriers and inequity for BBP in the face of NZ guidelines that clearly state longer needle length requirements (Ministry of Health, 2020b).

The workplace of one EM participant employed a number of BBP and this was notably reflected in their knowledge about equipment and lifting requirements and the respectful manner in which BBP in the community were spoken about. This highlights that BBP do work in EM and will have needs in a disaster situation that may not have been planned for by their EM colleagues, such as the impact of heat and exertion on big bodied EMs, following the 2010 Haiti earthquake (Geiling, 2010). Most EMs interviewed in this study however were smaller bodied compared to the BBP participants, with one EM stating:

our organisation doesn't typically employ people with extreme obesity EM survey 1

It is important, that those making planning decisions are aware of needs specific to BBP in disasters and understand that these are not automatically 'covered' by considerations for other groups identified as being at risk. Increasing EMs knowledge about the prevalence of BBP within their regions of jurisdiction would be an excellent starting point. During the interview process, when asked if EMs would value having access to regional prevalence data for BBP, most EMs indicated this would indeed be helpful.

Implications for practice:

Being big in a disaster brings unique challenges, it is therefore vital that the implications of size, shape and weight, largely overlooked by EMs and BBP at present, are included in future

DRR considerations. EMs should have access to meaningful data relating to the likely prevalence of BBP in each region or locality which may include big bodied EMs. With suitable (culturally appropriate, non-discriminatory and non-stigmatising) education and information, inclusion of BBP in DRR planning does not need to be a 'big issue', although a one size EM approach may still not include BBP. Some EMs interviewed expressed interest in education around DRR considerations with and for BBP to identify what planning, equipment or provisions may be required. BBPs in this study welcomed the opportunity to think through their own preparedness for size specific equipment and clothing.

The red herring of health or disability

Most EM participants in this study perceived BBP as unwell, highly dependent individuals, with poor mobility and significant care needs that were largely their own making. When speaking of people with a BMI above 40kg/m² it is unlikely that any were picturing someone such as Bill Cavubati, a BBP participant happy to be named in this thesis and depicted at the end of this chapter. At around 165 kg, Bill, was the world's heaviest rugby player representing Fiji, Wellington and the Hurricanes rugby club in the 1990's and 2000's. "His huge size and strong physique made him a cult hero amongst the fans" (Rowais, 2018, p.1).

The notion of resilience as health was highlighted by EMs in this study. Sadly, the (mis)belief that BBP can quickly and easily take individual action in order to reduce body size and directly improve health is globally endemic. It is no great surprise, therefore, that some EMs went so far as to position weight loss as resilience:

We consider it in term of resilience. The healthier the population is e.g. less obesity, then the less likely they will become unwell from disease either in response or during recovery to the disaster. The disaster might be a pandemic where they might become a casualty... EM online survey 21

Conversely, a reviewer of Publication 3 observed that BBP demonstrate high levels of resilience each and every day and stated that they were "astounded by the resiliency of fat people in the face of so little care for their well-being."

The concept of weight loss as a resilience strategy is extremely limiting as described in Chapter 5 and can result in problematic discourse around fatness and health that may exacerbate negative attitude and behaviours towards BBP with negative health impacts including depression, eating disorders, reduced self-esteem, stress and weight gain (e.g. Sutin & Terracciano, 2013; Puhl & Heur, 2010). Focus on individuals and weight loss strategies is more likely to erode a person's resilience (see Chapter 5).

The assumption that BBP would be receiving some form of health care led non-health EMs to assume that BBP would be well known to health services and readily identifiable.

If the [Health Board name] identified that there were a significant number of extremely obese people who were less able to make their own plans and arrangements for emergencies, we would expect the DHB to make us aware of this, and their locations EM survey 3

Such assumptions were dispelled by EM participants working in health who noted that outside the hospital in-patient environment there were unlikely to be any plans in place for BBP. Even in hospital, suitable equipment was an issue in some locations. BBP mostly reported that they were not under any direct 'health' care, or if they were, it was not for any conditions commonly assumed to be associated with being big bodied. BBP in this study reported that they were not or did not think they would be classified on any register as disabled, despite some BBP reporting disabling conditions.

There is a wealth of experience concerning the needs, provision and equipment requirements for BBP patients in health emergencies, some of which may be helpful to EMs and BBP for disaster planning purposes (e.g. Patrick, 2004; Gallagher, 2015). Resources that mention body size but fail to expand on specific DRR factors for people's size, shape and weight miss opportunities to ensure people are able to consider all aspects of preparedness (e.g. National Diabetes Service Scheme, 2021; Ringel et al., 2011). Best practice for evacuation shelters to accommodate more vulnerable populations in disasters currently overlook the needs particular to anyone who may also be big bodied (Kako et al., 2020). Currently, BBP engaging with health services receive no guidance around the need to include size, weight and shape considerations in disaster planning, beyond routine in-patient hospital care and health patient transport.

Implications for practice:

By making health-equating assumptions and focusing only on health dimensions, the complexities of disaster vulnerability and needs of BBP are overlooked. EMs and health personnel should work together to identify what, when and where people's needs are addressed by health in relation to disaster planning, risk reduction and during events. BBP must be included in DRR planning relating to BBP specific needs. It is feasible that authors of preparedness information and guidelines might be concerned about how to frame considerations for BBP. Support could be provided to ensure information and guidelines include appropriate, non-stigmatising and non-discriminatory language and terminology.

Stay or go

One assumption identified in the literature (Chapter 2) was that mobile BBP will be slower to evacuate a building and/or will hold up others (Apatu et al., 2013). While this is a common narrative, it is not supported by research (e.g. Galea et al., 2012; Peacock et al., 2012). Some BBP in this study experienced the consequences of such assumptions first-hand when they were told to stay behind until last to evacuate and/or had been designated floor wardens who are also last to leave the floor. The irony was not lost on one BBP who, in an emergency, ran down the stairs before remembering that they were meant to stay behind so ran back upstairs to their office floor. Another BBP, compliant in evacuation drills, made clear they would not be sitting on a chair while others evacuated in a real emergency. This also begs the question that if someone is told to remain behind in a workplace during an emergency and is subsequently injured or dies, what are the legal implications for a workplace?

So because of my disability- which is ridiculous, because like I don't have a disability- I have to wait till everybody's gone. Because I have to wait for someone to bring me a chair, and then I have to sit on... and I don't want to do that. BBP 1

Evacuation procedures are an important part of DRR planning, yet EMs in this study had given little, or no consideration to the factors of size, shape and weight. Most with prior experiences relating to evacuation of BBP in emergency situations generally reported negative experiences, further reinforcing the belief that BBP in general are a 'problem' in this regard. Even in the face of having

experienced physical challenges when evacuating specific BBP, no detailed provisions had been made by EMs in regard to disaster planning generally. In some countries, the identification and provision of evacuation resources intended to be helpful, such as stair evacuation chairs, are problematic if untested with or consulted with BBP. In certain situations it was believed that 'stay put' policies were the most appropriate approach. However, such policies have been criticised as contributing to the deaths of people unable to mobilise quickly during the residential London (UK) Grenfell Tower disaster in June 2017. Seventy two people lost their lives in the Grenfell Towers, including families with young children. A number of the residents who had been living on the higher floors had disabilities and several were big bodied.

The inquiry into the disaster was highly critical of the lack of evacuation plans and the reliance instead on a "stay put" policy, recommending instead that all disabled residents in high rise buildings should have personal emergency evacuation plans (Disability Rights UK, 2021). However, in May 2022, the UK Government Home Office stated that it believes the recommendations were not proportionate (Home Office, 2022). A legal challenge is being mounted by two disabled residents of fire safety-risk buildings over this apparent turnaround (Apps, 2022). This highlights tensions between individual responsibility versus state responsibility for DRR.

What is not known is the extent to which size, shape or weight contributed to any of the residents' deaths in the Grenfell disaster. One resident, a BBP living on the 20th floor, followed advice to 'stay put' and was eventually found deceased in the hallway of the ninth floor. In most events, the role of size, shape and weight are not included in reports. Where these factors are reported, they provide insight into the barriers that existed, and with the benefit of hindsight, allow opportunities to learn from and eliminate BBP being left behind in future.

Implications for practice:

Training for EMs would be beneficial to dispel the myth that 'BBP are an evacuation hazard' and so that they better understand what the likely evacuation-related needs, including equipment and aids, for BBP are in reality. This should include increasing knowledge about what support BBP might require to evacuate to a temporary shelter and why a BBP may

choose not to do so. BPP should also be encouraged to identify their own needs and make plans appropriate to their size, shape and weight, in the event that they may be required to leave their homes. Systematic reporting and analysis of all factors contributing to, for example, less than optimal DRR, evacuation or shelter and the specific issues relevant to disaster vulnerabilities, including but not limited to factors of size, shape and weight will assist better analysis and subsequent implementation of improvements from lessons learned.

Positioning dynamic of language

It is clear from the assumptions and differing perspectives of BBP and EMs in this study that the way in which BBP are positioned by others or position themselves in relation to self and others influences perception of needs, rights, expectations, roles, responsibilities and for some, their destiny. The positioning of body size and language as power are introduced earlier in this thesis (Chapter 5).

For example, when specifically asked about considerations relating to BBP, and if BBP should be included in disaster plans, a number of EM online survey respondents assumed defensive positioning that if BBP were to be included, there were others groups whose needs were surely more important or deserving. Another example was seen in the blurring or purposeful generalisation of 'at risk groups' and a belief that one size planning was sufficiently inclusive, which positions BBP in such a way that they are excluded by default.

Advocating for inclusion also shifts the positioning of BBP from silent to vocal and invisible to visible. Examples have been observed during the COVID-19 pandemic, including when proposals to ration ventilators and treatment for certain groups including BBP and disabled people in the United States (US) generated uproar from fat activists and disability advocates in many countries (Cortese, 2020). Fat activists and disability activists worked together in the US to successfully challenge triage guidelines in California (NoBody is Disposable Coalition, 2020; Disability Rights Education & Defense Fund, 2020). Thus positioning theory may be a useful approach in future considerations of how to influence the positioning of BBP in DRR and achieve the dynamic shifts required to ensure inclusion of BBP in DRR.

Chapter summary

By triangulating datasets from the different elements of this doctoral study it was possible to identify five themes that reflected a number of assumptions. In turn, implications for practice were summarised. The following chapter provides a summary overview of the research, impacts of the research, next steps and future research.



Image 10: Bill Cavubati, Fijian former professional rugby union player

Image credit: Cameron Burnell, Stuff NZ 2017

10

The positioning of big bodied people in disaster risk reduction

Kāore te kumara e kōrero ana mo tōna ake reka.

[The kumara does not brag about its own sweetness]

This chapter brings together all elements of the thesis in order to summarise to research question 4:

What factors could strengthen disaster risk reduction in relation to big bodied people and their whānau in New Zealand?

The chapter begins with a summary of how the research questions have been addressed then discusses the impacts of the research. The strengths and limitations of this study are presented. Areas for possible future research and next steps are suggested before providing concluding comments.

Overview of research outcomes

This doctoral research set out to inform national and international DRR policy and practice by identifying DRR considerations and issues for BBP in Aotearoa New Zealand (NZ). In order to achieve this aim, four research questions were posed. An exploration of each is presented in the previous chapters, including three published peer-reviewed articles. The alignment between these is presented in Table 9.

Table 9: Alignment of research questions with thesis chapters and publications

Research question 1: How are big bodied people constituted as a specific ‘at risk’ population with respect to disasters?

Chapters **Publication 1**

2, 4 & 6 Gray, L. (2017). Social determinants of health, disaster vulnerability, severe and morbid obesity in adults: Triple jeopardy? *International Journal of Environmental Research and Public Health*, *14*, 1452.
<https://doi.org/10.3390/ijerph14121452Text>

Research question 2: In what way are big bodied people presently considered in emergency planning in New Zealand?

Chapters **Publication 2**

2, 6 & 7 Gray, L., MacDonald, C., Becker, J. S., & Johnston, D. (2022). A qualitative study of emergency management considerations for big bodied people in Aotearoa New Zealand. *International Journal of Disaster Risk Reduction*, *67*, 102646.
<https://doi.org/10.1016/j.ijdrr.2021.102646>

Research question 3: What are the experiences, perceptions and preparedness for disasters of people and/or their whānau?

Chapter 8 **Publication 3**

Gray, L., Becker, J., MacDonald, C., and Johnston, D. (2022). Sizing up disaster risk reduction: a qualitative study of the voices of big bodied people in Aotearoa New Zealand. *International Journal of Disaster Risk Reduction*, *74*, 102922
<https://doi.org/10.1016/j.ijdrr.2022.102922>

Research question 4: What factors could strengthen disaster risk reduction in relation to big bodied people and their whānau in New Zealand?

Chapters 9 **Publications 2 & 3**
& 10

Research question 1 set out to explore how BBP are constituted as a specific 'at risk' population with respect to disaster. The thesis introduction and literature review (Chapter 2) show that BBP have for the most part been conspicuously invisible in DRR literature, with very few scholars considering DRR associated with size, shape and weight. While some articles or reports refer to people with obesity, this is usually only a mention within broader categories of groups or populations deemed to be 'vulnerable' or of special interest.

The first publication in this thesis (Chapter 4) highlights how BBP are inextricably linked to a range of population groups known to be at higher risk in disasters. The paper posed the prospect of 'triple jeopardy' for BBP through the intersection of the social determinants of health and disaster vulnerability. It challenged emergency planners to take a broader view of vulnerability and consider how BBP can be included in DRR planning and activities. An online exploratory survey (described below) also informed research question one and two.

A multi methods approach was used to address the second research question: *in what way are BBP presently considered in emergency planning in Aotearoa New Zealand?*

The literature search located some considerations for BBP as in-patients or during health emergency transportation, although nothing was located specific to size, shape and weight for BBP in their usual homes and communities (Chapter 2). An online exploratory survey of emergency managers (described in Chapter 6) was followed by in-depth qualitative interviews with EMs. The second publication of this doctoral thesis presents the reflexive thematic analysis of the interviews (Chapter 7). It is clear that BBP are not generally considered or planned for by EMs in relation to DRR, with EMs reflecting vague assumptions that BBP were included in existing provisions for people with pre-existing health conditions or disability. This may heighten the disaster risk for BBP.

Crucial to this thesis, the third research question asked *what are the experiences, perceptions and preparedness for disasters of BBP and/or their whānau?*

Through in-depth qualitative interviews, 17 people identifying as BBP shared their experiences, perceptions and preparedness for disasters. The findings presented in Publication 3 (Chapter 8) show three strong and common themes providing a greater understanding of key issues. Despite BBPs own

prior experiences of prejudice, bias and discrimination relating to size, shape and weight in daily life and emergency situations, most BBP were surprised and shocked to learn that in previous disasters these factors had contributed to people being left behind in previous disasters. These findings also supported the proposition made in Chapter 4 that there exists the potential for 'triple jeopardy' during and after disasters for BBP.

The fourth and final research question asked *what factors could strengthen disaster risk reduction in relation to BBP and their whānau in New Zealand?* This is the focus of Chapter 9 in which the research evidence is triangulated and synthesised, and this final chapter (Chapter 10) which considers the impact of this doctoral study and discusses how DRR for BBP could be strengthened.

Impacts of the research

This research is one of the first known studies to explore DRR considerations for BBP, including bringing into focus the voices, experiences and beliefs of BBP at the heart of research in the field of DRR in NZ.

In so doing, this thesis contributes to the study of DRR by highlighting that:

1. Because being big in a disaster brings unique challenges and risks, it is vital that the implications of size, shape and weight, largely overlooked by EMs and BBP at present, are included in future DRR considerations.
2. To improve DRR planning and actions for this overlooked and underserved group, underlying assumptions made by both EMs and BBP must be identified and addressed.
3. EMs and BBP may require support and information to maximise DRR in ways that are safe for BBP.

Sharing knowledge

The qualitative interviews highlighted preparedness and DRR gaps for both EMs and BBP, with all but one of the participants sharing freely. The degree of trust that was built in the researcher-participant relationship meant I was able to offer to come back to participants after the interviews with information to assist in bridging gaps. At the follow-up some of the EMs and BBP requested further information and/or provided additional information. Some EMs came back to clarify likely prevalence for BBP in their region. Some BBP updated me on their personal preparedness planning or advised

they were contacting their local EM to discuss their particular needs, others have asked for written information to aid their planning. In this way, researcher and participant were able to co-construct knowledge around areas of concern beyond the transcribed interview data. I am confident that those participants have more valuable knowledge that can be applied to reduce disaster risks with and for BBP.

Practical outputs

In order to contribute meaningfully to the DRR literature it was important to me that EMs and BBP could view the publications and take practical application from this work. Not only from the perspective of a pragmatist, but as a big bodied DRR practitioner I believe that novel findings need to be communicated rapidly and effectively to the intended audience in "useful and useable" ways to ensure they are actually used (Aitsi-Selmi et al., 2016, p.6). In the course of this doctoral study, three articles were published, raising the topic of DRR for BBP. Importantly, publication 3 presents findings from empirical research with BBP.

During interviews, some participants stated they were keen to improve their knowledge relating to BBP, so that in future, considerations could be included where appropriate. The EMs also reported a desire for guidance and training to manage and understand biases. I delivered presentations at two Massey Emergency Management Summer Institute training courses (Gray, 2020^d; Gray, 2021). The Summer Institute involve interdisciplinary seminar and desktop exercises, exploring health and environmental consequences of disasters. Running over two-days they draw from research evidence nationally and internationally to present disaster management in NZ. One EM qualitative interview participant invited me to speak at their annual Welfare Forum (Appendix 15). Whenever I speak at Emergency Management events, I provide links to the publications, or the full articles where copyright allows, so that dissemination continues beyond the presentations and hopefully the publications are taken back to regional EM offices. Open access papers associated with this topic have been provided to PreventionWeb who disseminate to the worldwide DRR community.

Links to all publication outputs have been provided to known fat activists and scholars and dialogue continues. One of the world's best known fat activists, Marilyn Wann, wrote to me about Publications 2 and 3 and gave permission for her words to be reproduced here -

"I cannot tell you what a relaxing and lovely thing it is to read BBP instead of O-words!!! I wish Judy Freespirit⁶ could have known about your important work. She tried to get things started educating our emergency responders on the needs of fattest and disabled people"
(M. Wann, personal communication, 2022).

Similarly, the reviewers of publication 3 provided very positive feedback comments about the submitted manuscript (Appendix 16).

As a health promoter, I have many years' experience developing and marketing health improvement training and resources. It is my intention following completion of this doctoral study to apply these skills to focus on the development and piloting of a DRR training package for EMs and in parallel to co-create DRR resources with and for BBP.

Mapping prevalence

Many EMs were aware that a lack of knowledge about BBP in the community hampered their planning efforts. While the interview process allowed for the exchange of some information relating to population prevalence of BBP, many EMs expressed a desire for advice and information about prevalence of those with BMI 40kg/m² in their own areas.

In 2019-2020, I collaborated with colleagues working with geographical information systems to combine prevalence data from the New Zealand Health Survey (Ministry of Health, 2019) with geospatial shape files from the National Emergency Management Agency and map this across each of the EM regions. The maps were piloted with 14 EMs attending the Massey University Emergency Management Summer Institute in March 2020 and feedback was positive. The prevalence information showing that the numbers were unlikely to be few in any area was "an eye opener" (participant EM8)

⁶ United States, noted as the architect of fat liberation movement and one of the first fat activists, died age 74 in 2010

and generated much discussion about the need to consider BBP in NZ. Importantly, EMs learned that contrary to what they expected, prevalence of BBP was likely to be more concentrated in areas outside of Auckland. Several EMs indicated that locality based prevalence information would be more helpful than the regional information presented and around half of the EMs sought further information from the presenting author during the session break. The regional mapping exercise and piloting was published outside the scope of this thesis (Gray et al., 2020^b). While it is not possible to infer any statistical significance, the qualitative feedback received from EMs suggests that this approach is worthy of further attention as a way of increasing EM awareness of BBP prevalence and is an opportunity to open discussion concerning DRR and BBP.

Advocating for inclusion

Having raised the need to address considerations for BBP in DRR in the various stages of this doctoral study, during the COVID-19 pandemic and as my doctoral study continued, I led a working group funded by the National Science Foundation-funded Social Science Extreme Events Research (SSEER) Network (USA) and the CONVERGE⁷ facility housed at the Natural Hazards Center at the University of Colorado Boulder, USA (Appendices 17 & 18) to address health equity issues for BBP in the COVID-19 pandemic. I led an expert group including advocates for fat equity, health at every size practitioners and critical weight science scholars to set an agenda for research concerning BBP to highlight inequities in the pandemic (Gray et al., 2020^c). A number of projects were created, some of which have already been published to further raise awareness in the sector and amongst BBP of the need to advocate for equitable care, resources and inclusion in vaccine trials (Pausé et al., 2021; Campbell et al., 2020, 2021) and urging authorities to ensure equitable preventive measures (Appendix 19).

Similarly, through this research, as highlighted in earlier chapters, I call on fat advocates and activists to engage with the DRR literature and to meet with their local EM agencies to identify gaps, limitations, and possible solutions. The value of such engagement was illustrated when, along with a BBP

⁷ The CONVERGE facility was established in 2018 and aims to advance the ethical conduct and scientific rigor of hazards and disaster research and strengthening networks between disciplinary communities (<https://converge.colorado.edu>)

advocate, I met the Emergency Management Chief at the Sarasota (United States) emergency operations centre in 2017 to discuss DRR for big bodied Sarasota residents (Gray et al., 2018).

Limitations of the research

This thesis was bounded by the restrictions brought about by the COVID-19 pandemic. These included limited access to campus and periods of time when in-person meetings and participant interviews were not possible.

The quality of evidence in primary research reports was limited to reports and documents published in English.

While the samples of EM and BBP are not representative of the EM or BBP populations, the researcher has drawn heterogeneous prospective samples that generated common themes for each sample. Results are qualitative and therefore are not intended to give any level of statistical confidence that could be generalisable to the whole population of EMs and BBP. The depth of qualitative interviewing does permit a deep understanding of the themes and issues raised.

A potential limitation of the EM and BBP participant samples is that the recruitment techniques for qualitative interviews were both non-probability samples. EMs were purposively sampled through the researcher's own networks, although every effort was made to ensure wide reach of the invitation. This modified snowball sampling approach adopted to recruit BBP can be a strength for recruitment of BBP and also a limitation. Snowball sampling approaches can assist in accessing 'hidden' populations, enabling a wider reach than usually available to the researcher to include people often marginalised or stigmatised. However, this approach is also dependant on the reach of initial contacts who then go on to share with their own networks. Most of the BBP participants described that they had good social networks and were active in their local communities at the time of interviews. This may not represent the social networks for other BBP and presents a potential gap in this research. The potential value of social network analysis is discussed below in 'Next steps and future research'.

Time and financial constraints placed limitations on the number and location of qualitative interviews possible in the time available. I sought and received permission from Ngāti Porou Hauora (Appendix

20) to travel to the East Coast of the Tairāwhiti region with the plan to run focus groups with different communities over a 3 day period with the support of Ngāti Porou Hauora, having submitted a research proposal summary in accordance with their health research and evaluation policy. Unfortunately the emergence of the COVID-19 pandemic meant these plans were not able to be implemented during the timeframe of the doctoral study as it is vitally important to meet with those communities in-person. Online alternatives are not a suitable substitute for these communities, both culturally and also because of limited internet connectivity in some of those areas.

Next steps and future research

This doctoral study is an important first step in researching this topic area. This research has highlighted much that could be explored in further research and underlines the importance of meaningful inclusion of BBP in research to inform and guide DRR planning, policies and practices.

Authentic engagement with BBP

This doctoral study shows the value of BBP voices in work concerning BBP. However more research is required to document and analyse BBP accounts of experiences in disasters in order to further explore factors that support or hinder DRR to ensure subsequent implementation of changes are informed by lessons learned.

This study also identified a desire amongst emergency managers to address their own biases towards BBP and to understand the importance of non-stigmatising, non-discriminatory approaches to DRR. Further research is needed that explores the factors impacting bias and discrimination relating to BBP and examine how best to ensure authentic and appropriate engagement with BBP.

Social networks

Further exploration of the nature and role of social networks for BBP would be beneficial to better understand how they contribute to aspects of DRR. One BBP participant interviewed with no close family or friends and extremely limited social networks was wholly reliant on professional carers. Further research to explore planning and preparedness by, with and for individuals in such circumstances would be beneficial. One model worth exploring with BBP is social network analysis (SNA). Such analysis has been utilised in a wide range of research and practice settings including with patients whose healthcare needs are longstanding and complex (e.g. Scott, 1988; McKinlay et al., 2017). The application of social network analysis (SNA) for DRR was considered at a workshop in 2009 (National Research Council, 2009). Workshop participants summarised that there was a disjoint between SNA research and the emergency management community. Network analysis offers a way to potentially transform the ways in which emergency management, and the communities they serve,

can prepare for disasters (National Research Council, 2009). Research to examine the value and application of SNA to BBP for disaster planning and preparedness is warranted.

Positioning

This doctoral study set out to explore and describe DRR considerations with and for BBP. During analysis and triangulation of EM and BBP data it became clear that the positioning of EMs and BBP shaped thinking and potentially influenced preparedness decisions. Further research exploring the role and impact of positioning and how it does and can inform and shape DRR actions and outcomes for BBP would be valuable. Positioning theory can assist in understanding the language and power dynamic relationships (Davies & Harre, 1990; Davies & Harre, 1999; Harre & van Langenhove, 1999) and can begin to test the feasibility (Sahin, 2021) of progressing this study from 'what is' to 'why'.

While positioning theory has not appeared in DRR literature to any great extent to date, Miller (2012) draws on positioning theory to frame recommendations from a study of disaster related resilience building for minority populations and posits that positioning theory can be utilised to better understand and resolve potential conflict. Positioning theory has been shown to be a useful framework to build on thematic and narrative analysis (e.g. Allen & Wiles, 2013) and offers a promising approach to understanding the 'why' of what this exploratory descriptive doctoral study has revealed.

Rural Communities of Aotearoa New Zealand

I am interested to further explore aspects of DRR for BBP with isolated communities, especially given rural communities in NZ experience heightened health inequities and higher levels of BMI 40kg/m² (Gray et al., 2020b). For example, I believe that there is much to learn from the communities of Tairāwhiti / East Coast region, who potentially face many different types of disaster and who, due to relative geographical isolation, are required to be largely self-sufficient as individuals and communities. I hope to resurrect plans to engage with communities in this region after being forced to cancel planned research due to COVID-19 restrictions.

Planning tools

Research is required to explore the suitability and acceptability of existing and future DRR planning tools in NZ and other countries to ensure that they include features specific to BBP in a manner that is culturally appropriate and that will not cause upset or offence, or further marginalise, stigmatise or discriminate against BBP.

For example, in Australia, one process tool designed to enable disaster preparedness was developed by Villeneuve and colleagues (2018) with and for people with disabilities and long term health conditions. Following completion of this doctoral study, I hope to connect with the authors to identify ways to incorporate considerations for size, shape and weight into such planning tools for NZ.

One planning tool that was created in direct response to EM participant comments in this study was the regional mapping tool (Gray et al., 2020). While the mapping tool proved to be informative and generated much discussion, several EMs who provided feedback advised that detail at a smaller locality level would be more helpful. It is possible to calculate prevalence at a more local level. A project is underway with colleagues from the University of Canterbury, one of whom completed their PhD exploring the spatial distribution of BBP in NZ (Watkins, 2017), to generate smaller geographical area data, before assessing the utility of the revised tool with EMs.

Beyond Aotearoa New Zealand

Further research is required to assess DRR for BBP and identify any examples of best practice in other countries. In addition, information concerning BBP prevalence should be available to EMs in other countries to raise awareness of the need to include BBP in planning.

Conclusions

This doctoral study set out to describe considerations for BBP in DRR, and to my knowledge, it is the first time that EMs or BBP have been asked directly about their views and experiences in this regard, in NZ or elsewhere. The findings of this study support the prospect of 'triple jeopardy' for BBP through the intersection of social determinants of health and of disaster vulnerability factors such as gender, age, ethnicity and economic status.

If the Sendai Framework for Disaster Risk Reduction 2015–2030 requirement for an ‘all-of-society engagement and partnership’ is to be met, emergency planners must widen the current conceptualisation of special populations and vulnerability to consider how BBP can be included in DRR planning and activities.

A number of underlying assumptions about BBP generally and in disasters have resulted in a failure to specifically consider or plan for BBP in relation to DRR in NZ. It is promising therefore, that EM participants in this study were receptive to education and training on the needs of BBP to identify what planning, equipment or provisions may be required. Stigma and bias must also be addressed to mitigate against discrimination and bias toward BBP in DRR.

Despite personal experiences of prejudice, bias and discrimination, both in daily life and during disasters, BBP in this study recognised the need to be more proactive in their own disaster readiness. BBP can be supported in this through increased knowledge of the risks in disasters and the limitations of resources and services during disasters.

Being big in a disaster poses unique challenges and considerations for individuals and emergency managers. To avoid more BBP being left behind, strong advocacy will be required so that the concerns and needs of BBP particular to size, shape and weight are heard and included in DRR planning, policies and practices. It is hoped this thesis can help with these next steps.



Image 11: Catching up with friends

Image credit: Obesity Canada - Obésité Canada

References

- Abdel-Kader, K., & Unruh, M. L. (2009). Disaster and end-stage renal disease: targeting vulnerable patients for improved outcomes. *Kidney International*, 75(11), 1131-1133.
- Accident Corporation Company. (2011). *Moving and handling people: The New Zealand guidelines*. Accident Corporation Company. Version accessed 1 May 2022. <https://www.acc.co.nz/assets/provider/1d98940288/acc6075-moving-and-handling-people-guidelines.pdf>
- Adams, V. (2010). *Scoping the Australian care economy: A gender equity perspective*. Security4Women. Version accessed 1 May 2022. <https://www.security4women.org.au/wp-content/uploads/2020/07/Scoping-the-care-economy-report-FINAL2.pdf>
- Aitsi-Selmi, A., Murray, V., Wannous, C., Dickinson, C., Johnston, D., Kawasaki, A., Stevance, A-S., & Yeung, T. (2016). Reflections on a science and technology agenda for 21st century disaster risk reduction. *International Journal of Disaster Risk Science*, 7(1), 1-29.
- Al-rousan, T. M., Rubenstein, L. M., & Wallace, R. B. (2014). Preparedness for natural disasters among older US adults: A nationwide survey. *American Journal of Public Health*, 104(3), 506-511.
- Alberga, A. S., Pickering, B. J., Alix Hayden, K., Ball, G. D., Edwards, A., Jelinski, S., Nutter, S., Oddie, S., Sharma, A.M., & Russell-Mayhew, S. (2016). Weight bias reduction in health professionals: A systematic review. *Clinical Obesity*, 6(3), 175-188.
- Albris, K., Lauta, K. C., & Raju, E. (2020). Disaster knowledge gaps: Exploring the interface between science and policy for disaster risk reduction in Europe. *International Journal of Disaster Risk Science*, 11(1), 1-12.
- Aldrich, D. P., & Sawada, Y. (2015). The physical and social determinants of mortality in the 3.11 tsunami. *Social Science & Medicine*, 124, 66-75.
- Alefaio, S. (2018). Samoan indigenous psychology. In *Asia-Pacific Perspectives on Intercultural Psychology* (pp. 218-231). Routledge.
- Alexander, D., Gaillard, J. C., & Wisner, B. (2012). Disability and disaster. *The Routledge Handbook of Hazards and Disaster Risk Reduction*, 1, 413-423.
- Allen, R. E., & Wiles, J. L. (2013). The utility of positioning theory to the study of ageing: Examples from research with childless older people. *Journal of Aging Studies*, 27(2), 175-187.
- Allison, D. B., Mentore, J. L., Heo, M., Chandler, L. P., Cappelleri, J. C., Infante, M. C., & Weiden, P. J. (1999). Antipsychotic-induced weight gain: a comprehensive research synthesis. *American Journal of Psychiatry*, 156(11), 1686-1696.
- Altman, B. M., & Bernstein, A. (2008). *Disability and health in the United States, 2001-2005*. Hyattsville, MD: National Center for Health Statistics. Version accessed 25 April 2022. <https://www.cdc.gov/nchs/data/misc/disability2001-2005.pdf>
- American Psychological Association. (2020). *Publication Manual of the American Psychological Association, 7th edition*. ISBN-13 p.428.
- An, R., & Xiang, X. (2015). Social vulnerability and obesity among US adults. *International Journal of Health Sciences*, 3(3), 7-21.
- Apps, P. (2022). *Home Office faces legal challenge over plans to reject Grenfell Inquiry recommendation on evacuation plans for disabled people*. Version accessed 13 June 2022. <https://www.insidehousing.co.uk/news/news/home-office-faces-legal-challenge-over-plans-to-reject-grenfell-inquiry-recommendation-on-evacuation-plans-for-disabled-people-76049>
- Apatu, E., Aga, D., Osland, E., & Gregg, C. E. (2014). Strengthening public health and disaster resilience in American Samoa: The use of the precede-proceed model. *Planet@ Risk*, 2(6).

- ArjoHuntleigh. (2014). *Guidebook for architects and planners: Functional design for mobilisation and ergonomics*. 4th edition. Version accessed 24 April 2022. <https://www.arjo.com/int/services-solutions/healthcare-solutions/architects-and-planners/>
- Ashwell, M., & Gibson, S. (2016). Waist-to-height ratio as an indicator of 'early health risk': simpler and more predictive than using a 'matrix' based on BMI and waist circumference. *BMJ Open*, 6(3), e010159.
- Atkinson, R., & Flint, J. (2001). Accessing hidden and hard-to-reach populations: Snowball research strategies. *Social Research Update*, 33(1), 1-4.)
- Augustine, J. J. (2007). Heavy subjects: delivery of emergency care to obese patients. *JEMS: a Journal of Emergency Medical Services*, 32(3), 74-85
- Augustine, J. J. (2014). Homebody: for a large patient, getting out of the house is tricky. *EMS World*, 43(3), 14-19.
- Ayo, N. (2012). Understanding health promotion in a neoliberal climate and the making of health conscious citizens. *Critical Public Health*, 22, 99–105.
- Bacon, L. (2010). *Health at every size: The surprising truth about your weight*. BenBella Books, Inc.
- Baggett, J. (2006). Florida disasters and chronic disease conditions. *Preventing Chronic Disease*, 3(2).
- Baker, T. L. (1994). *Doing social research* (2nd ed.). McGraw-Hill.
- Baker, L.R. & Cormier, L.A., (2014). *Disasters and Vulnerable Populations: Evidence-based Practice for the Helping Professions*. Springer Publishing Company.
- Baltar, F. & Brunet, I. (2012). Social research 2.0: virtual snowball sampling method using Facebook, *Internet Research*, 22(1), 57-74.
- Barnett, P., & Bagshaw, P. (2020). Neoliberalism: What it is, how it affects health and what to do about it. *NZ Medical Journal*, 133, 76-84.
- Batterham, R. (2020). *Health inequalities and obesity*. Royal College of Physicians. Version accessed 24 April 2022. <https://www.rcplondon.ac.uk/news/health-inequalities-and-obesity#:~:text=In%202018%2F19%2C%20the%20prevalence,13.9%25%20in%202018%2F19>.
- Baum, F., & Fisher, M. (2014). Why behavioural health promotion endures despite its failure to reduce health inequities. *Sociology of Health & Illness*, 36(2), 213-225.
- Becker, J. S., Paton, D., Johnston, D. M., Ronan, K. R., & McClure, J. (2017). The role of prior experience in informing and motivating earthquake preparedness. *International Journal of Disaster Risk Reduction*, 22, 179-193.
- Becker, J. S., Payne, B. A., & Paton, D. (2020). Understanding readiness for disasters on the East Coast, North Island, Aotearoa New Zealand: A summary of preparedness surveys. *Disaster Research Science Report; 2020/05*. Massey University Wellington.
- Beebe, R. (2010). Handling Bariatrics. How to Treat & Transport Morbidly Obese Patients. *JEMS: a Journal of Emergency Medical Services*, 35(1), 40.
- Beety, V. E. (2012). Criminality and corpulence: Weight bias in the courtroom. *Seattle Journal for Social Justice*, 11, 523.
- Biddle, C., & Schafft, K. A. (2015). Axiology and anomaly in the practice of mixed methods work: Pragmatism, valuation, and the transformative paradigm. *Journal of Mixed Methods Research*, 9(4), 320-334.
- Biedrzycki, P. A., & Koltun, R. (2012). Integration of social determinants of community preparedness and resiliency in 21st century emergency management planning. *Homeland Security Affairs*, 8(1), 1-8.
- Biglan, A. (1973). The characteristics of subject matter in different academic areas. *Journal of Applied Psychology*, 57(3), 195.

- Biles, J., & Garner, A. A. (2016). Loss of consciousness during single sling helicopter hoist rescue resulting in a fatal fall. *Aerospace Medicine and Human Performance*, 87(9), 821-824.
- Binning, E. (2021, Mar 5). The facts on today's tsunami threat - and how to stay safe. *New Zealand Herald*. Version accessed 5 March 2021. www.nzherald.co.nz/nz/the-facts-on-todays-tsunami-threat-and-how-to-stay-safe/EIEC22WYEV5RYJT3QNX6RLFULM
- Blackstone, S. W., & Kailes, J. I. (2015). Integrating Emergency and Disaster Resilience Into Your Everyday Practice. In: S.W. Blackstone, D.R. Beukelman, K.M. Yorkston. *Patient-Provider Communication-Roles for Speech-Language Pathologists and Other Health Care Professionals* (pp.103-138). Plural Publishing.
- Blake, D., Marlowe, J., & Johnston, D. (2017). Get prepared: Discourse for the privileged? *International Journal of Disaster Risk Reduction*, 25, 283-288.
- Booth, H. P., Charlton, J., & Gulliford, M. C. (2017). Socioeconomic inequality in morbid obesity with body mass index more than 40 kg/m² in the United States and England. *SSM-Population Health*, 3, 172-178.
- Booth, R. (2021, May 6). Grenfell landlord 'did not create escape plans for disabled residents': 'Stay put' advice was relied upon despite fires at other towers requiring evacuations, inquiry told. *The Guardian*. Version accessed 6 May, 2021. www.theguardian.com/uk-news/2021/may/06/grenfell-landlord-did-not-create-escape-plans-for-disabled-residents
- Borgstede, M., & Scholz, M. (2021). Quantitative and Qualitative Approaches to Generalization and Replication—A Representationalist View. *Frontiers in Psychology*, 117.
- Boutilier, M. A., Rajkumar, E., Poland, B. D., Tobin, S., & Badgley, R. F. (2001). Community action success in public health: Are we using a ruler to measure a sphere? *Canadian Journal of Public Health*, 92(2), 90-94.
- Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic Analysis and Code Development*. Sage Publications Ltd.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology, Vol. 2. Research Designs: Quantitative, qualitative, neuropsychological, and biological*. American Psychological Association (pp. 57–71).
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589-597.
- Braun, V., & Clarke, V. (2021). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, 18(3), 328-352.
- Brown, A., & Flint, S. W. (2021). Preferences and emotional response to weight-related terminology used by healthcare professionals to describe body weight in people living with overweight and obesity. *Clinical Obesity*, 11(5), e12470.
- Brownell, K. D., Puhl, R. M., Schwartz, M. B., & Rudd, L. E. (2005). *Weight Bias: Nature, Consequences, and Remedies*. Guilford Publications.
- Busch, J. (2013). Big rig: the Memphis Fire Department's bariatric ambulance. With increased demand, the department recently added a second bariatric unit. *EMS World*, 42(4), 46-47.
- Butland, B., Jebb, S., Kopelman, P., McPherson, K., Thomas, S., Mardell, J., & Parry, V. (2007). *Tackling obesities: future choices-project report, 10, 17*. London: Department of Innovation, Universities and Skills.
- Byrne, C. (2021). The BMI is racist and useless. Here's how to measure health instead. *HuffPost*. Version accessed 25 Jan 2022. https://www.huffpost.com/entry/bmi-scale-racist-health_I_5f15a8a8c5b6d14c336a43b0

- Cambridge Dictionary. (2022). Reflexivity. *Cambridge Dictionary*. Version accessed 18 July 2022. <https://dictionary.cambridge.org/dictionary/english/reflexivity>
- Camic, P. M., Rhodes, J. E., & Yardley, L. (2003). *Qualitative research in psychology: Expanding perspectives in methodology and design*. American Psychological Association.
- Campbell, J. (2011). A History of Pragmatism. In S. Pihlström. (Ed.). *The Continuum Companion to Pragmatism*. (pp.69-80). Bloomsbury Publishing.
- Campos, P. (2005). *The Diet Myth: Why America's Obsession with Weight Is Hazardous to Your Health*. Gotham
- Campos, P., Saguy, A., Ernsberger, P., Oliver, E., & Gaesser, G. (2006). The epidemiology of overweight and obesity: public health crisis or moral panic?. *International Journal of Epidemiology*, 35(1), 55-60.
- Centers for Disease Control and Prevention. (2019). Disability and Obesity. Version accessed 25 April 2022. <https://www.cdc.gov/ncbddd/disabilityandhealth/obesity.html>
- Chafe, R. (2017). The value of qualitative description in health services and policy research. *Healthcare Policy*, 12(3), 12.
- Charlesworth, T. E., & Banaji, M. R. (2019). Research: How Americans' Biases Are Changing (or Not) Over Time. *Harvard Business Review* <https://hbr.org/2019/08/research-on-many-issues-americans-biases-are-decreasing>
- Chastain, R. (Ed.). (2014). *The Politics of Size: Perspectives from the Fat Acceptance Movement* [2 volumes]: Perspectives from the Fat Acceptance Movement. ABC-CLIO.
- Chin, M. H., King, P. T., Jones, R. G., Jones, B., Ameratunga, S. N., Muramatsu, N., & Derrett, S. (2018). Lessons for achieving health equity comparing Aotearoa/New Zealand and the United States. *Health Policy*, 122(8), 837-853.
- Chrisler, J. C., & Barney, A. (2017). Sizeism is a health hazard. *Fat Studies*, 6(1), 38-53.
- Cienki, J. J. (2016). Emergency medical service providers' perspectives towards management of the morbidly obese. *Prehospital and Disaster Medicine*, 31(5), 471-474.
- Claridge, R., Gray, L., Stubbe, M., Macdonald, L., Tester, R., & Dowell, A. (2014). General practitioner opinion of weight management interventions in New Zealand. *Journal of Primary Health Care*, 6(3), 212-220.
- Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist*, 26(2).
- Coates, L., van Leeuwen, J., Browning, S., Gissing, A., Bratchell, J., & Avci, A. (2022). Heatwave fatalities in Australia, 2001–2018: An analysis of coronial records. *International Journal of Disaster Risk Reduction*, 67, 102671.
- Cohen, L., Manion, L., & Morrison, K. (2002). *Research Methods in Education*. Routledge.
- Cooper, C. (2007) 'Headless Fatties' [Online]. London. Version accessed 24 April 2022. <http://charlottecooper.net/fat/fat-writing/headless-fatties-01-07/>
- Cooper, C. (2021). *Fat Activism: A Radical Social Movement*. Intellect Books.
- Cooper Stoll, L., & Thoun, D. L. (2019). Elevating the Voices and Research of Fat Scholars and Activists: Standpoint Theory in Fat Studies. *Fat Studies*, 1–8
- CORDAID & Partners for Resilience, Inclusive resilience. https://www.preventio.nweb.net/files/71675_716542020marchpfrinclusion toolkit.pdf, 2020.
- Correll, C. U., Kane, J. M., & Manu, P. (2011). Obesity and coronary risk in patients treated with second-generation antipsychotics. *European Archives of Psychiatry and Clinical Neuroscience*, 261(6), 417-423.

- Cortese, C. (2020). *Even during a Pandemic, Fatphobia Won't Take a Day off*. Version accessed 24 April 2022. <https://www.bitchmedia.org/article/fatphobia-in-coronavirus-treatment>
- Creswell, J. W. & Creswell, D. (2007). *Research design: Qualitative, Quantitative, and Mixed Methods Approaches* (2nd ed.), Sage Publications Ltd.
- Creswell, J. W., & Plano Clark, V. L. P. (2017). *Designing and Conducting Mixed Methods Research*. Sage Publications Ltd.
- Crotty, M. J. (1998). *The foundations of social research: Meaning and perspective in the research process*. Sage Publications Ltd.
- Crozier, M., & Dee, M. (2016). Critical Literature Review: Disaster support and the resource needs of marginalised children and young people with disabilities from diverse cultural backgrounds. Version accessed 24 April 2022. <https://www.semanticscholar.org/paper/Critical-literature-review%3A-Disaster-support-and-of-Crozier-Dee/7ccf9436755ddc1d33e3603dfc956839b23a9e9f>
- Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003). Social vulnerability to environmental hazards. *Social Science Quarterly*, 84(2), 242-261.
- Cutter, S. L., Ismail-Zadeh, A., Alcántara-Ayala, I., Altan, O., Baker, D. N., Briceño, S., Gupta, H., Holloway, A., Johnston, D., McBean, G.A., Ogawa, Y., Paton, D., Porio, E., Silbereisen, R.K., Takeuchi, K., Valsecchi, G.B., Vogel, C., & Wu, G. (2015). Global risks: Pool knowledge to stem losses from disasters. *Nature*, 522(7556), 277-279.
- Daumit, G. L., Goldberg, R. W., Anthony, C., Dickerson, F., Brown, C. H., Kreyenbuhl, J., Wholheiter, K., & Dixon, L. B. (2005). Physical activity patterns in adults with severe mental illness. *The Journal of Nervous and Mental Disease*, 193(10), 641-646.
- Davies, B., & Harré, R. (1990). Positioning: The discursive production of selves. *Journal for the Theory of Social Behaviour*, 20(1), 43-63.
- Davies, B., & Harre', R. (1999). Positioning and personhood. In R. Harre' & L. Van Langenhove (Eds.), *Positioning Theory* (pp. 32-52). Blackwell.
- Demeulemeester, F., de Punder, K., van Heijningen, M., & van Doesburg, F. (2021). Obesity as a Risk Factor for Severe COVID-19 and Complications: A Review. *Cells*, 10(4), 933.
- Dempsey, T. M., Lapinsky, S. C., Melnychuk, E., Lapinsky, S. E., Reed, M. J., & Niven, A. S. (2019). Special populations: disaster care considerations in chronically ill, pregnant, and morbidly obese patients. *Critical Care Clinics*, 35(4), 677-695.
- Denzin, N. K., & Lincoln, Y. S. (2008). Introduction: The discipline and practice of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Strategies of Qualitative Inquiry* (pp. 1-43). Sage Publications Ltd.
- Denzin, N. K. (2010). Moments, mixed methods, and paradigm dialogs. *Qualitative Inquiry*, 16(6), 419-427.
- Devaux, M., & Sassi, F. (2015). The labour market impacts of obesity, smoking, alcohol use and related chronic diseases. *OECD Health Working Papers, No. 86*. OECD Publishing
- Devereaux, A. (2006). Shelter medicine: beyond the first and second response. *Chest Physician*, 1(2), 13.
- Devereaux, A., Burns, S., & Gougelet, R. (2009). Delivering acute care to chronically ill adults in shelters. *Fundamental Disaster Management*. 3rd ed. Society of Critical Care Medicine (pp. 1-14)
- Dipasquale, S., Pariante, C. M., Dazzan, P., Aguglia, E., McGuire, P., & Mondelli, V. (2013). The dietary pattern of patients with schizophrenia: a systematic review. *Journal of Psychiatric Research*, 47(2), 197-207.

- Disability Rights Education and Defense Fund. (2020). *Summary of California's Revised Crisis Care Guidelines*. Version accessed 25 April 2022. <https://dredf.org/2020/06/10/summary-of-californias-revised-crisis-care-guidelines/>
- Disability Rights UK. Emergency evacuation plans needed for disabled people in high rise blocks. Version accessed 24 April 2022. <https://www.disabilityrightsuk.org/news/2021/january/emergency-evacuation-plans-needed-disabled-people-high-rise-blocks>
- Dominelli, L. (2013). Gendering climate change: Implications for debates, policies and practices. In *Research, Action and Policy: Addressing the Gendered Impacts of Climate Change* (pp. 77-93). Springer.
- Doyle, E. E., Becker, J. S., Neely, D. P., Johnston, D. M., & Pepperell, B. (2015). Knowledge transfer between communities, practitioners, and researchers: A case study for community resilience in Wellington, New Zealand. *Australasian Journal of Disaster and Trauma Studies*, 19(2), 55.
- Dries, D., Reed, M. J., Kisson, N., Christian, M. D., Dichter, J. R., Devereaux, A. V., & Upperman, J. S. (2014). Special populations: care of the critically ill and injured during pandemics and disasters: CHEST consensus statement. *Chest*, 146(4), e75S-e86S.
- Dulock, H. L. (1993). Research design: Descriptive research. *Journal of Pediatric Oncology Nursing*, 10(4), 154-157
- Duncan, A., Parkinson, D., Archer, F., & Keech, E. (2018). Diversity in Disaster conference: Issues paper. *Australian Journal of Emergency Management*, 3, 10-27.
- Duncan, E., Schofield, G., Duncan, S., Kolt, G., & Rush, E. (2004). Ethnicity and body fatness in New Zealanders. *The New Zealand Medical Journal (Online)*, 117(1195).
- Eisenman, D. P., Zhou, Q., Ong, M., Asch, S., Glik, D., & Long, A. (2009). Variations in disaster preparedness by mental health, perceived general health, and disability status. *Disaster Medicine and Public Health Preparedness*, 3(1), 33-41.
- Eknoyan, G. (2008). Adolphe Quetelet (1796–1874)—the average man and indices of obesity. *Nephrology Dialysis Transplantation*, 23(1), 47-51.
- Elliott, C. D. (2007). Big persons, small voices: On governance, obesity, and the narrative of the failed citizen. *Journal of Canadian Studies*, 41(3), 134-149.
- Elman, I., Borsook, D., & Lukas, S. E. (2006). Food intake and reward mechanisms in patients with schizophrenia: implications for metabolic disturbances and treatment with second-generation antipsychotic agents. *Neuropsychopharmacology*, 31(10), 2091-2120.
- Elmslie, J. L., Silverstone, J. T., Mann, J. I., Williams, S. M., & Romans, S. E. (2000). Prevalence of overweight and obesity in bipolar patients. *Journal of Clinical Psychiatry*, 61(3), 179-184. <https://doi.org/10.4088/jcp.v61n0306>.
- Enari, D., & Matapo, J. (2020). Pasifika education innovation during the COVID-19 pandemic. *MAI Journal*, 7-11.
- Enarson, E., & Fordham, M. (2001). From women's needs to women's rights in disasters. *Global Environmental Change Part B: Environmental Hazards*, 3(3), 133-136.
- Ehrhardt, A. A., Sawires, S., McGovern, T., Peacock, D., & Weston, M. (2009). Gender, empowerment, and health: what is it? How does it work?. *Journal of Acquired Immune Deficiency Syndromes (1999)*, 51(Suppl 3), S96.
- Etikan, I., & Bala, K. (2017). Sampling and sampling methods. *Biometrics & Biostatistics International Journal*, 5(6), 00149.
- Evans, J. (2010). Mapping the vulnerability of older persons to disasters. *International Journal of Older People Nursing*, 5(1), 63-70.
- Fatoric, S., & Seekamp, E. (2017). Are cultural heritage and resources threatened by climate change? A systematic literature review. *Climatic Change*, 142(1-2), 227.

- Faulkner, G. E., Gorczynski, P. F., & Cohn, T. A. (2009). Psychiatric illness and obesity: recognizing the "obesogenic" nature of an inpatient psychiatric setting. *Psychiatric Services, 60*(4), 538-541.
- Fee, M. (2006). Racializing narratives: Obesity, diabetes and the "Aboriginal" thrifty genotype. *Social Science & Medicine, 62*(12), 2988-2997.
- Fessler, P. (2013). 'Please, No More Clothes': Relief Groups Ask For Cash. *Kera News*. Version accessed 30 May 2022. <https://www.keranews.org/2013-05-25/please-no-more-clothes-relief-groups-ask-for-cash>
- Fetters, M. D., & Molina-Azorin, J. F. (2017). The journal of mixed methods research starts a new decade: principles for bringing in the new and divesting of the old language of the field. *Journal of Mixed Methods Research, 11*(1), 3-10.
- Few, R., & Tran, P. G. (2010). Climatic hazards, health risk and response in Vietnam: Case studies on social dimensions of vulnerability. *Global Environmental Change, 20*(3), 529-538.
- Fidler, H. (2020). PPE: 'one size fits all' design is a fallacy. *Nursing Standard, 36*(6), 23
- Field, H. (1982). Realism and relativism. *The Journal of Philosophy, 79*(10), 553-567.
- Fikkan, J., & Rothblum, E. (2005). Weight Bias in Employment. in: K.D. Brownell, R.M. Puhl, M.B. Schwartz, L. Rudd (Eds.), *Weight Bias: Nature, Consequences, and Remedies*. Guilford Publications (pp. 15–28).
- Fink, S. (2009). The deadly choices at Memorial. *New York Times Magazine, 30*, 28-46.
- Fink, S. (2013). *Five Days at Memorial: Life and Death at a Storm-Ravaged Hospital*; Atlantic Books Ltd.
- Finlay, L. (2002). Negotiating the swamp: the opportunity and challenge of reflexivity in research practice. *Qualitative Research, 2*(2), 209-230.
- Flint, S. W. (2020). Stigmatizing media portrayal of obesity during the coronavirus (COVID-19) pandemic. *Frontiers in Psychology, 11*, 2124.
- Fothergill, A., Maestas, E. G., & Darlington, J. D. (1999). Race, ethnicity and disasters in the United States: A review of the literature. *Disasters, 23*(2), 156-173.
- Foucault, M. (1979). *Discipline and Punish: The Birth of the Prison*. Vintage Books.
- Freedman, D. S., Khan, L. K., Serdula, M. K., Galuska, D. A., & Dietz, W. H. (2002). Trends and correlates of class 3 obesity in the United States from 1990 through 2000. *Journal of the American Medical Association, 288*(14), 1758-1761.
- Fricker, R. D. (2008). Sampling methods for web and e-mail surveys. *The SAGE handbook of online research methods*. SAGE Publications Ltd.
- Froehlich-Grobe, K., & Lollar, D. (2011). Obesity and disability: time to act. *American Journal of Preventive Medicine, 41*(5), 541-545.
- Gable, B. D., Gardner, A. K., Celik, D. H., Bhalla, M. C., & Ahmed, R. A. (2014). Improving bariatric patient transport and care with simulation. *Western Journal of Emergency Medicine, 15*(2), 199.
- Gaillard, J. (2019). Disaster studies inside out. *Disasters 43*, S7–S17.
- Gale, N. K., Heath, G., Cameron, E., Rashid, S., & Redwood, S. (2013). Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Medical Research Methodology, 13*(1), 1-8.
- Galea, E. R., Hulse, L., Day, R., Siddiqui, A., & Sharp, G. (2012). The UK WTC 9/11 evacuation study: an overview of findings derived from first-hand interview data and computer modelling. *Fire and Materials, 36*(5-6), 501-521.
- Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Educational research: An introduction*. Longman Publishing.

- Gallagher, S. M. (2015). *A Practical Guide to Bariatric Safe Patient Handling & Mobility: Improving Safety and Quality for the Patient of Size*. Visioning Publishers.
- Gamble, J. L., Balbus, J., Berger, M., Bouye, K., Campbell, V., Chief, K., Conlon, K., Crimmins, A.R., Flanagan, B., Gonzalez-Maddux, C.M., Hallisey, E., Hutchins, S., Jantarasami, L., Khoury, S., Keifer, M., Kolling, J., Lynn, K., Manangan, AP., McDonald, M., & ... Wolkin, A. F. (2016). Ch. 9: Populations of concern (pp. 247-286). US Global Change Research Program.
- Gard, M., & Wright, J. (2005). *The obesity epidemic: Science, morality and ideology*. Routledge.
- Gardner, L., & Gibbs III, C. (2013). Class III obese patients: Is your hospital equipped to address their needs. *The Pennsylvania Patient Safety Authority, 10*, 11-18.
- Garrett, A. (2021). Even when getting vaccinated against Covid, fatphobia runs rampant. *The Guardian*. Version accessed 24 April 2022.
<https://www.theguardian.com/commentisfree/2021/jun/14/even-when-getting-vaccinated-against-covid-fatphobia-runs-rampant>
- Garriguet, D. (2008). Obesity and the eating habits of the Aboriginal population. *Health Reports-Statistics Canada, 19*(1), 21.
- Geiling, J. (2010). Critical care of the morbidly obese in disaster. *Critical Care Clinics, 26*(4), 703.
- Gershon, R. R., Qureshi, K. A., Rubin, M. S., & Raveis, V. H. (2007). Factors associated with high-rise evacuation: qualitative results from the World Trade Center Evacuation Study. *Prehospital and Disaster Medicine, 22*(3), 165-173.
- Gill, T., Hughes, R., & Tunidau-Schultz, J. (2002). *Obesity in the Pacific: Too Big to Ignore*. Secretariat of the Pacific Community. Version accessed on 27 June 2022.
<https://apps.who.int/iris/handle/10665/207524>
- Gillings, J. (2010) Special Needs Population: Emergency Management of Bariatric Patients [online], July. Version accessed 2 March, 2016. No longer available online.
- Goodman, L. A. (1961). Snowball sampling. *The Annals of Mathematical Statistics, 148-170*.
- Gouldner, A. W. (1954). *Patterns of industrial bureaucracy*. Free Press
- Government Office for Science. (2007). Foresight Tackling Obesity: Future Choices - Obesity System Atlas. Department of Innovation Universities and Skills. Version accessed on 18 July 2022.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/295153/07-1177-obesity-system-atlas.pdf
- Grant, M. J., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal, 26*(2), 91-108.
- Gray, D. E. (2014). *Doing Research in the Real World* (3rd ed.). Sage Publications Ltd.
- Gray, L. (2017). Social Determinants of Health, Disaster Vulnerability, Severe and Morbid Obesity in adults: Triple Jeopardy? *International Journal of Environmental Research and Public Health, 14*, 1452.
- Gray, L. (2018, April 17-18). *Morbid Obesity and Disaster*. Diversity in Disaster Conference, Melbourne, Australia.
- Gray, L. (2018, September 4-6). Preparing for the Big One: an exploratory study with emergency managers, planners and responders in Aotearoa New Zealand [Poster presentation]. QuakeCore Annual Meeting, Taupō, Aotearoa New Zealand.
- Gray, L. (2020^d). *The Big Body in Disasters*. Emergency Management Summer Institute, Massey University, Wellington, March 2020. Invited oral presentation.
- Gray L. (2021). *Wellbeing*. Emergency Management Summer Institute, Massey University, Wellington, March 2021. Invited oral presentation.
- Gray, L., Adams, L., Airborne, M., Campbell, J., Gillon A., Meadows, A., O'Hara, L., O'Toole, C., Parker, G., Pausé, C., Quigley, F., Rushton, A., Sendziak, B., Solovay, S., Thille, P., Wann, M., Willer, F.,

- Williams, L. (2020^c). *Ethics, Equity, and Risk for Higher Weight People*. Version accessed 21 June 2022. <https://converge.colorado.edu/working-groups/ethics-equity-and-risk-for-higher-weight-people/>
- Gray, L., Becker, J., MacDonald, C., & Johnston, D. (2020^a). Disaster risks identified by people with high body mass: A qualitative study. *Obesity Reviews*, *13*(11), 269-269.
- Gray, L., Becker, J., MacDonald, C., & Johnston, D. (2022^b). Sizing up disaster risk reduction: a qualitative study of the voices of big bodied people in Aotearoa New Zealand. *International Journal of Disaster Risk Reduction*, *67*, 102922
- Gray, L., & MacDonald, C. (2016). Morbid obesity in disasters: bringing the “conspicuously invisible” into focus. *Int. J. Environ. Res. Public Health*, *13*(10), 1029.
- Gray, L., MacDonald, C., Becker, J. S., & Johnston, D. (2022^a). A qualitative study of emergency management considerations for big-bodied people in Aotearoa New Zealand. *International Journal of Disaster Risk Reduction*, *67*, 102646
- Gray, L., McAfee, L., McCrane, E. J., & MacDonald, C. (2018). My grab bag is two suitcases: an autoethnographical view of a super-plus size self-evacuation from Hurricane Irma. *Australian Journal of Emergency Management*, *3*, 50-54.
- Gray, L., Rushton, A., & Hobbs, M. (2020^b). “We only have the one”: Mapping the prevalence of people with high body mass to aid regional emergency management planning in Aotearoa New Zealand. *International Journal of Disaster Risk Reduction*, *51*, 101859.
- Grieve, E., Fenwick, E., Yang, H. C., & Lean, M. (2013). The disproportionate economic burden associated with severe and complicated obesity: a systematic review. *Obesity Reviews*, *14*(11), 883-894.
- Grimaldi, D. A., & Engel, M. S. (2007). Why descriptive science still matters. *BioScience*, *57*(8), 646-647.
- Grix, J. (2002). Introducing students to the generic terminology of social research. *Politics*, *22*(3), 175-186.
- Groenland, E. (2014). The problem analysis for empirical studies. *International Journal of Business and Globalisation*, *12*(3), 249-263.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of Qualitative Research*, *2*(163-194), 105.
- Guest, G., MacQueen, K. M., & Namey, E. E. (2012). Introduction to applied thematic analysis. *Applied Thematic Analysis*, *3*(20), 1-21.
- Gudmundsdottir, G. B., & Brock-Utne, B. (2010). An exploration of the importance of piloting and access as action research. *Educational Action Research*, *18*, 359–372.
- Hajek, A., & König, H. H. (2019). Obesity and loneliness. Findings from a longitudinal population-based study in the second half of life in Germany. *Psychogeriatrics*, *19*(2), 135-140.
- Hajek, A., Kretzler, B., & König, H. H. (2021). The association between obesity and social isolation as well as loneliness in the adult population: a systematic review. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*, *14*, 2765.
- Hales, C. (2015). *Misfits: An ethnographic study of extremely fat patients in intensive care*. [Unpublished doctoral dissertation]. Victoria University of Wellington
- Hales, C., Amankwaa, I., Gray, L., & Rook, H. (2020). Providing care for older adults with extreme obesity in aged residential care facilities: An environmental scan. *Nursing Praxis in New Zealand*, *36*(3), 24-37.
- Hales, C., Gray, L., MacDonald, C., & Purdie, G. (2019). Dissonance in naming adiposity: a quantitative survey of naming preferences from a convenience sample of health professional and lay population in Aotearoa New Zealand. *NZ Medical Journal*, *132*(1496), 20-30.

- Hallegatte, S., Vogt-Schilb, A., Rozenberg, J., Bangalore, M., & Beaudet, C. (2020). From poverty to disaster and back: A review of the literature. *Economics of Disasters and Climate Change*, 4(1), 223-247
- Haller, B., Dorries, B., & Rahn, J. (2006). Media labeling versus the US disability community identity: a study of shifting cultural language. *Disability & Society*, 21(1), 61-75.
- Hancock, T. (2015). *Life in this Fat Body: Exploring the multiple realities of fat embodiment*. [Unpublished masters thesis], Victoria University of Wellington, Wellington, New Zealand. <http://researcharchive.vuw.ac.nz/bitstream/handle/10063/4731/thesis.pdf?sequence=1>
- Handmer, J., Vogel, C., Payne, B., Stevance, A-S., Kirsch-Wood, J., Boyland, M., Han, Q., & Lian, F. (2021). *A Framework for Global Science in support of Risk Informed Sustainable Development and Planetary Health*. United Nations Office for Disaster Risk Reduction. Version accessed 24 April 2022. <https://www.undrr.org/publication/framework-global-science-support-risk-informed-sustainable-development-and-planetary>
- Hariton, E., & Locascio, J. J. (2018). Randomised controlled trials—the gold standard for effectiveness research. *BJOG: An International Journal of Obstetrics And Gynaecology*, 125(13), 1716
- Harjunen, H. 2017. *Neoliberal Bodies and the Gendered Fat Body*. Routledge.
- Harré, R., & Van Langenhove, L. (1999). *Positioning Theory*. Blackwell.
- Harrison, L. D'S. (2021). *Belly of the beast: The politics of anti-fatness as anti-blackness*. North Atlantic Books.
- Harrison, S. E., Potter, S. H., Prasanna, R., Doyle, E. E., & Johnston, D. (2021). 'Where oh where is the data?': Identifying data sources for hydrometeorological impact forecasts and warnings in Aotearoa New Zealand. *International Journal of Disaster Risk Reduction*, 66, 102619.
- Hart, C. (1998). *Doing a literature review: Releasing the Research Imagination*. Sage Publications Ltd.
- Harwood, D., & Farrow, A. (2008). Factors associated with marine injuries during vertical chute evacuation training. *Occupational Medicine*, 58(6), 400-405.
- Haw, C., & Rowell, A. (2011). Obesity and its complications: a survey of inpatients at a secure psychiatric hospital. *The British Journal of Forensic Practice*. 13(4), 270-277.
- Hawaii Disaster Medical Assistance Team. (2010). Treatment Protocols: Bariatric Patients during Mass Casualty Events. PowerPoint presentation. Version accessed online. Link no longer available online. http://www.integratedtrainingsummit.org/presentations/2010/main_training_summit/48_-_treatment_protocols-bariatric_patients_during_mass_casualty_events.pdf
- Hayes, W. J. (1942). An exploratory study of objectives for introductory sociology. *Social Forces*, 21(2), 165-172.
- Health at Every Size Australia Incorporated. (n.d.). What is Health at Every Size (HAES)? Version accessed 16 June 2022. <https://haesaustraliainc.wildapricot.org/What-is-HAES>
- Heath, S. E., & Linnabary, R. D. (2015). Challenges of managing animals in disasters in the US. *Animals*, 5(2), 173-192.
- Hemingway, L., & Priestley, M. (2006). Natural hazards, human vulnerability and disabling societies: A disaster for disabled people? *Review of Disability Studies: An International Journal*, 2(3).
- Henry, E., & Pene, H. (2001). Kaupapa Maori: Locating indigenous ontology, epistemology and methodology in the academy. *Organization*, 8(2), 234-242.
- Hesse-Biber, S. N. (2010). *Mixed methods research: Merging theory with practice*. Guilford Press.
- Hills, M. (2000). Human science research in public health: The contribution and assessment of a qualitative approach. *Canadian Journal of Public Health*, 91(6), 1-4-1-7.

- Home Office (2022). *Open consultation: EEIS consultation document*. UK Government. Version accessed 31 May 2022. <https://www.gov.uk/government/consultations/emergency-evacuation-information-sharing/eeis-consultation-document>
- Horspool, N., Elwood, K., Johnston, D., Deely, J., & Ardagh, M. (2020). Factors influencing casualty risk in the 14th November 2016 MW7. 8 Kaikōura, New Zealand earthquake. *International Journal of Disaster Risk Reduction*, 51, 101917.
- Hudson, L. A., & Ozanne, J. L. (1988). Alternative ways of seeking knowledge in consumer research. *Journal of Consumer Research*, 14(4), 508-521.
- Hughes, J. D. (2013). Responses to natural disasters in the Greek and roman world. In K. Pfeifer & N. Pfeifer (Eds.) *Forces of nature and cultural responses* (pp. 111-137). Springer, Dordrecht.
- Huthwaite, M., Elmslie, J., Every-Palmer, S., Grant, E., & Romans, S. E. (2017). Obesity in a forensic and rehabilitation psychiatric service: a missed opportunity? *Journal of Forensic Practice*, 19(4), 269-277.
- Jack, S. M. (2006). Utility of qualitative research findings in evidence-based public health practice. *Public Health Nursing*, 23(3), 277-283.
- Jankowski, K., & Hamblen, J. (2010). The effects of disaster on people with severe mental illness. *Natl. Cent. PTSD Fact Sheet*. Version accessed 25 April 2022. https://www.ptsd.va.gov/professional/treat/specific/disaster_mental_illness.asp
- Janssen, I. (2013). The public health burden of obesity in Canada. *Canadian Journal of Diabetes*, 37(2), 90-96.
- Jerome, G. J., Young, D. R., Dalcin, A., Charleston, J., Anthony, C., Hayes, J., & Daumit, G. L. (2009). Physical activity levels of persons with mental illness attending psychiatric rehabilitation programs. *Schizophrenia Research*, 108(1-3), 252-257.
- Joffe, H. (2011). Thematic analysis. In: Harper D, Thompson AR, editors. *Qualitative methods in mental health and psychotherapy: A guide for students and practitioners* (pp.209–224). John Wiley & Sons.
- Johnson, P. F., Johnson, C. E., & Sutherland, C. (2012). Stay or go? Human behavior and decision making in bushfires and other emergencies. *Fire Technology*, 48(1), 137-153.
- Johnson, R. B., Onwuegbuzie, A. J., de Waal, C., Stefurak, T., & Hildebrand, D. (2016). 12 Unpacking Pragmatism for Mixed Methods Research. *The BERA/SAGE Handbook of Educational Research*. Sage Publications Ltd.
- Jones, D. S., & Podolsky, S. H. (2015). The history and fate of the gold standard. *The Lancet*, 385(9977), 1502-1503.
- Jones, S.R. (2002). (Re)writing the word: Methodological strategies and issues in qualitative research. *Journal of College Student Development*, 43, 461-473.
- Jutel, A. (2005). Weighing health: The moral burden of obesity. *Social Semiotics*, 15(2), 113-125.
- Kailes, J. I., & Enders, A. (2007). Moving beyond “special needs” A function-based framework for emergency management and planning. *Journal of Disability Policy Studies*, 17(4), 230-237.
- Kako, M., Steenkamp, M., Ryan, B., Arbon, P., & Takada, Y. (2020). Best practice for evacuation centres accommodating vulnerable populations: A literature review. *International Journal of Disaster Risk Reduction*, 46, 101497.
- Kamara, J.K., Wali, N., Agho, K., Renzaho, A.M.N. (2018). Resilience to climate-induced disasters and its overall impact on well-being in Southern Africa: A mixed-methods systematic review protocol. *Syst. Rev.* 7, 127.
- Kaushik, V., & Walsh, C. A. (2019). Pragmatism as a research paradigm and its implications for social work research. *Social Sciences*, 8(9), 255.

- Kelemen, M., & Rumens, N. (2012). Pragmatism and heterodoxy in organization research: Going beyond the quantitative/qualitative divide. *International Journal of Organizational Analysis*, 20(1), 5-12.
- Kelman, I., & Stough, L. (Eds.). (2015). *Disability and disaster: Explorations and exchanges*. Springer.
- Kenney, C. M., & Phibbs, S. (2015). A Māori love story: Community-led disaster management in response to the Ōtautahi (Christchurch) earthquakes as a framework for action. *International Journal of Disaster Risk Reduction*, 14, 46-55.
- Kiger, M. E., & Varpio, L. (2020). Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical Teacher*, 42(8), 846-854.
- Kinglake A.W. (1844). *Eothen*. John Ollivier.
- Kitahara, C. M., Flint, A. J., Berrington de Gonzalez, A., Bernstein, L., Brotzman, M., MacInnis, R. J., Robien, K., Rosenberg, P.S., Singh, P. N., Weiderpass, E., Adami, H.O., Anton-Culver, H., Ballard-Barbash, R., Buring, J.E., Freedman, D.M., Fraser, G.E., Beane Freeman, L.E., Gapstur, S.M., Gaziano, J.M., ... & Hartge, P. (2014). Association between class III obesity (BMI of 40–59 kg/m²) and mortality: a pooled analysis of 20 prospective studies. *PLoS Medicine*, 11(7), e1001673.
- Kyle, T. K., & Puhl, R. M. (2014). Putting people first in obesity. *Obesity*, 22(5), 1211.
- Klinenberg, E. (2015). *Heat wave: A social autopsy of disaster in Chicago*. University of Chicago Press.
- Latner, J. D., Stunkard, A. J., & Wilson, G. T. (2005). Stigmatized students: age, sex, and ethnicity effects in the stigmatization of obesity. *Obesity Research*, 13(7), 1226-1231.
- Laverty, S. M. (2003). Hermeneutic phenomenology and phenomenology: A comparison of historical and methodological considerations. *International Journal of Qualitative Methods* 2(3), 21-35
- Lavrakas, P. J. (2008). *Encyclopedia of survey research methods* (Vols. 1-0). Sage Publications Ltd.
- Lee, J. A., & Pausé, C. J. (2016). Stigma in practice: Barriers to health for fat women. *Frontiers in Psychology*, 7, 2063.
- Leichter-Flack, F. (2011). *Saving or leaving to die. Medical ethics and disaster*. Books and ideas. Version accessed 20 June 2022. <https://booksandideas.net/Saving-or-Leaving-to-Die.html>
- Levac, J., Toal-Sullivan, D., & OSullivan, T. L. (2012). Household emergency preparedness: a literature review. *Journal of Community Health*, 37(3), 725-733.
- Levers, M. J. D. (2013). Philosophical paradigms, grounded theory, and perspectives on emergence. *Sage Open*, 3(4), 2158244013517243.
- Levine, j., Chengappa, K. R., Patel, A., Vagnucci, A., John, V., Brar, J. S., Chalasani, L., Parepally, H., & Ganguli, R. (2001). Obesity and medical illnesses in psychiatric patients admitted to a long-term psychiatric facility. *Journal of Psychiatric Practice*, 7(6), 432-439.
- Levitt, A. (2016). *Crossing The Troll Bridge - The Framing Of Fat Bodies On Social Media*. [Unpublished masters thesis], Wayne State University, Detroit, United States. https://digitalcommons.wayne.edu/oa_theses/494
- Lewin A.M. (2005). Katrina victims “Blessing : clothes that fit. *ABC News*. Version accessed 30 May 2022. <https://abcnews.go.com/Business/HurricaneKatrina/story?id=1144281&page=1>
- Liamputtong, P. (2009). *Qualitative research methods* (3rd ed.). Oxford University Press.
- Light, A. E., Benson-Greenwald, T. M., & Diekman, A. B. (2022). Gender representation cues labels of hard and soft sciences. *Journal of Experimental Social Psychology*, 98, 104234.
- Lindsay, J. R. (2003). The determinants of disaster vulnerability: Achieving sustainable mitigation through population health. *Natural Hazards*, 28(2), 291-304.
- Lopresti, A. L., & Drummond, P. D. (2013). Obesity and psychiatric disorders: commonalities in dysregulated biological pathways and their implications for treatment. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 45, 92-99.

- Louie, J. K., Acosta, M., Samuel, M. C., Schechter, R., Vugia, D. J., Harriman, K., & Matyas, B. T. (2011). A novel risk factor for a novel virus: obesity and 2009 pandemic influenza A (H1N1). *Clinical Infectious Diseases*, 52(3), 301-312.
- Lupton, D. (2013). *Fat politics: Collected writings*. Version accessed 24 April 2022. <https://ses.library.usyd.edu.au/bitstream/handle/2123/9021/?sequence=2>
- Lupton, D. (2016). Explainer: what is fat studies? *The Conversation*. Version last accessed 25 April 2022. <https://theconversation.com/explainer-what-is-fat-studies-63108>
- Lurie, N. (2009). H1N1 influenza, public health preparedness, and health care reform. *New England Journal of Medicine*, 361(9), 843-845.
- Lustig, R. H. (2013). *Fat chance: Beating the odds against sugar, processed food, obesity, and disease*. Penguin.
- Lynch, D. M. (1996). The heavy issue: Weight-based discrimination in the airline industry. *Journal of Air Law and Commerce*, 62, 203.
- Mace, S. E., Doyle, C. J., Askew, K., Bradin, S., Baker, M., Joseph, M. M., & Sorrentino, A. (2018a). Planning considerations for persons with access and functional needs in a disaster-Part 1: Overview and legal. *American Journal of Disaster Medicine*, 13(2), 69-83.
- Mace, S. E., Doyle, C. J., Askew, K., Bradin, S., Baker, M., Joseph, M. M., & Sorrentino, A. (2018b). Planning considerations for persons with access and functional needs in a disaster-Part 2: Evacuation and sheltering. *American Journal of Disaster Medicine*, 13(3), 195-206.
- Mace, S. E., Doyle, C. J., Askew, K., Bradin, S., Baker, M., Joseph, M. M., & Sorrentino, A. (2018c). Planning considerations for persons with access and functional needs in a disaster-Part 3: Medical CMIST and recommendations. *American Journal of Disaster Medicine*, 13(3), 207-220.
- Mackereth, C. (2014). Public health priorities. *Community Practitioner*, 87(11), 20.
- Madill, A., Jordan, A., & Shirley, C. (2000). Objectivity and reliability in qualitative analysis: Realist, contextualist and radical constructionist epistemologies. *British Journal of Psychology*, 91(1), 1-20.
- Maja-Schultz, T., & Swain, B. (2012). Disabled adults in adult care facilities facing disasters in New York City: An aggregate assessment. *Care Management Journals*, 13(2), 67-74.
- Manokaran, R., Pausé, C., Roßmöller, M., & Vilhjálmsdóttir, T. M. (2021). 'Nothing about us without us': Fat people speak. *Qualitative Research in Psychology*, 18(4), 537-549.
- Marmot, M., Friel, S., Bell, R., Houweling, T. A., Taylor, S., & Commission on Social Determinants of Health. (2008). Closing the gap in a generation: health equity through action on the social determinants of health. *The Lancet*, 372(9650), 1661-1669.
- Mason, K., Lindberg, K., Haenfling, C., Schori, A., Marsters, H., Read, D., & Borman, B. (2021). Social vulnerability indicators for flooding in Aotearoa New Zealand. *International Journal of Environmental Research and Public Health*, 18(8), 3952.
- Massey University. (2015). Massey University code of ethical conduct for research, teaching and evaluations involving human participants. Revised Code 2017 (pp. 1-24). Palmerston North, New Zealand: Massey University. Version accessed 26 April 2022. <https://www.massey.ac.nz/massey/fms/PolicyGuide/Documents/c/code-of-ethical-conduct-for-research,-teaching-and-evaluations-involving-human-participants.pdf>
- Matapo, J. J. (2021). *Tagata o le Moana—The people of Moana: Traversing Pacific Indigenous philosophy in Pasifika education research*. Doctoral dissertation, Auckland University of Technology.
- Mather M., & Lawrence, K. (2021, Mar 5). Tsunami warning: Residents who evacuated coastal Bay of Plenty towns and Northland can return home. *Stuff*. Version accessed 2 January 2022. <https://www.stuff.co.nz/national/124444257/tsunami-warning-residents-who-evacuated-coastal-bay-of-plenty-towns-and-northland-can-return-home>

- Maxcy, S. J. (2003). The new pragmatism and social science and educational research. In *Ethical foundations for educational administration* (pp. 155-177). Routledge.
- Maxwell, J. (1992). Understanding and Validity in Qualitative Research. *Harvard Educational Review* 62(3): 279–301.
- Mayes, C. (2015). *The biopolitics of lifestyle: Foucault, ethics and healthy choices*. Routledge.
- McBride, S. K., Becker, J. S., & Johnston, D. M. (2019). Exploring the barriers for people taking protective actions during the 2012 and 2015 New Zealand ShakeOut drills. *International Journal of Disaster Risk Reduction*, 37, 101150.
- McBride, S. K., Smith, H., Morgoch, M., Sumy, D., Jenkins, M., Peek, L., Bostrom, A., Baldwin, D., Reddy, E., de Groot, R., & Becker, J. (2022). Evidence-based guidelines for protective actions and earthquake early warning systems. *Geophysics*, 87(1), WA77-WA102.
- McCubbin, L. D., & Antonio, M. (2012). Discrimination and obesity among Native Hawaiians. *Hawai'i Journal of Medicine & Public Health*, 71(12), 346.
- McKinlay, E., McDonald, J., Darlow, B., & Perry, M. (2017). Social networks of patients with multimorbidity: a qualitative study of patients' and supporters' views. *Journal of Primary Health Care*, 9(2), 153-161.
- McLennan, J., Every, D., & Reynolds, A. (2021). Disability and natural hazard emergency preparedness in an Australian sample. *Natural Hazards*, 107(2), 1489-1499.
- Meadows, A. (2018). Discrimination against fat people is so endemic, most of us don't even realise it's happening. *The Conversation*. Version accessed 26 April 2022. <https://theconversation.com/discrimination-against-fat-people-is-so-endemic-most-of-us-dont-even-realise-its-happening-94862>
- Meadows, A., & Daniélsdóttir, S. (2016). What's in a word? On weight stigma and terminology. *Frontiers in Psychology*, 7, 1527.
- Mendez, M. A., Monteiro, C. A., & Popkin, B. M. (2005). Overweight exceeds underweight among women in most developing countries. *The American Journal of Clinical Nutrition*, 81(3), 714-721.
- Mertens, D. M., Bledsoe, K. L., Sullivan, M., & Wilson, A. (2010). Utilization of mixed methods for transformative purposes. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of Mixed Methods in Social and Behavioral Research* (pp. 193-215). Sage Publications Ltd.
- Merton, R. K. (1984). The Fallacy of the Latest Word: The Case of "Pietism and Science". *American Journal of Sociology*, 89(5), 1091-1121.
- Merton, R. K. (1949). Social structure and anomie. In D. R. Cressey and DA Ward (Eds.), *Delinquency, Crime, and Social Process*. New York.
- Miller, P. L. (2012). Preparing minority populations for emergencies: connecting to build a more resilient community [unpublished Masters thesis]. Naval Postgraduate School. <https://apps.dtic.mil/sti/pdfs/ADA574435.pdf>
- Ministry of Health, Clinical Trials Research Unit. (2009). Clinical Guidelines for Weight Management in New Zealand Adults; Ministry of Health. Version accessed 12 September 2017. www.health.govt.nz/publication/clinical-guidelines-weight-management-new-zealand-adults
- Ministry of Health. (2015). *National Health Emergency Plan, A Framework for the Health and Disability Sector*, Ministry of Health. Version accessed 26 April 2022. <https://www.health.govt.nz/publication/national-health-emergency-plan-framework-health-and-disability-sector>
- Ministry of Health. (2016). *Framework for Psychosocial Support in Emergencies*. Ministry of Health. Version accessed 26 April 2022. <https://www.health.govt.nz/publication/framework-psychosocial-support-emergencies>

- Ministry of Health. (2017) *New Zealand Influenza Pandemic Plan: A Framework for Action, 2nd ed.*; Ministry of Health. Version accessed 26 April 2022. <https://www.health.govt.nz/your-health/healthy-living/emergency-management/pandemic-planning-and-response/influenza-pandemic-plan>
- Ministry of Health. (2019). *Methodology Report 2017/18: New Zealand Health Survey*. Ministry of Health [updated 2019]. Version accessed 20 June 2022. <https://www.health.govt.nz/publication/methodology-report-2017-18-new-zealand-health-survey>
- Ministry of Health. (2020a). *Annual Update of Key Results 2019/20: New Zealand Health Survey* [Data File]. Ministry of Health. Version accessed 10 October 2021. <https://www.health.govt.nz/publication/annual-update-key-results-2019-20-new-zealand-health-survey>
- Ministry of Health. (2020b). *Immunisation Handbook*. Ministry of Health. Version accessed 25 June 2022. <https://www.health.govt.nz/our-work/immunisation-handbook-2020>
- Ministry of Health. (2021). *Annual Data Explorer 2020/21: New Zealand Health Survey* [Data File]. Ministry of Health. Version accessed 14 January, 2022. <https://www.health.govt.nz/publication/annual-update-key-results-2020-21-new-zealand-health-survey>
- Mizutori, M. (2020). *Time to say goodbye to “Natural Disasters.”* PreventionWeb blog. Version accessed 18 January 2022. <https://www.preventionweb.net/blog/time-say-goodbye-natural-disasters>
- Monaghan, L. F., Bombak, A. E., & Rich, E. (2018). Obesity, neoliberalism and epidemic psychology: critical commentary and alternative approaches to public health. *Critical Public Health*, 28(5), 498-508.
- Monteiro, C. A., Moura, E. C., Conde, W. L., & Popkin, B. M. (2004). Socioeconomic status and obesity in adult populations of developing countries: A review. *Bulletin of the World Health Organization*, 82, 940-946.
- Moon, K., & Blackman, D. (2014). A guide to understanding social science research for natural scientists. *Conservation Biology*, 28(5), 1167-1177.
- Moore, S., Daniel, M., Linnan, L., Campbell, M., Benedict, S., & Meier, A. (2004). After Hurricane Floyd passed: Investigating the social determinants of disaster preparedness and recovery. *Family & Community Health*, 27(3), 204-217.
- Morgan, D. L. (2014). Pragmatism as a paradigm for social research. *Qualitative Inquiry*, 20(8), 1045-1053.
- Morrison, K. W. (2009). Maximum Capacity: America’s Obesity Epidemic and its Effect on PPE and Workplace Safety. *Safety + Health*. Version accessed 20 June 2022. <https://www.safetyandhealthmagazine.com/articles/maximum-capacity-2>
- Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods*, 1(2), 13-22.
- Moser, J. A. S., Galindo-Fraga, A., Ortiz-Hernández, A. A., Gu, W., Hunsberger, S., Galán-Herrera, J. F., Guerrero, M.L., Ruiz-Palacios, G.M., & Cherpitel, D. E. N. (2019). Underweight, overweight, and obesity as independent risk factors for hospitalization in adults and children from influenza and other respiratory viruses. *Influenza and Other Respiratory Viruses*, 13(1), 3-9.
- Naser-Hall, E. (2013). The disposable class: Ensuring poverty consciousness in natural disaster preparedness. *DePaul Journal for Social Justice*, 7, 55.
- National Academies of Sciences, Engineering, and Medicine. (2017). *Communicating science effectively: A research agenda*. National Academies.

- National Association to Advance Fat Acceptance. (2017). *October Newsletter*. Version accessed 22 April 2022. <http://archive.benchmarkemail.com/NAAFA/newsletter/October-2017-NAAFA-Newsletter#article4>
- National Diabetes Service Scheme. (2021). The needs of people with diabetes and other chronic conditions in natural disasters. Diabetes Australia and the Australian Diabetes Educators Association. Version accessed 24 April 2022 (first published November 2015). <https://www.ndss.com.au/wp-content/uploads/resources/booklet-emergency-guide-services-councils-not-for-profit.pdf>
- National Emergency Management Agency (2020). Coordinated Incident Management System (CIMS), 3rd ed., 2020. Version accessed 26 April 2022. <https://www.civildefence.govt.nz/resources/coordinated-incident-management-system-cims-third-edition/>
- National Research Council. (2009). *Applications of social network analysis for building community disaster resilience: workshop summary*. National Academies Press.
- Nepal, V., Banerjee, D., Perry, M., & Scott, D. (2012). Disaster preparedness of linguistically isolated populations: Practical issues for planners. *Health Promotion Practice*, 13(2), 265-271.
- New Zealand Government. (2017). *Three in four New Zealanders live in the North Island*. Version accessed 22 April 2022. <https://www.stats.govt.nz/news/three-in-four-new-zealanders-live-in-the-north-island>
- NoBody is Disposable Coalition. (2020). NoBody is disposable. Version accessed 26 April 2022. <https://nobodyisdisposable.org/about/>
- Nohrstedt, D., Parker, C. F., von Uexkull, N., Mård, J., Albrecht, F., Petrova, K., Nyberg, L., Göteman, M., Hileman, J., Messori, G. & Di Baldassarre, G. (2022). Disaster risk reduction and the limits of truisms: Improving the knowledge and practice interface. *International Journal of Disaster Risk Reduction*, 67, 102661.
- Nomura, S., Parsons, A. J., Hirabayashi, M., Kinoshita, R., Liao, Y., & Hodgson, S. (2016). Social determinants of mid-to long-term disaster impacts on health: A systematic review. *International Journal of Disaster Risk Reduction*, 16, 53-67.
- Non Communicable Disease Risk Factor Collaboration. (2016). Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19· 2 million participants. *The Lancet*, 387(10026), 1377-1396.
- Non Communicable Disease Risk Factor Collaboration. (2017). Country Profile – USA – Body-mass index. Version accessed 30 May 2022. <https://ncdrisc.org/country-profile.html>
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1),
- Nowlin, M. C., & Wehde, W. (2021). Social capital and hurricane warning response. *International Journal of Disaster Risk Reduction*, 65, 102536.
- Nuttall, F. Q. (2015). Body mass index: obesity, BMI, and health: a critical review. *Nutrition Today*, 50(3), 117.
- O'Dea, K. (1991). Westernisation, insulin resistance and diabetes in Australian Aborigines. *Medical Journal of Australia*, 155(4), 258-264.
- O'Hara, L., & Taylor, J. A. (2014). Health at every size: A weight-neutral approach for empowerment, resilience and peace. *International Journal of Social Work and Human Services Practice*, 2(6), 272-282.
- Ofri, D. (2012). The storm and the aftermath. *New England Journal of Medicine*, 367(24), 2265-2267.
- Oliver-Smith, A. (1996). Anthropological research on hazards and disasters. *Annual Review of Anthropology*, 25(1), 303-328.

- Oliver-Smith, A. (2013). Theorizing vulnerability in a globalized world: a political ecological perspective, in: G. Bankoff, G. Frerks, D. Hilhorst (Eds.), In *Mapping Vulnerability* (pp. 29-43). Routledge.
- Onwuegbuzie, A. J., Johnson, R. B., & Collins, K. M. (2009). Call for mixed analysis: A philosophical framework for combining qualitative and quantitative approaches. *International Journal of Multiple Research Approaches*, 3(2), 114-139.
- Papanastasiou, E. (2012). Interventions for the metabolic syndrome in schizophrenia: a review. *Therapeutic Advances in Endocrinology and Metabolism*, 3(5), 141-162.
- Park, Y. S., Konge, L., & Artino, A. R. (2020). The positivism paradigm of research. *Academic Medicine*, 95(5), 690-694.
- Parkinson, D. (2015). Increased violence against women after disaster. In *Proceedings of the First Northern European Conference on Emergency and Disaster Studies*, Copenhagen, Denmark, 9–11 December.
- Paton, D. (2019). Disaster risk reduction: Psychological perspectives on preparedness. *Australian Journal of Psychology*, 71(4), 327-341.
- Paton, D.; & McClure, J. (2013). *Preparing for Disasters: Building Household and Community Capacity*. Charles C. Thomas Publisher.
- Patrick, R. W. (2004). Morbid obesity: considerations for the EMS provider. *Emergency Medical Services*, 33(11), 34-34.
- Patton, M. Q. (2014). *Qualitative research & evaluation methods: Integrating theory and practice*. Sage Publications Ltd.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods*. SAGE Publications Ltd.
- Patton, M. Q. (2002). Two decades of developments in qualitative inquiry: A personal, experiential perspective. *Qualitative Social Work*, 1(3), 261-283.
- Pausé, C., Parker, G., & Gray, L. (2021). Resisting the problematisation of fatness in COVID-19: in pursuit of health justice. *International Journal of Disaster Risk Reduction*, 54, 102021.
- Pausé, C. (2012). On the epistemology of fatness. *Friend of Marilyn*. Version accessed 20 April, 2022. <https://www.friendofmarilyn.com/blog/2012/04/05/the-epistemology-of-fatness>
- Pausé, C. (2020). Ray of light: Standpoint theory, fat studies, and a new fat ethics. *Fat Studies*, 9(2), 175-187.
- Pausé, C.J. (2021). On protecting fat people from COVID-19. *Friend of Marilyn*. Version accessed 25 April 2022. <https://www.friendofmarilyn.com/blog/onprotectingfatpeoplefromcv19>
- Pausé, C., & Taylor, S. R. (2021). Fattening up scholarship. *The Routledge International Handbook of Fat Studies* (pp. 1-18). Routledge.
- Pawson, R., & Tilley, N. (1997). *Realistic evaluation*. Sage Publications Ltd.
- Peacock, R. D., Hoskins, B. L., & Kuligowski, E. D. (2012). Overall and local movement speeds during fire drill evacuations in buildings up to 31 stories. *Safety Science*, 50(8), 1655-1664.
- Peek, L. (2008). Children and disasters: Understanding vulnerability, developing capacities, and promoting resilience—An introduction. *Children Youth and Environments*, 18(1), 1-29.
- Peek, L., & Stough, L. M. (2010). Children with disabilities in the context of disaster: A social vulnerability perspective. *Child Development*, 81(4), 1260-1270.
- Peek, L., Tobin, J., Adams, R. M., Wu, H., & Mathews, M. C. (2020). A framework for convergence research in the hazards and disaster field: The natural hazards engineering research infrastructure CONVERGE facility. *Frontiers in Built Environment*, 6, 110.
- Phelan, S. M., Puhl, R. M., Burke, S. E., Hardeman, R., Dovidio, J. F., Nelson, D. B., Przedworski, J., Burgess, D.J., Perry, S., Yeazel, M.W., & van Ryn, M. (2015). The mixed impact of medical

- school on medical students' implicit and explicit weight bias. *Medical Education*, 49(10), 983-992.
- Phillimore, J., & Goodson, L. (2004). Progress in qualitative research in tourism: Epistemology, ontology and methodology. In *Qualitative research in tourism* (pp. 21-23). Routledge.
- Plough, A., Fielding, J. E., Chandra, A., Williams, M., Eisenman, D., Wells, K. B., Law, G.Y., Fogleman, S., & Magaña, A. (2013). Building community disaster resilience: perspectives from a large urban county department of public health. *American Journal of Public Health*, 103(7), 1190-1197.
- Pomeranz, J. L. (2008). A historical analysis of public health, the law, and stigmatized social groups: the need for both obesity and weight bias legislation. *Obesity*, 16(S2), S93-S103.
- Pontzer, H., Raichlen, D. A., Wood, B. M., Mabulla, A. Z., Racette, S. B., & Marlowe, F. W. (2012). Hunter-gatherer energetics and human obesity. *PLoS One*, 7(7), e40503.
- Prentice, A. M., & Jebb, S. A. (2001). Beyond body mass index. *Obesity Reviews*, 2(3), 141-147.
- Prohaska, A., & Gailey, J. A. (2019). Theorizing fat oppression: Intersectional approaches and methodological innovations. *Fat Studies*, 8(1), 1-9.
- Prospective Studies Collaboration. (2009). Body-mass index and cause-specific mortality in 900 000 adults: collaborative analyses of 57 prospective studies. *The Lancet*, 373(9669), 1083-1096.
- Prottengeier, J., Meyer, M., & Münster, T. (2014). Transfer of obese patients in European air ambulances. *European Journal of Emergency Medicine*, 21(5), 377-379.
- Puhl, R. M. (2020). What words should we use to talk about weight? A systematic review of quantitative and qualitative studies examining preferences for weight-related terminology. *Obesity Reviews*, 21(6), e13008.
- Puhl, R., & Brownell, K. D. (2001). Bias, discrimination, and obesity. *Obesity Research*, 9(12), 788-805.
- Puhl, R. M., & Heuer, C. A. (2009). The stigma of obesity: a review and update. *Obesity*, 17(5), 941.
- Puhl, R. M., & Heuer, C. A. (2010). Obesity stigma: important considerations for public health. *American Journal of Public Health*, 100(6), 1019-1028.
- Puhl, R. M., & King, K. M. (2013). Weight discrimination and bullying. *Best Practice & Research Clinical Endocrinology & Metabolism*, 27(2), 117-127.
- Qualtrics^{XM} © (2018). Qualtrics. Version accessed April 2018. www.qualtrics.com
- Ramme, A.J., Shaleen, V., & McLaurin, T.M. (2015). Superstorm Sandy's Forgotten Patient: A lesson in Emergency Preparedness in Severe Obesity. *Obesity*, 23, 253-254.
- Rand, A. (1990). *Introduction to Objectivist Epistemology: Expanded Second Edition*. Penguin.
- Rich, E., Monaghan, L. F., & Aphramor, L. (Eds.). (2010). *Debating Obesity*. Palgrave Macmillan.
- Ringel, J. S., Chandra, A., Williams, M., Ricci, K. A., Felton, A., Adamson, D. M., Weden, M.M., & Huang, M. (2011). Enhancing public health emergency preparedness for special needs populations: a toolkit for state and local planning and response. *Rand Health Quarterly*, 1(3).
- Rios, L., & Cullen, T. (2006). A disaster medical assistance team operates a hurricane evacuation shelter with US public health service support. *Preventing Chronic Disease*, 3(2).
- Roberto, C. A., Swinburn, B., Hawkes, C., Huang, T. T., Costa, S. A., Ashe, M., Zwicker, L., Cawley, J.H., & Brownell, K. D. (2015). Patchy progress on obesity prevention: emerging examples, entrenched barriers, and new thinking. *The Lancet*, 385(9985), 2400-2409.
- Robinson, O. C. (2014). Sampling in interview-based qualitative research: A theoretical and practical guide. *Qualitative Research in Psychology*, 11(1), 25-41.
- Ronan, K. R., Alisic, E., Towers, B., Johnson, V. A., & Johnston, D. M. (2015). Disaster preparedness for children and families: a critical review. *Current psychiatry reports*, 17(7), 58.

- Rorty, R., & Putnam, H. (1998). *The revival of pragmatism: New essays on social thought, law, and culture*. Duke University Press.
- Rössner, S. (2007). Adolphe Quetelet (1796-1874). *Obesity reviews: an official journal of the International Association for the Study of Obesity*, 8(2), 183.
- Rothbauer, P. (2008). Triangulation. In L.M. Given (Ed). *The SAGE Encyclopedia of Qualitative Research Methods*, 1, 892-894. Sage Publications Ltd
- Rothblum, E.D. & Solovay, S. (Eds). (2009). *The Fat Studies Reader*. New York University Press.
- Rowais, S. (2018). Top 10 Biggest and strongest rugby players in the world. *Sportsgoogly.com*. Version accessed 19 June 2022. <https://www.sportsgoogly.com/strongest-rugby-players-in-the-world/#:~:text=Bill%20Cavubati%20is%20the%20world%E2%80%99s%20heaviest%20rugby%20player,made%20him%20a%20cult%20hero%20amongst%20the%20fans>
- Russell, B. (1905). On Denoting. *Mind*, 14(56) 479-493. Oxford University Press.
- Sahin, S., & Mete, J. (2021). A Brief Study on Descriptive Research: Its Nature and Application in Social Science. *International Journal of Research and Analysis in Humanities*, 1(1), 11-11.
- Sainsbury, A., & Hay, P. (2014). Call for an urgent rethink of the 'health at every size' concept. *Journal of Eating Disorders*, 2(1), 1-4.
- Sandelowski, M. (2000). Whatever Happened to Qualitative Description? *Research in Nursing & Health*, 23(4), 334-40. doi:10.1002/1098-240X(200008)23:43.0.CO
- Sandelowski, M. & Barroso, J. (2003). Classifying the findings in qualitative studies. *Qualitative Health Research*, 13(7):905-923
- Sassi, F. (2010). *Obesity and the Economics of Prevention*. Edward Elgar Publishing.
- Satinsky, S., & Ingraham, N. (2014). At the intersection of public health and fat studies: Critical perspectives on the measurement of body size. *Fat Studies*, 3(2), 143-154
- Saunders, J. M. (2007). Vulnerable populations in an American Red Cross shelter after hurricane Katrina. *Perspectives in Psychiatric Care*, 43(1), 30-37.
- Sharpe, H., & Bradbury, S. (2015). *Understanding Excess Body Weight: New Zealand Health Survey*. Version accessed 12 February 2022. <https://www.health.govt.nz/publication/understanding-excess-body-weight-new-zealand-health-survey>
- Schorb, F. (2022). Fat as a neoliberal epidemic: Analyzing fat bodies through the lens of political epidemiology. *Fat Studies*, 11(1), 70-82.
- Schuetz, A. (1945). On Multiple Realities. *Philosophy and Phenomenological Research*, 5(4), 533-576.
- Schulz, L. O., & Chaudhari, L. S. (2015). High-risk populations: the Pimas of Arizona and Mexico. *Current Obesity Reports*, 4(1), 92-98.
- Schwartz, M. B., Vartanian, L. R., Nosek, B. A., & Brownell, K. D. (2006). The influence of one's own body weight on implicit and explicit anti-fat bias. *Obesity*, 14(3), 440-447.
- Sciabarra, C. M. (2012). "The Journal of Ayn Rand Studies" The Best is Yet to Come. *The Journal of Ayn Rand Studies*, 12(1), 1-3.
- Scott, J. (1988). Social network analysis. *Sociology*, 22(1), 109-127.
- Scotland, J. (2012). Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretive, and critical research paradigms. *English Language Teaching*, 5(9), 9-16.
- Semenza, J. C., Rubin, C. H., Falter, K. H., Selanikio, J. D., Flanders, W. D., Howe, H. L., & Wilhelm, J. L. (1996). Heat-related deaths during the July 1995 heat wave in Chicago. *New England Journal of Medicine*, 335(2), 84-90.

- Shaw, R., Izumi, T., & Shi, P. (2016). Perspectives of science and technology in disaster risk reduction of Asia. *International Journal of Disaster Risk Science*, 7(4), 329-342.
- Smith, J. A. & Osborn, M. (2003). Interpretative phenomenological analysis. In: Smith, JA, editor. *Qualitative psychology: a practice guide to methods*. Sage Publications Ltd
- Smith, L. T. (2021). *Decolonizing methodologies: Research and indigenous peoples*. Bloomsbury Publishing.
- Sober, Elliott (2013). *Core Questions in Philosophy: A Text with Readings* (6th ed.). Pearson Education.
- Soujaa, I., Nukpezah, J. A., & Benavides, A. D. (2021). Coordination Effectiveness During Public Health Emergencies: An Institutional Collective Action Framework. *Administration & Society*, 53(7), 1014-1045.
- Squance, H. (2011). *Animal welfare emergency management: educational needs*. [Unpublished master's dissertation], Massey University, Palmerston North, New Zealand.
- Squance, H. (2021) *Enhancing Multiagency Collaboration in Animal Welfare Emergency Management*. [Unpublished doctoral thesis], Massey University, Wellington, New Zealand.
- Staupe-Delgado, R. (2019). Analysing changes in disaster terminology over the last decade. *International Journal of Disaster Risk Reduction*, 40, 101161.
- Staupe-Delgado, R., & Kruke, B. I. (2018). Preparedness: Unpacking and clarifying the concept. *Journal of Contingencies and Crisis Management*, 26(2), 212-224
- Stebbins, R. A. (2001). *Exploratory Research in the Social Sciences* (Vol. 48). Sage Publications Ltd.
- Steup, M. (2008). Epistemology in the twentieth century. In *The Routledge Companion to Twentieth Century Philosophy* (pp. 485-538). Routledge.
- Stewart, G. (2020). *Māori philosophy: Indigenous thinking from Aotearoa*. Bloomsbury Publishing.
- Stewart, A., Nevill, A., & Johnson, C. (2019). The Ability of Adults of Different Size to Egress Through Confined Space Apertures. *Human Factors*, 61(6), 895-905.
- Storer, N. W. (1967). The hard sciences and the soft: Some sociological observations. *Bulletin of the Medical Library Association*, 55(1), 75.
- Stouffer, S. A., & Lazarsfeld, P. F. (1937). Research Memorandum on the Family in the Depression. *Social Science Research Council Bulletin*, 29, 231.
- Stough, L. M. (2015). World Report on Disability, Intellectual Disabilities, and Disaster Preparedness: Costa Rica as a Case Example. *Journal of Policy and Practice in Intellectual Disabilities*, 12(2), 138-146.
- Stough, L. M., & Kang, D. (2015). The Sendai framework for disaster risk reduction and persons with disabilities. *International Journal of Disaster Risk Science*, 6(2), 140-149.
- Stough, L. M., Sharp, A. N., Decker, C., & Wilker, N. (2010). Disaster case management and individuals with disabilities. *Rehabilitation Psychology*, 55(3), 211.
- Strawson, P. F. (1950). On referring. *Mind*, 59(235), 320-344.
- Strings, S. (2015). Obese black women as “social dead weight”: Reinventing the “diseased black woman.” *Signs: Journal of Women in Culture and Society*, 41(1), 107-130.
- Strings, S. (2019). *Fearing the Black Body*. New York University Press.
- Strum, R., & Hattori, A. (2013). Morbid obesity rates continue to rise rapidly in the US. *International Journal of Obesity (London)*, 37(6), 889-891.
- Stubbe, M., Macdonald, L., Tester, R., Gray, L., Hilder, J., Dew, K., & Dowell, T. (2020). Talking About Diabetes and Healthy Lifestyle in Primary Healthcare—Translating Research Findings into Practice. In *Professional Communication* (pp. 129-150). Palgrave Macmillan.


- Sun, Y., Wang, Q., Yang, G., Lin, C., Zhang, Y., & Yang, P. (2016). Weight and prognosis for influenza A (H1N1) pdm09 infection during the pandemic period between 2009 and 2011: a systematic review of observational studies with meta-analysis. *Infectious Diseases*, 48(11-12), 813-822.
- Sutherland M, & Wilkins, A. (2018). Kiwi researchers want fat-shaming made illegal. *Newshub*. Version accessed 3 April 2022. https://www.newshub.co.nz/home/lifestyle/2018/10/kiwi-researchers-want-fat-shaming-made-illegal.amp.html?__twitter_impression=true
- Sutin, A. R., & Terracciano, A. (2013). Perceived weight discrimination and obesity. *PLoS One*, 8(7), e70048.
- Swanson, J. M. (2001). The nature of outcomes. In J.M. Morse, J. M. Swanson, & A. J. Kuzel (Eds.). *The Nature of Qualitative Evidence* (pp. 223–255). Sage Publications Ltd
- Swedberg, R. (2020). *Exploratory Research*. In C. Elman, J. Gerring, & J. Mahoney (Eds.), *The Production of Knowledge: Enhancing Progress in Social Science* (pp. 17-41). Cambridge University Press.
- Sweetman, D., Badiie, M., & Creswell, J. W. (2010). Use of the transformative framework in mixed methods studies. *Qualitative Inquiry*, 16(6), 441-454.
- Swinburn, B. A., Sacks, G., Hall, K. D., McPherson, K., Finegood, D. T., Moodie, M. L., & Gortmaker, S. L. (2011). The global obesity pandemic: shaped by global drivers and local environments. *The Lancet*, 378(9793), 804-814.
- Tashakkori, A., & Teddlie, C. (2009). Integrating qualitative and quantitative approaches to research. *The SAGE Handbook of Applied Social Research Methods*, 2, 283-317. Sage Publications Ltd.
- Taylor, I.L. (2014). Surviving hurricane Katrina, *Pharos Alpha Omega Alpha Honor Medical Society*, 78, 6–12.
- Taylor, M., Lynch, E., Burns, P., & Eustace, G. (2015). The preparedness and evacuation behaviour of pet owners in emergencies and natural disasters. *Australian Journal of Emergency Management*, 30(2), 18-23.
- Thorne, S., Kirkham, S. R., & MacDonald-Emes, J. (1997). Interpretive Description: A Noncategorical Qualitative Alternative for Developing Nursing Knowledge. *Research in Nursing & Health* 20(2): 169–77.
- Tolich, M., & Davidson, C. (1999). *Starting fieldwork: An introduction to qualitative research in New Zealand*. Oxford University Press.
- Trainer, S., Brewis, A., Williams, D., & Chavez, J. R. (2015). Obese, fat, or “just big”? Young adult deployment of and reactions to weight terms. *Human Organization*, 74(3), 266-275.
- Tremblay, M. S., Pérez, C. E., Ardern, C. I., Bryan, S. N., & Katzmarzyk, P. T. (2005). Obesity, overweight. *Health Reports*, 16(4), 23.
- Tuli, F. (2010). The basis of distinction between qualitative and quantitative research in social science: Reflection on ontological, epistemological and methodological perspectives. *Ethiopian Journal of Education and Sciences*, 6(1), 97-108.
- Tuohy, R., Stephens, C., & Johnston, D. (2015). Disaster preparedness: older adults' perspectives. *International Journal of Emergency Management*, 11(1), 46-61.
- Twigg, J. (2004). *Disaster risk reduction: mitigation and preparedness in development and emergency programming*. Overseas Development Institute (ODI).
- United Nations. (2016). *Transforming our world: The 2030 agenda for sustainable development*. Version accessed 30 July 2022. <https://sdgs.un.org/2030agenda>
- United Nations Office for Disaster Risk Reduction. (2020-2022a). *Poverty and Inequality*. Version accessed 26 April 2022. <https://www.preventionweb.net/understanding-disaster-risk/risk-drivers/poverty-inequality>

- United Nations Office for Disaster Risk Reduction. (2020-2022b). *Understanding disaster risk*. Version accessed 1 May 2022. <https://www.preventionweb.net/understanding-disaster-risk/component-risk/disaster-risk>
- United Nations International Strategy for Disaster Reduction. (2005). Hyogo framework for action 2005-2015: building the resilience of nations and communities to disasters. In *Extract from the final report of the World Conference on Disaster Reduction (A/CONF. 206/6)* (Vol. 380). United Nations.
- United Nations International Strategy for Disaster Reduction. Secretariat. (2015). *Global Assessment Report on Disaster Risk Reduction 2015: Making Development Sustainable: the Future of Disaster Risk Management* (Vol. 4). United Nations.
- United Nations International Strategy for Disaster Reduction. (2009). *Global assessment report on disaster risk reduction*. United Nations
- United Nations Office for Disaster Risk Reduction. (2015). *Sendai Framework Disaster Risk Reduction 2015-2030*. Version accessed 1 May 2022. <https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030>
- United Nations Office for Disaster Risk Reduction. (2020-2022). *Poverty and Inequality*. Version accessed 1 May 2022. <https://www.preventionweb.net/understanding-disaster-risk/risk-drivers/poverty-inequality>
- United Nations Office for Disaster Risk Reduction. (2020-2022). *Disaster Risk Reduction*. Version accessed 1 May 2022. <https://www.preventionweb.net/terminology/disaster-risk-reduction>
- University of Otago (2009). Featured Resource: Grey Literature. Library Link, Newsletter of the Wellington Medical Library. Version accessed 30 May 2022 <https://www.otago.ac.nz/wellington/otago018407.pdf>
- Uscher-Pines, L., Chandra, A., Acosta, J., & Kellermann, A. (2012). Citizen preparedness for disasters: are current assumptions valid? *Disaster Medicine and Public Health Preparedness*, 6(2), 170-173.
- Villeneuve, M., Abson, L., Pertiwi, P., & Moss, M. (2021). Applying a person-centred capability framework to inform targeted action on Disability Inclusive Disaster Risk Reduction. *International Journal of Disaster Risk Reduction*, 52, 101979.
- Villeneuve, M., Sterman, J., & Llewellyn, G. L. (2018). *Person-Centred Emergency Preparedness: A process tool and framework for enabling disaster preparedness with people with chronic health conditions and disability*. Centre for Disability, Research and Policy, University of Sydney. Version accessed 20 June 2022. https://collaborating4inclusion.org/wp-content/uploads/2019/05/UOS_PrepateNSW_user_guide_FINAL_v2.pdf
- Vincent, H. K., Vincent, K. R., & Lamb, K. M. (2010). Obesity and mobility disability in the older adult. *Obesity Reviews*, 11(8), 568-579.
- Vinnell, L. J., Hudson-Doyle, E. E., Inch, P., Tan, M. L., Becker, J. S., & Johnston, D. M. (2022). Evacuation Behavior and Information Needs of Wellington, Aotearoa New Zealand Residents Following the 5 March 2021 Mw 7.3 East Cape Earthquake. *Seismological Research Letters*.
- Wachinger, G., Keilholz, P., & O'Brian, C. (2018). The difficult path from perception to precautionary action—Participatory modeling as a practical tool to overcome the risk perception paradox in flood preparedness. *International Journal of Disaster Risk Science*, 9(4), 472-485.
- Wachinger, G., Renn, O., Begg, C., & Kuhlicke, C. (2013). The risk perception paradox—implications for governance and communication of natural hazards. *Risk Analysis*, 33(6), 1049-1065.
- Wang, S. S., Brownell, K. D., & Wadden, T. A. (2004). The influence of the stigma of obesity on overweight individuals. *International Journal of Obesity*, 28(10), 1333-1337.
- Wann, M. (1998). *Fat! So?: Because you don't have to apologize for your size!*. Random House Digital, Inc.

- Wann, M. (2009). Fat studies: An invitation to revolution. *The Fat Studies Reader* (pp. ix-xxv). New York University Press.
- Wann, M. (2021). Personal communication relating to plus sized clothing following the Kentucky Tornadoes. December, 2021.
- Warbrick, I., Came, H., & Dickson, A. (2019). The shame of fat shaming in public health: moving past racism to embrace indigenous solutions. *Public Health*, 176, 128-132.
- Ward, M. (2020). Are coronavirus triage protocols sacrificing fat people? Should they? *International Journal of Feminist Approaches to Bioethics Blog*. Version accessed 1 May 2022. <http://www.ijfab.org/blog/2020/05/are-coronavirus-triage-protocols-sacrificing-fat-people-should-they/>
- Watkins, A. (2017). *Exploring the social and spatial context of adult obesity in Aotearoa New Zealand: a spatial microsimulation approach*. [Unpublished doctoral dissertation]. University of Canterbury.
- Weil, E., Wachterman, M., McCarthy, E. P., Davis, R. B., O'Day, B., Iezzoni, L. I., & Wee, C. C. (2002). Obesity among adults with disabling conditions. *Journal of the American Medical Association*, 288(10), 1265-1268.
- White, P., Pelling, M., Sen, K., Seddon, D., Russell, S., & Few, R. (2005). Disaster risk reduction: a development concern. *London: DfID*. www.preventionweb.net/publications/view/1070
- Wilson, S. (2001). What is an indigenous research methodology? *Canadian Journal of Native Education*, 25(2), 175-179.
- Wise, J. (2017). Waist measurement, not BMI, is stronger predictor of death risk, study finds. *BMJ Open*, 357, j2033
- Wisner, B. (2016). Vulnerability as concept, model, metric, and tool. In *Oxford Research Encyclopedia of Natural Hazard Science*. Version accessed 1 May 2022. <https://doi.org/10.1093/acrefore/9780199389407.013.25>
- Wisner, B.; Blaikie, P.; Cannon, T.; Davis, I. (2004) *At Risk: Natural Hazards, People's Vulnerability and Disasters*. Routledge.
- Wisner, B., Gaillard, J. C., & Kelman, I. (2015). *Disaster Risk*. Routledge.
- Wittert, G. A., Huang, K. C., & Heilbronn, L. K. (2015). Supporting the callout for people first language in obesity. *Obesity Research & Clinical Practice*, 4(9), 309.
- Woodbridge, J. E. (1921). Mind discerned. *The Journal of Philosophy*, 18(13), 337-347.
- Woolf, S. H., Purnell, J. Q., Simon, S. M., Zimmerman, E. B., Camberos, G. J., Haley, A., & Fields, R. P. (2015). Translating evidence into population health improvement: strategies and barriers. *Annual Review of Public Health*, 36, 463-482.
- World Health Organization. (1995). *Physical status: The use of and interpretation of anthropometry, Report of a WHO Expert Committee*. World Health Organization.
- World Health Organization. (1998). *Obesity: preventing and managing the global epidemic: report of a WHO consultation on obesity, Geneva, 3-5 June 1997*. World Health Organization. Version accessed 1 May 2022. <https://apps.who.int/iris/handle/10665/63854>
- World Health Organization. (2009). *Influenza A (H1N1) Pandemic 2009-2010*. Version accessed 1 May 2022. http://www.who.int/csr/disease/swineflu/notes/h1n1_clinical_features_20091016/en/index.html. No longer available online.
- World Health Organization. (2016). Global Health Observatory (GHO) data: Obesity. *World Health Organization*. Version accessed 1 May 2022. <https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/ncd-risk-factors>
- World Health Organization. (2022). *Obesity*. Version accessed 24 April 2022. https://www.who.int/health-topics/obesity#tab=tab_1

- World Health Organization. (2022) *Social Determinants of Health. Key Concepts*. Version accessed 1 May 2022. <https://www.who.int/news-room/questions-and-answers/item/social-determinants-of-health-key-concepts#:~:text=What%20are%20the%20social%20'determinants,%2C%20social%20policies%2C%20and%20politics.>
- World Health Organization Expert Consultation. (2004). Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *Lancet*, 363(9403), 157-163.
- Wynn Jr, D. E., & Williams, C. K. (2008). *Critical realm-based explanatory case study research in information systems*. International Conference on Information Systems, 2008. Version accessed 1 May 2022. <https://aisel.aisnet.org/icis2008/202>
- Yanchar, S. C., & Westerman, M. A. (2006). Reconsidering quantitative research approaches: New interpretations and future possibilities. [Editorial]. *New Ideas in Psychology*, 24(3), 187–188. Version accessed 1 May 2022. <https://doi.org/10.1016/j.newideapsych.2006.09.003>
- Young, R. A., & Collin, A. (2004). Introduction: Constructivism and social constructionism in the career field. *Journal of Vocational Behavior*, 64(3), 373-388.
- Yu, H., Feng, Z., Uyeki, T. M., Liao, Q., Zhou, L., Feng, L., ... & Wang, Y. (2011). Risk factors for severe illness with 2009 pandemic influenza A (H1N1) virus infection in China. *Clinical Infectious Diseases*, 52(4), 457-465.
- Zaidi, R. Z., & Fordham, M. (2021). The missing half of the Sendai framework: Gender and women in the implementation of global disaster risk reduction policy. *Progress in Disaster Science*, 10, 100170.

Appendix 1: Massey University guidelines



DOCTORAL THESIS WITH PUBLICATIONS GUIDELINES

THE DIFFERENCES BETWEEN A DOCTORATE WITH PUBLICATIONS AND A TRADITIONAL THESIS OR DOCTORATE BY MONOGRAPH

The "Doctorate with Publications" is an alternative to the traditional "Doctorate by Monograph" approach to writing the doctoral dissertation.

In a traditional Doctoral thesis by Monograph, the doctoral student writes up their research in a comprehensive thesis or book form, with typically discrete chapters that cover for example, an introduction, literature review, conceptual development or methods, results and analyses, discussion, and conclusions. The monograph approach demonstrates both depth and breadth of knowledge in the student's discipline within a single tome. Often only once the doctoral thesis is completed is an attempt made to publish one or more research articles arising from the work, which are then submitted to academic journals or other appropriate peer-reviewed literature.

In a Doctoral thesis with Publications, the doctoral student authors or co-authors multiple articles on their research during their doctoral programme. These articles are then collated and linked together to constitute the doctoral thesis. Each article will be structured in a way that is appropriate for the field and specific publication, often typically comprising an abstract, introduction with literature context, conceptual development or methods, results, analyses, discussion, and conclusions. This may lead to some repetition in a thesis of this nature, which is not in this context seen as a flaw. It is important to recognise that a thesis with publications is not composed exclusively of publications (see structure below). A doctoral thesis with publications must still demonstrate sufficient breadth and depth of knowledge in the discipline but does so using an appropriate number of discrete published articles as chapters (see below).

GUIDELINES FOR PREPARING A THESIS WITH PUBLICATIONS (TwP)

Candidates considering presenting their thesis with published work should consult with their supervisors early in their candidature to determine whether the thesis with publication format is appropriate. If a candidate is considering this format, it is expected that this be identified as part of the 'confirmation of registration' candidature milestone process.

A Doctorate with Publications requires a candidate to present a thesis comprising typically between two and six research papers/publications. The exact number of publications included in the thesis may vary by discipline. Students may write a monograph thesis and publish just one paper. The publications may be various stages of publication at the time of thesis submission for examination.

The expectation is that the doctoral candidate should target mainstream journals in their discipline for publication of their work. Whenever possible aim for international and highly ranked journals, or a journal with a robust peer review process.

Publications contributing to the doctoral thesis must have been written during the period of candidature enrolment and supervision in the doctorate, and candidate cannot present material which was published prior to their doctoral enrolment as part of the thesis.

Published material may be submitted for examination once only and by one doctoral candidate, so where team research is involved, it is important to clarify roles at an early stage. In special circumstances, different parts of the same publication may be submitted for examination by different candidates (e.g. where experiments and modelling have been done by different people). This will need to be clarified in a statement of contribution that is required to accompany each chapter comprising a publication (see below).

Where work has been published, the journal/publisher may need to give copyright permission for the material to be included in a thesis which will be placed in the Library's electronic repository. Candidates should gain copyright clearance as early as possible if this is the case. It should however be noted that thesis chapters comprising discrete articles/publications must be formatted according to a consistent style within the body of the thesis and not according to publication formats. Usually journals permit reproduction of pre-print versions of articles that are not in final publication format.

Graduate Research Guidelines
November 2015

Candidates can change their decision to present their thesis in the thesis with publication format and revert to a monograph format during their candidature (for example, if results do not go as expected and are not deemed publishable), as long as the decision does not impact on the time to completion and the thesis submission is within the doctoral guidelines.

STRUCTURE OF THESIS WITH PUBLICATIONS

Thesis structure will vary depending on the number of research papers to be included. A thesis with publications may consist of a combination of published and non-published chapters. The thesis may therefore include papers that:

- Are in the (final) process of being prepared for publication in a peer-reviewed journal (in prep.)
- Have been submitted for publication in a peer-reviewed journal but not yet accepted (in review, including in revision after reviewers' comments)
- Have been accepted for publication in a peer-reviewed journal but not yet published (in press)
- That are published in a peer-review journal, edited book chapter, or equivalent
- That are in exhibitions, site specific installations, film, video, scores (with exegesis)

Some chapters may include work that is not publishable, but which nevertheless contributes to the subject body of knowledge and is thus admissible for doctoral research. A doctoral thesis with publications may therefore partly or (nearly) entirely comprise research papers.

Notwithstanding the previous paragraph, the thesis must have an overall introductory chapter which outlines the topic, justifies the research, identifies research objectives and outlines the thesis structure, indicating those chapters that have been written as papers for peer-reviewed publication.

Before the start of each chapter which represents a research paper or publication, the candidate must complete and include a DRC 16 'Statement of Contribution – Doctorate with Publications/Manuscripts'. The DRC 16 outlines the student contribution, authorship, intended target journal and the status of the publication.

The research paper/manuscript should be presented in the same form as they were presented, or intend to be presented, for the target journal, with exception that the referencing and text-formatting should be standardised throughout the thesis and must be in the body of the chapter.

The candidate should outline the links between the chapters/research papers. A chapter comprising an article will necessarily include an opening paragraph linking with the preceding chapter and/or a closing paragraph linking to the next chapter, in which the overall fit of the article is set clearly within the body of research that is the doctoral thesis.

The candidate must ensure that all methods used in the body of research for the thesis are clearly described in the thesis. These are usually contained within the method sections of the corresponding papers. However, appendices should also be used to outline or expand upon methods that may have been abbreviated for publication. Any data and discussion that was also abbreviated to conform to the strictures of the publication process, including information published as supplementary material should also be included in appendices to the thesis, if appropriate. It is also acceptable to have unpublished chapters that may focus on a methodology, or set of results, but also the methodology chapter (or parts thereof) may be published. Unpublished chapters are entirely admissible in a thesis with publications. The thesis introduction should clarify what chapters are published and they should be referenced accordingly.

The thesis should conclude with a final chapter providing a synthesis of the work as a whole presented in the body of the thesis. It is important that discrete published chapters are brought together in this coherent synthesis to demonstrate the overall contribution to knowledge provided by the body of research within the thesis. Final overall conclusions revisiting the research objectives draw the thesis to a close at the end of the synthesis, or as a short, discrete chapter according to preference and disciplinary practice.

Formatting of the final thesis may be a challenge as the thesis should be a whole, presented in the same font and format, so figures and tables have to be renumbered and references consistently formatted.

The thesis with publications must still work as an integrated whole, address a significant research question or questions, and present a clearly identified original contribution to knowledge of the subject with which it deals.

AUTHORSHIP OF THE PUBLICATIONS

The authorship of publications is determined based on the APA authorship guidelines, which also highlight that the supervisors are NOT automatically the authors on all publications arising from the candidate's research for the doctorate. Only supervisors who have contributed sufficient intellectual knowledge to an academic paper that is part of a doctorate with publications should be included as co-authors of that academic paper. Authorship of publications is decided by discussion and agreement between the supervisors and candidate.

In some cases, the candidate may be the sole author of a publication(s). Where the candidate is a joint author with supervisor(s) and/or others, the contribution by the candidate is normally expected to be in the capacity of first/primary author. Multi-authored papers in a thesis must have a substantial and significant contribution by the candidate. The principal supervisor signs the 'Statement of Contribution: Doctorate with Publications/Manuscripts (DPC 16)' specifying the candidate's contribution. To protect the interest of candidates, it is important that authorship is discussed at an early stage of candidature, ideally with the involvement of an independent party, such as the unit postgraduate coordinator, with an ideal context being the confirmation process.

Candidates are advised to fully reference previous publication of their own sole-authored work, including graphs, tables and images that they themselves have generated. Any other intellectual content must be fully and appropriately referenced to the person(s) that supplied them. They are then able to sign a statement that the thesis is their own work.

EXAMINATION

The candidate is expected to have a working knowledge of all parts of the thesis, and to be able to answer questions about the thesis as a whole in the oral examination.

The University sets the standard by which theses are examined, and acceptance of any part by a publisher does not necessarily mean that it meets examination standards. Examiners will be instructed to examine all parts of the thesis with equal rigour and may request major or minor changes to any part of the thesis regardless of whether it has been published or not. Material included in a thesis with publications is clearly of publishable quality, but the candidate's understanding of their body of work in its constituent parts, as well as the whole, must be examined.

Whether a candidate submits their thesis in traditional monograph form or with publications, examiners will still be asked to examine the thesis following the same guidelines:

- That the candidate shows familiarity with, and understanding of the relevant literature
- The thesis provides a sufficiently comprehensive study of the topic
- The research questions have been identified
- The methods adopted are appropriate to the subject matter and properly applied
- The research findings are documented and explained coherently
- The thesis as a whole makes an original contribution to the knowledge of the subject with which it deals, and the candidate understands the relationship of the thesis to the wider context of the knowledge in which it belongs.

It is advisable for supervisors to select examiners who are familiar with the Doctorate with Publications format if at all possible.

FREQUENTLY ASKED QUESTIONS

Which is of more value? A *Twp* or a monograph?

- For the examination process there is no difference. Some candidates may find it beneficial to have published papers in their thesis for subsequent job opportunities or for applications for a post-doctoral research position. An examiner will not see a monograph of lesser value if it meets all the criteria for doctoral studies.

How do you structure a *Twp*?

- It is similar to a monograph: introduction chapter; followed by the literature review (which may or may not be published), then one can have a methodology chapter, but it is not required, and then the chapters which may or may not have been published already (in prep/review/press/published). The last chapter is the discussion or synthesis where the whole thesis and research must be discussed and the novel contribution covered.
- Chapters may require additional introductions and conclusions to ensure clarity of relationship with broader thesis.

Each published article typically describes literature, methods etc. So how do you avoid repetitive writing across the thesis chapters?

- This cannot be prevented, but the candidate should try to minimise where possible. Although a paper may have been published, it will still be 'examined' as part of the overall thesis, and repetition will be taken into account by the examiner.

How does a *New Zealand Twp* compare to a doctoral thesis (a monograph) in the U.S.?

- There is no difference. The same academic principles (e.g., original contribution to knowledge etc) apply to both versions. The required word limit still applies.
- Even if much of the content has been published in peer-review outlets the thesis must still pass as a doctorate (an original, coherent contribution as a body of knowledge to the discipline).

Is different work involved in a *Twp* compared to a monograph?

- Yes. One has to plan the chapters as papers, start writing earlier in the doctorate and while writing the thesis, submit and revise previous chapters/ papers as per the reviewer's comments. Once a paper is submitted, control is in the hands of the journal editors.

Is there anything to prevent you from publishing while presenting your thesis in a monograph form?

- No not at all.

Is there a minimum or maximum number of publications per thesis?

- No, it can vary, often only one chapter is actually published, others maybe under review, and some submitted. Generally, it is expected that there are between two and six chapters which are in published format (in prep/review/press/published).

Is it more challenging to produce a TdP when conducting research from a mixed method or humanities approach?

- Potentially. This option is most likely to be useful in cases where a student has already some experience in producing articles or reports and therefore seeks to pursue a TdP given familiarity with this genre. However, it may be more difficult to ensure a coherence of work around an overarching research question in these fields.

What are the rules around authorship? Does the doctoral candidate always have to be the lead author? What if the journal doesn't use a first author system, and instead lists them alphabetically?

- It is expected that the candidate is the lead author. In humanities and Social Sciences, the usual practice is to rank authors alphabetically unless one author is a clear lead author, in which case the position of names can at times be determined by contribution. Maxey expectation is that authorship is determined based on the APA authorship guidelines.

Does publishing research that is done from a science discipline fit well with publications?

- There is no reason why not. It will be important to select journals carefully and choose the most appropriate publication outlet for the work.

If your supervisor is new to TdPs, who else can a student go to for advice (for both the student and the supervisor)?

- GRs, and they can refer the student to staff whose students regularly do TdP.
- Postgraduate Coordinator in the academic units.

How are ethics managed and integrated into the TdP process?

- There is no difference, if a researcher is working with people or animals, the ethics process needs to be addressed and discussed in the papers/ chapters.
- There are ethical considerations with regards to co-publishing that need to be considered (i.e. ensuring student work is appropriately recognised in publications).

Monograph vs. TdP - is this a personal decision or does it have to be justified in another way?

- The student and supervisory panel should discuss the format of the thesis in the provisional year. Supervisors and students should both agree that TdP is the best avenue.

When do you decide which journal to submit to? How do you make that decision? How do you make sure that you stay productive in that process?

- The journal should be discussed with the supervisors. Once one paper is submitted the candidate should start the next one or work on the literature review.
- Ensure good quality publication outlets (well known, well ranked) to ensure strong reviews and to maximise student benefit.

What are some of the challenges associated with TdP? And what specific advice is there for overcoming those challenges?

- Staying within a time frame and not extending the Doctorate while waiting for papers and reviews. Keep productive while waiting for an editor's reply.
- Dealing with reviewer's comments can be challenging, but your supervisors should provide support, and this provides good preparation for examiners comments.
- Formatting of the final thesis may be a challenge as the thesis should be a whole, presented in the same font and format. So, figures and tables have to be renumbered and referenced consistently formatted because the thesis is a publication in its own right and as such should be a cohesive document.
- Ensuring the student retains a birds-eye view of the thesis as an overarching project that, with all parts working together, makes an original contribution to the field.

When you decide to do a TdP, is there a formal process for that, or is it simply an agreement that you make with your supervisor?

- There is no formal process, just an agreement between the student and supervisor(s). However, there are forms that need to be completed as part of the submission of the thesis which attributes the contribution of the candidate and other authors for those chapters in the thesis that are publications or in the process of publication (in prep/review/press).

If in doubt, please contact your supervisor

Appendix 2: Online survey emergency managers

Considerations with and for 'at risk groups in disasters - Aotearoa New Zealand Exploratory Survey

Thank you for participating in this survey. The survey is anonymous and will take approximately five minutes to complete. Any details you provide will not be personally identifiable in the analysis or in any publications.

Results will be shared at relevant Aotearoa New Zealand and international conferences, in sector related newsletters, emergency management or disaster journals.

This survey has been evaluated and judged to be low risk by Massey University. Lesley Gray is responsible for the ethical conduct of this research.

Lesley Gray, PhD Candidate,
Joint Centre for Disaster Research, Massey University & GNS Science
Senior Lecturer, University of Otago, Wellington

- Q1 To help me gain a better understanding of the range of agencies and roles represented by people responding to this survey please tell me a little about your role:
- Q2 What type of organisation do you work in? (e.g. DHB, Council, Red Cross, Police, Civil Defence)
- Q3 Which Region do you work in? (e.g. Auckland, Wairarapa, Otago)
- Q4 What is your job title?
- Q5 Does your work involve any of the following? (click as many as apply)
- | | |
|--|---|
| <input type="checkbox"/> Planning/Preparedness | <input type="checkbox"/> Transport |
| <input type="checkbox"/> Community Engagement | <input type="checkbox"/> Evacuation |
| <input type="checkbox"/> Risk Reduction | <input type="checkbox"/> Policy |
| <input type="checkbox"/> Emergency Assistance Centres | <input type="checkbox"/> Research |
| <input type="checkbox"/> Response | <input type="checkbox"/> Psychosocial Support |
| <input type="checkbox"/> Rescue | <input type="checkbox"/> Welfare Services |
| <input type="checkbox"/> Provision of Emergency Supplies | <input type="checkbox"/> Other (please specify below) |
- Q6 Which group(s) does your organisation have specific disaster-related arrangements with/for in your organisation? (click as many as apply)
- People with disabilities
 - Children
 - People with chronic medical conditions
 - Older people
 - People with mental illness
 - People with extreme obesity (high body mass)
 - None of the above
 - Other (please specify below)

I am particularly interested in the considerations with/for people with extreme obesity. (Before Q6A & Q7).

- Q6A (If PWEO clicked in Q6). In the previous question you indicated people with extreme obesity are included in your organisation's disaster related arrangements. Can you tell me how people with extreme obesity are included?
- Q7 In your opinion, do you think your organisation needs to consider people with extreme obesity in disaster-related arrangements?
- Yes No Not Sure
- Please say a little about why you responded in this way:
- Q8 Which group(s) does your organisation have written disaster-related documents with/for in your organisation (e.g. plans, policies, protocols, strategies, guidance, information)? (click as many as apply)
- People with disabilities
 Children
 People with chronic medical conditions
 Older people
 People with mental illness
 People with extreme obesity (high body mass)
 None of the above
 Other (please specify below)
- Q9 Do you think people with extreme obesity should be considered in your organisation's written disaster-related documents?
- Yes No Not Sure
- Please say a little about why you responded in this way:
- Q10 Are you able to provide me with a copy of any written disaster-related plans, policies, protocols, strategies, guidance, or information for your organisation that include people with extreme obesity?
- Yes - if yes, can you please email the document(s) to lesley.gray@otago.ac.nz or provide details of how the researcher can access the document(s) here:
 Not Sure - if you are not sure because the researcher would need to get permission from someone else, please provide their contact details:
- Q11 Any additional comments?
- Q12 Are you willing to be contacted by the researcher to share your perspective on disaster-related arrangements for 'at risk' groups, in more detail? If so, please provide your name and contact details here so that the researcher may contact you (your details will not be included in the data analysis or results).

Thank you for participating in this survey.

Anonymised results will be shared at relevant New Zealand and international conferences, in sector related newsletters and emergency management or disaster journals.

If you would like a copy of the results sent to you directly, please email lesley.gray@otago.ac.nz and include the word "RESULTS" in the subject line.

Lesley Gray

Appendix 3: Ethics (Low risk)



10/11/2017

Dear: Lesley Gray

Re: Low Risk Notification - 400018662 - Disaster Risk Reduction concerning people with morbid obesity: survey of emergency managers and planners in New Zealand

Thank you for your notification which you have assessed as Low Risk.

Your project has been recorded in our database for inclusion in the Annual Report of the Massey University Human Ethics Committee.

The low risk notification for this project is valid for a maximum of three years.

If situations subsequently occur which cause you to reconsider your ethical analysis, please contact a Research Ethics Administrator.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research."

If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director - Ethics, telephone 06 3569099 ext 86015, email humanethics@massey.ac.nz.

Please note, if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to complete the application form again, answering "yes" to the publication question to provide more information for one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

A handwritten signature in blue ink that reads "B Finch".

Dr Brian Finch Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

Research Ethics Office, Research and Enterprise
Massey University, Private Bag 11 222, Palmerston North, 4442, New Zealand T 06 951 6841; 06 95106840
E humanethics@massey.ac.nz; animalethics@massey.ac.nz; ge@massey.ac.nz

Appendix 4: Online survey information sheet (EM)



Emergency management and response considerations with and for 'at risk' groups in disasters: an Aotearoa New Zealand exploratory survey

INFORMATION SHEET

Introduction to this survey

This exploratory survey seeks to map the work of Aotearoa New Zealand organisations in relation to individuals or groups who may be at greater risk of harm in a disaster. The survey is likely to take around 5 minutes to complete.

Background: New Zealand is a signatory to the Sendai Framework for Disaster Risk Reduction 2015–2030. This global strategy was adopted by United Nations (UN) members in 2015. The Framework aims to reduce loss of life, livelihood and health from disasters through a range of disaster risk management (DRM) actions. Priority one in the Framework is to better understand disaster risk in all its dimensions of vulnerability.

About the researcher

Lesley Gray is a senior lecturer with the University of Otago Medical School and a PhD candidate with the Joint Centre for Disaster Research, Massey University & GNS Science. You may contact the researcher at any time to ask questions about this invitation and the survey:

Email - lesley.gray@otago.ac.nz; Mobile – [REDACTED]

Invitation

You are invited to complete the online survey by following the link in the email or copying and pasting the URL into your web browser:

URL Link: <https://tinyurl.com/drrsurvey>

Participant identification and recruitment

The survey is being distributed to a range of organisations – you are also welcome to forward the email and information sheet to your colleagues and to other networks who you think might be interested in completing the survey. I hope for a wide range of responses to enable detailed analysis.

Data management

The online survey is anonymous and your name and details (if provided) will not be linked to either the data analysis or identified in any of the results or publications. Data will be stored on a password protected University computer and the data will be destroyed after 5 years. Anonymised results will be shared at relevant New Zealand conferences, in sector related newsletters and emergency management or disaster journals. If you would like a copy of the results sent to you directly, please email - lesley.gray@otago.ac.nz and include the word “RESULTS” in the subject line.

Participant’s Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

As this project has been evaluated and judged to be low risk by Massey University, it did not require review by the University’s Human Ethics Committee. The researcher (Lesley Gray) is responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Dr Brian Finch, Director, Research Ethics, Massey University, telephone 06 356 9099 x 86015, email - humanethics@massey.ac.nz.

**Te Kūnenga
ki Pūrehuroa**

Joint Centre for Disaster Research
Massey University, PO Box 756, Wellington 6140, New Zealand **T** +64 4 8015799 **F** +64 4 801 4822
E jcdr.enquiry@massey.ac.nz Website: <http://Disasters.massey.ac.nz>

Appendix 5: Semi-structured interview guide - emergency managers

Question Areas

- Tell me a little about your experiences relating to disasters and disaster risk reduction
- Talk me through how the Civil defence/welfare centres function in your area and their role/purpose
- Tell me a little about disaster planning/arrangements for people identified at greater risk/ more vulnerable in disasters. (give me some examples of which people this might include in your area)
- What arrangements are in place in your region/through the health board for people with a high level of health need? Do you know how 'high level of health need' would be defined? Could you talk me through example(s)?
- How does the health board/Emergency Management currently 'notify' or receive notifications of people with particular needs?
- Thinking about people with high body mass – what disaster/EM considerations do you already have?
- Thinking about people with high body mass – what disaster/EM considerations do you think we need?
- What plans for evacuation centres/local Marae? Any for people with high body mass?
- For emergency response – what weight, width, height restrictions on equipment?
- (2020 question) in the recent Tsunami evacuations, I heard on the news that Ambulance services were suspended within 2kms of Tsunami zone – was that in your region? What if any people at greater risk still in their homes within the zone?
- What advice would you give to people for their own disaster risk reduction planning?
- What advice would you give to people with high body mass for their own disaster risk reduction planning?
- Were you aware of links between people with higher body mass and influenza A (H1N1) 2009 pandemic (added in 2020 interviews: and/or COVID-19)?
 - If you were aware – what if any actions did you/do you take relating to BBP?
 - If you were not aware, do you think BBP should be made aware for future pandemics?
 - Any other comments relating to these aspects?

About Participant

- Are you registered as disabled or diagnosed with any (chronic) health conditions yourself?
- Do you happen to know your weight and height? Is it possible for me to record those?
- Willing to say which age bracket?
- Which ethnicity / gender do you identify with?

Appendix 6: Semi-structured interview guide - big bodied people

Question Areas

- Please tell me a little bit about yourself
- Work - what is/was your occupation (if any)?
- Which ethnicity / gender do you identify with?
- Your circle of friends, family/whanau/support network – who do you support/who supports you?

Preparedness

- What are the main hazards where you live/work? (wildfire, flood, tsunami, quake, volcano, etc.)
 - Do you have any plans in place for each/any of those hazards? Please explain
- Experiences relating to natural hazards (such as flood, earthquake)? Can you tell me about that?
 - If yes to experience, has that experience influenced your emergency plans? If so, how?
 - How well prepared do you think you were for that event?
 - What resources would have been useful to have, that were not readily available?
-] advice would you give to others - other BBP/Emergency Managers?

Health Status

- Are you registered as disabled or diagnosed with any (chronic) health conditions? Happy to say what?
 - If yes, how does your condition(s) affect you?
 - Are you on any medications and/or do you use CPAP (for example).
- Do you happen to know your weight and height? Is it possible for me to record those?

Community Involvement in Emergency Management

- Are you engaged in your local community Civil Defence or Emergency Management in any way?
- Ever attended a community meeting to discuss emergency planning or been asked to input into community planning? If no – would you like to be?
- Do you have any recommendations for individuals, communities, emergency services and government?

Were you aware of any heightened risks for BBP in the H1N1 pandemic (or COVID-19 for those participating in interviews from February 2020).

Is there anything else you would like to tell me that you feel will be relevant to this research?

Appendix 7: Interview information sheet (BBP)



Disaster risk reduction for people with high body mass in Aotearoa New Zealand INFORMATION SHEET

Introduction

This project seeks to investigate disaster risk reduction concerning people with high body mass in Aotearoa New Zealand. The research will be conducted by Lesley Gray who is currently undertaking a PhD at the Joint Centre of Disaster Research (Massey University and GNS Science, Wellington, New Zealand). This study will provide an insight into issues, strategies and actions relating to disaster planning, as currently there is little research about this topic.

Description and invitation

Within the study of disaster, the stories and experiences of people with high body mass are rarely documented. There may be an assumption that people with high body mass are already considered in disaster planning, however little research has been conducted to support this. The project will explore both strengths and capacities of people with high body mass and consider support requirements.

You are invited to participate in this project and to take part in a face to face interview with the researcher, Lesley Gray. The interview will last approximately 1 hour and involve a discussion and questions relating to your experience in disasters and/or disaster planning. Family/whanau/carers are welcome to be part of the interview or can be interviewed individually.

The themes and questions which will be discussed during the interview are:

- Your experiences (if any) in disaster situations (e.g. flood, earthquake)
- Physical, health and environmental considerations
- Concerns and issues
- Coping strategies, problem solving and ideas
- Availability of resources

Data Storage

The researcher will take written notes and will also, with your permission, use a sound recorder so that the researcher can write up the interview at a later date. Any notes taken during the interview will be kept confidential and your name will not be used in the write up (an alternate name may be used). All notes taken during the interview will be kept secured and locked away in a filing cabinet at the University and the researcher, Lesley Gray is bound by the Privacy Act and confidentiality agreement.

Important information

- A confidentiality agreement must be signed by the researcher which protects against the disclosure of confidential information
- The researcher is strictly bound by the Privacy Act and the confidentiality agreement to guarantee the anonymity of the participants. The anonymity of participants will be assured, and alternate names may be assigned if required any published work will guarantee that this research will have no negative impact upon any individual's reputation.
- A participant consent form must be signed by the participant which states they are agreeing to take part in the interview and allow for what is discussed in the interview to be used as part of the research and be included in the PhD thesis.
- The participant must be aware that they can withdraw from the interview at any point and will have an opportunity to review, correct or withdraw their transcript from the research analysis.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- Decline to answer any particular question
- Withdraw from the study at any point before the thesis is submitted
- Ask any questions about the study at any time during participation
- Provide information on the understanding that your name will not be used unless you give permission to the researcher
- Be given access to a summary of the project findings when it is concluded
- Ask for the recorder to be turned off at any time during the interview.

The student for this PhD research project is:

- Lesley Gray - lesley.gray@otago.ac.nz
- Contact Mobile number: [REDACTED]

The supervisors are:

- Prof David Johnston – D.M.Johnston@massey.ac.nz
- Dr Julia Becker – J.Becker@massey.ac.nz
- Dr Carol MacDonald - carol.macdonald@xtra.co.nz

If you have any questions, or at any point need to speak with the researcher or her supervisors, please do not hesitate to contact using the contact details above.

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern A, Application SOA 18/59. If you have any concerns about the conduct of this research, please contact Dr Lesley Batten, Chair, Massey University Human Ethics Committee: Southern A, telephone + 64 6 356 9099 x 85094, email humanethicsoutha@massey.ac.nz

SUPPORT

If this invitation or the face to face interview raises issues that you wish to discuss with someone please contact your General Practice or health clinic for details of local support. Alternatively, free national helpline numbers are provided below:

Free Call or Text:

[Lifeline](#) – 0800 543 354 (0800 LIFELINE) or free text 4357 (HELP)

[Healthline](#) – 0800 611 116

[Samaritans](#) – 0800 726 666

Appendix 8: Consent form (BBP)



Disaster risk reduction for people with high body mass in Aotearoa New Zealand

PARTICIPANT CONSENT FORM

	YES	NO
I agree to the interview being sound recorded	<input type="checkbox"/>	<input type="checkbox"/>
I wish to review the transcribing of my interview	<input type="checkbox"/>	<input type="checkbox"/>

I agree to participate in this study.

Signature: Date:

Full Name (printed):

Appendix 9: Authorship contribution statement (Chapter 4)

DRC 16



GRADUATE RESEARCH SCHOOL

STATEMENT OF CONTRIBUTION DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

Name of candidate:	Lesley Gray
Name/title of Primary Supervisor:	Prof. David Johnston
in which chapter is the manuscript /published work: Chapter 4	
Please select one of the following three options:	
<input checked="" type="radio"/> The manuscript/published work is published or in press <ul style="list-style-type: none"> Please provide the full reference of the Research Output: Gray, L. (2017). Social determinants of health, disaster vulnerability, severe and morbid obesity in adults: Triple jeopardy? <i>International Journal of Environmental Research and Public Health</i>, 14, 1452. https://doi.org/10.3390/ijerph14121452 	
<input type="radio"/> The manuscript is currently under review for publication – please indicate: <ul style="list-style-type: none"> The name of the journal: The percentage of the manuscript/published work that was contributed by the candidate: 100% Describe the contribution that the candidate has made to the manuscript/published work: The candidate devised the research topic and conducted the literature review, drafted the manuscript and made changes suggested by reviewers. The candidate revised and submitted the manuscript and verified proofs as corresponding author. 	
<input type="radio"/> It is intended that the manuscript will be published, but it has not yet been submitted to a journal	
Candidate's Signature:	
Date:	28 June 2022
Primary Supervisor's Signature:	
Date:	14/7/22

This form should appear at the end of each thesis chapter/section/appendix submitted as a manuscript/ publication or collected as an appendix at the end of the thesis.

GRO Version 5 – 22 December 2019
DRC 15/09/20

Appendix 10: Personal communication - Professor Lori Peek

From: Lori Peek
Sent: Friday, 9 June 2017 3:36 PM
To: Lesley Gray
Subject: RE: follow up

Dear Lesley,

Thank you for sharing this and for advancing thinking in this particular area. Very, very impressive.

With every warm wish,
Lori

Lori Peek, Ph.D.
Professor, Department of Sociology
Director, Natural Hazards Center
University of Colorado-Boulder
<https://hazards.colorado.edu/>

From: Lori Peek
Sent: Thursday, 1 June 2017 3:44 a.m.
To: Lesley Gray
Subject: follow up

Dear Lesley,

I am writing to thank you for submitting an update on your work to this year's Natural Hazards Workshop portal. I realize that the auto-response to that submission said that we would not be able to respond to all those who shared ideas for potential inclusion on the program, but I wanted to reach out to you to thank you for submitting and to let you know how impressed I am with the work you are doing.

I also wanted to let you know that because of the number of submissions we received, we were only able to place about one-sixth of the actual submissions on the agenda. This meant that it was a very difficult task on our end, but an inspiring one as well. The state of our hazards and disaster field is obviously strong.

Those of us here at the Hazards Center are still hopeful that you might be able to join us July 9-12 for the Hazards Workshop. If you are able to attend, I hope you will submit a Research – Practice Highlight, summarizing your recent work, new programs or initiatives, or any other organizational update you might want to share (<https://hazards.colorado.edu/workshop/2017/submissions>).

Thank you again for taking the time to submit and to share your important work with us here at the Hazards Center. We use these Workshop submissions to inform many of our information clearinghouse activities throughout the year, so please know how genuinely grateful we are.

With much respect,

Lori

PS: I have never seen any doctoral research, or research otherwise, on the topic you proposed. I think this is really fascinating and look forward to continuing to follow your work.

Appendix 11: Authorship contribution statement (Chapter 7)

DRG 16



STATEMENT OF CONTRIBUTION DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the Statement of Originality.

Name of candidate:	Lesley Gray
Name/title of Primary Supervisor:	Prof. David Johnston
in which chapter is the manuscript /published work: Chapter 7	
Please select one of the following three options:	
<input checked="" type="radio"/> The manuscript/published work is published or in press: <ul style="list-style-type: none"> Please provide the full reference of the Research Output: Gray, L., MacDonald, C., Becker, J. S., & Johnston, D. (2022). A qualitative study of emergency management considerations for big bodied people in Aotearoa New Zealand. <i>International Journal of Disaster Risk Reduction</i>, 67, 102646. https://doi.org/10.1016/j.ijdrr.2021.102646 	
<input type="radio"/> The manuscript is currently under review for publication – please indicate: <ul style="list-style-type: none"> The name of the journal: The percentage of the manuscript/published work that was contributed by the candidate: 80% Describe the contribution that the candidate has made to the manuscript/published work: The candidate devised the research topic and methods, conducted the semi-structured interviews and data analysis of transcripts, verifying resulting themes with Dr MacDonald. The candidate drafted the manuscript, made changes suggested by co-authors and reviewers. Revised and submitted manuscript and verified proofs as corresponding author. 	
<input type="radio"/> It is intended that the manuscript will be published, but it has not yet been submitted to a journal	
Candidate's Signature:	
Date:	28 June 2022
Primary Supervisor's Signature:	
Date:	14/7/22

This form should appear at the end of each thesis chapter/section/appendix submitted as a manuscript/ publication or collected as an appendix at the end of the thesis.

GRS Version 5 – 17 December 2019
DRG 15/06/10

Appendix 12: Ethics (full)



24/09/2018

Dear: Lesley Gray

Re: Ethics Application - SOA 18/59 - Disaster risk reduction for people with high body mass in Aotearoa New Zealand

Thank you for the above application that was considered by the Massey University Human Ethics Committee:

Human Ethics Southern A Committee at their meeting held on **Tuesday, 11 September 2018**

On behalf of the Committee I am pleased to advise you that the ethics of your application are approved.

Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely



Professor Craig Johnson
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

Research Ethics Office, Research and Enterprise
Massey University, Private Bag 11 222, Palmerston North, 4442, New Zealand T 06 951 6841; 06 95106840
E humaneethics@massey.ac.nz; animalethics@massey.ac.nz; ge@massey.ac.nz

Appendix 13: Authorship contribution statement (Chapter 8)

ORC 16



GRADUATE
RESEARCH
SCHOOL

STATEMENT OF CONTRIBUTION DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the candidate and the candidate's Primary Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the Statement of Originality.

Name of candidate:	Lesley Gray
Name/Title of Primary Supervisor:	Prof. David Johnston
In which chapter is the manuscript /published work: Chapter 8	
Please select one of the following three options:	
<input checked="" type="radio"/> The manuscript/published work is published or in press <ul style="list-style-type: none"> • Please provide the full reference of the Research Output: Gray, L., Becker, J., MacDonald, C., and Johnston, D. (2022). Sizing up disaster risk reduction: a qualitative study of the voices of big bodied people in Aotearoa New Zealand. <i>International Journal of Disaster Risk Reduction</i>, 74, 102922 	
<input type="radio"/> The manuscript is currently under review for publication – please indicate: <ul style="list-style-type: none"> • The name of the journal: • The percentage of the manuscript/published work that was contributed by the candidate: 80% • Describe the contribution that the candidate has made to the manuscript/published work: The candidate devised the research topic and methods, conducted the semi-structured interviews and data analysis of transcripts, verifying resulting themes with Dr MacDonald. The candidate drafted the manuscript, made changes suggested by co-authors and reviewers. Revised and submitted manuscript and verified proofs as corresponding author. 	
<input type="radio"/> It is intended that the manuscript will be published, but it has not yet been submitted to a journal	
Candidate's Signature:	
Date:	28 June 2022
Primary Supervisor's Signature:	
Date:	14/7/22

This form should appear at the end of each thesis chapter/section/appendix submitted as a manuscript/ publication or collected as an appendix at the end of the thesis.

ORC Version 3 – 18 December 2019
ORC 13/05/20

Appendix 14: Ministry of Health email

From: forename.surname@health.govt.nz
Sent: Thursday, 2 December 2021 2:58 pm
To: Lesley Gray <lesley.gray@otago.ac.nz>
Subject: RE: Bariatric Evac/Emergency Equipment

Hi Lesley

We contract out the purchase and storage of body bags, so the only information I can find is;

- Minimum size: 2.2m x 0.8m.
- C style zipper, closing towards the foot end of the bag.
- Minimum lifting capacity: 120kg.
- Four lifting handles with all stitching penetrating the bag material sealed against leakage of fluids.
- Material: White opaque 100g polypropylene with a fluid-proof polyethylene coating, suitable for either cremation or burial, with a surface finish suitable for writing on with an indelible felt pen or similar.
- A clear plastic external pocket of 300mm x 210mm, with a fastening flap, to hold identity papers and similar, positioned at the foot end of the bag.

The other option would be NZ Police Disaster Victim Identification team who have a stock of bags.

Me aku mihi
[forename]

Emergency Management
Population Health and Prevention

Phone/waea pūkoro:
Email/īmēra:

Manatū Hauora, 133 Molesworth Street
Thorndon, Wellington 6011



Appendix 15: Welfare Forum speaking invitation



22 July 2021

University of Otago
Department of Primary Health Care & General Practice
PO Box 7343
Wellington South 6242

Atn: Lesley Gray

Dear Lesley

Annual Welfare Forum – ‘People with disabilities in Emergencies – readiness and response’

I am contacting you as the Group Welfare Manager for the Bay of Plenty Region, as I am organising the regional Annual Welfare Forum. The topic for this year's forum is on 'People with disabilities in Emergencies – readiness and response'.

We would be excited to hear about your PhD work on Disaster risk reduction for people with high body mass in Aotearoa New Zealand, and to establish how Civil Defence Emergency Management and our associated organisations could better prepare in the event of an emergency. Therefore, I wish to extend an invitation to you, to be our keynote speaker at our Annual Welfare Forum.

In the Bay of Plenty Region, it would appear that there are large numbers of people that would fit the definition of having a high body mass. It would be very valuable to learn more and to gain a better understanding of the needs of these people to ensure that they are not overlooked in emergency planning. We are also really hoping to promote the need for people to have individual emergency plans that meet their specific requirements. I'm hoping that you might also be able to help promote the message of the need for a plan.

Our goal is to bring people from around the region together to provide the opportunity to strengthen our networks and to share and explore ideas. In addition, we hope to gain a better understanding of the needs of our communities in the Bay of Plenty, and how supported and prepared people with disabilities are in the event of a Civil Defence emergency.

We will also have three other guest speakers who will speak about their organisations and the work they do, with the focus around what support their organisations can, and currently provide to people with disabilities in term of emergency preparedness and response. This might also include information around access and availability of resources, how their organisations communicate, provide updates and information to



1 Seaview PO Box 364, Whakapu, Bay of Plenty
Telephone 0800 084 082 Facebook 0800 084 082

clients, key contacts and others, before, during and after an emergency event (i.e. social media, newsletters, phone calls, face to face etc). We would appreciate if you could share any experiences, successes, challenges, and areas where potentially more support could be needed.

The forum will be held on Tuesday 24th August 2021 at The Club, Mount Maunganui. This is an all-day event starting at 9.30am, until 3.30pm. We expect the audience to be in the region of around 80 to 100 people. The attendees will be made of up members from Emergency Management Bay of Plenty, key staff from Local Councils, and representatives from a number of other government and non-government agencies within the Bay of Plenty, who work or have an interest in this subject.

We are still finalising our plans for the day, but our thoughts were to also hold a facilitated panel session. Our guest speakers would contribute for half an hour or so, allowing the attendees to ask questions. There will also be a desk top session, where attendees will have the opportunity to brainstorm and work collectively in groups on topics of interest.

Please confirm by the 30th July 2021 whether you would be interested in the opportunity to be a guest speaker at this forum. Should you wish to take up this opportunity to be a guest speaker, or have any further queries regarding the Forum, please contact me on 027 523 44 28 or email me at nicky.parker@emboop.govt.nz to discuss further.

I look forward to hearing from you.

Yours sincerely



Nicky Parker
Group Welfare Manager
Emergency Management Bay of Plenty

Appendix 16: Reviewer comments - excerpts from feedback

IJDRR-D-22-00256 – Sizing up disaster risk reduction: A qualitative study of the voices of big bodied people in Aotearoa New Zealand:

Reviewer #1

This is such an important and timely topic and I am so glad to be asked to review it. There are some really excellent ideas here and the focus on BBP's experiences is absolutely vital and sorely needed.

... the research is great so remind us of that!

The methodology is what makes this article unique and I hope to see more of your work vocalising the experiences of fat people very soon!

Reviewer #

This paper discusses an important issue about an understudied group (BBP) and their preparedness for disasters. It is important to research the experiences of BBP in their own voices to understand where emergency managers should direct resources.

Despite understanding risk, BBP appear to be underprepared and concerned about the accessibility of resources to them. The authors draw the conclusion that emergency managers, communities, and workplaces need to be educated about the needs of BBP and develop plans to serve them in the wake of a disasters

Great job!

Reviewer #3

I'll admit that my area of specialization is in fat/critical obesity studies, not disaster risk reduction. In reading this manuscript I'm absolutely struck by how little I had considered many of the issues raised by the participants in your study. These accounts are heartbreaking and moving—I'm astounded by the resiliency of fat people in the face of so little care for their well-being. In all honesty, I'm now considering how poorly prepared I am for a disaster as a fat person. Unsurprisingly, this is the strength your piece. As you point out, the limitation of your qualitative study is that it is small and might not account for the vast range of experiences encountered by fat people in these sorts of situations; however, it seems to me that this is an invitation for more scholars to join this important conversation.

Additionally, it's unfortunately rare to have such an assortment of fat voices discussing fat experiences. I appreciate that you've preserved the rich voices of your research participants and that you've coded for very specific situations/themes. For readers who are new to this conversation, you've provided a clear exigence for your research. For readers who are already familiar with conversations about harm reduction for fat people, your research provides additional support for an ongoing plea for support.

Finally, as I've been watching the war in Ukraine unfold it's difficult not to imagine who is being left behind. Your piece has me thinking about this more critically than ever. Thank you for your work and for your contributions to these difficult conversations.

Appendix 17: SSEER Network Award Letter



April 18, 2020

Dear Lesley and Working Group Members:

Thank you for submitting an application for the **COVID-19 Working Groups for Public Health and Social Sciences Research**. I am so pleased to inform you that your group, *Ethics, Equity, and Risk for Higher Weight People*, will receive a **\$1,000 award** to advance your collective efforts. This award is made possible through the National Science Foundation-funded Social Science Extreme Events Research (SSEER) Network and the CONVERGE facility housed at the Natural Hazards Center at the University of Colorado Boulder.

The COVID-19 crisis has affected billions of people around the world, upending lives and livelihoods. This pandemic—as has been the case with prior disasters—has revealed both the strengths and vulnerabilities of social, economic, political, and cultural systems. Additionally, and perhaps more than any other event in living memory, the pandemic has underscored the urgent need for a large-scale collective social science and public health response. Members of this well-established research community, in collaboration with a range of other disciplinary and organizational partners, have the skills necessary to help characterize the drivers of pandemic risks and the seemingly countless human consequences of this global catastrophe. Thank you to your Working Group for advancing ethical, coordinated, and novel convergence research during this time of great loss and uncertainty.

As an expectation of the award, we ask that your Working Group submit a **one- to two-page research agenda setting paper** by no later than **June 19, 2020**. The paper should emanate from your Working Group topical area and highlight key ethical, methodological, and/or empirical gaps that could be addressed by the broader research community. This paper will be published on the CONVERGE website and will be free to download. The publication of your and other papers will be announced via press release and social media.

The team here will be following up soon to collect some additional information so that we can process the first installment (\$500) of your award. Your group will receive the second installment (\$500) upon submission and approval of your brief research agenda setting paper. Your Working Group is welcome to organize in any way that you deem appropriate and to spend the funds on any research-related expenses. Pre-approval or reporting of award expenditures is not required.

In addition to the above, we also ask the following of your Working Group:

Please ensure that the following **funding acknowledgement** is included on any papers, presentations, or other products that emerge as a result of this award:

This COVID-19 Working Group effort was supported by the National Science Foundation-funded Social Science Extreme Events Research (SSEER) Network and the CONVERGE facility at the Natural Hazards Center at the University of Colorado Boulder (NSF Award #1941338). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the NSF, SSEER, or CONVERGE.

If your group launches an original research study (or studies), we ask that you please take 10 minutes to register your work as part of the **COVID-19 Global Research Registry for Public Health and Social Sciences**. You can learn more and access the registry here: <https://converge.colorado.edu/resources/covid-19/public-health-social-sciences-registry>. Thank you for considering sharing this link and registry with your colleagues as well.

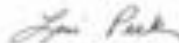


483 LACB | Boulder, Colorado | 80309-0483 | 303.492.5295
Faculty@naturalhazards.org | <http://www.naturalhazards.com>

Your Working Group will be highlighted prominently on the CONVERGE website. We will be back in touch to confirm your membership roster, brief description, and title of your Working Group (note that we have already shortened or otherwise revised some titles for clarity and consistency in the presentation of these groups). There is nothing for you to do right now in this regard, but please plan to respond to future inquiries from us. Once your page is live, we ask that you send us any additional materials, web links, photographs, or other resources that are created by your Working Group and that you wish to have featured on your Working Group page.

Thank you again to the entire Working Group for your application and your efforts to advance the field at this crucial historical moment. If you have any questions, please contact me via email at Lori.Peck@colorado.edu. Thank you for the work you are doing and will continue to do.

Please take care of yourself and others.



Lori Peck, Ph.D.
Professor, Department of Sociology
Director, Natural Hazards Center | <https://hazards.colorado.edu/>
Principal Investigator, NSF-Funded CONVERGE, SSEER, and DSEER | <https://converge.colorado.edu/>
University of Colorado Boulder

Cc: Jacqueline Meszaros, Joy Pauschke, Walter Peacock, and Robert O'Connor
Program Directors
National Science Foundation

Appendix 18: CONVERGE Working Group Technical Report

CONVERGE COVID-19 Working Groups for Public Health and Social Sciences Research Research Agenda-Setting Paper

Working Group Name: Ethics, Equity, and Risk for Higher Weight People

Working Group Description

This working group brings together multi-disciplinary experts, in academic, activism and law, to address ethical and justice issues relating to the experience of higher weight people during the COVID-19 pandemic. Public health emergencies typically hit vulnerable groups hardest and exacerbate existing social, economic and political inequalities. Higher weight people already experience anti-fat stigma, epistemic injustice, discrimination, barriers to care, and poorer health outcomes. Of relevance at this time, the origins of fat stigma and discrimination are embedded in colonisation and anti-Blackness. Our research agenda is to investigate the impact of COVID-19, including the public health, medical and media response to COVID-19, on the health and wellbeing of higher weight people. For example, some resource allocation and triage protocols de-prioritise higher weight people. Anti-fat stigma is strong in mass media, and weight-gain memes are viral on social media. These issues will be critically analysed from evidentiary, equity and ethics perspectives.

Issues

Timeline	Issues relating to ethics, equity & risk for higher weight people
<i>Pre Pandemic</i>	<ol style="list-style-type: none"> 1. Medical marginalisation of higher weight bodies. 2. Public health policy and initiatives persist with prioritising weight loss, despite evidence this is ineffective and harmful. 3. Social location - intersection of race, socio-economic status, gender identity and weight amongst other identities in personal risk profile for exposure to COVID-19 and infection through living arrangement, employment type and geographic location.
<i>Early Pandemic</i>	<ol style="list-style-type: none"> 1. Proliferate negative mainstream and social media narratives about and portrayal of higher weight bodies in relation to COVID-19 infection and illness. 2. Early publication & pre-publication of speculative research around body mass index (BMI) and COVID-19, with limited peer review or robust commentary for accessible interpretation by the general populace - heightening anxiety in response to alarmist headlines and media soundbites. 3. Renewed energy and reinvigoration of calls for collective action toward weight loss in higher weight patients
<i>Mid/Peak Pandemic</i>	<ol style="list-style-type: none"> 1. Surge planning: Allocation & reallocation of medical resource under scarcity/saturation event. 2. Treatment & diagnostic concerns, chronic underfunding of R&D for equipment, imaging tools & training that is fit for purpose. 3. Conflicting advice & protocols about best practice for mechanical ventilation of higher weight patients. 4. Emergence of statements from Public Health US asserting school closures secondary to the "pandemic could make Obesity worse". 5. Emergence of "infodemic" with individuals and companies capitalising off the pandemic - example upcoming book: "The 21 Day Immunity Plan: How to Rapidly Improve Your Metabolic Health and Resilience to Covid-19".
<i>Post Pandemic Risks</i>	<ol style="list-style-type: none"> 1. De-prioritisation of higher weight people from receiving early/timely vaccination, secondary to literature asserting reduced vaccine efficacy in higher weight patients. 2. Triage of patients for "catch up", business as usual care and elective surgeries, weight as exclusion criteria to reduce caseloads. 3. Reinvigoration of governments' appetites for action targeting anti-higher weight as a result of COVID-19.

Priority Topics and Specific Research and/or Activity Questions:

Priority Topic	Potential Research Question or Activity
1. Issue: Fat is associated with COVID-19	RQ1.1: What are the range of issues relating to ethics, equity & risk for higher weight people before, during and after the COVID-19 pandemic? Are these real or artefact? (see detailed actions in 2, 3, 4, & 5, below)
	RQ1.2: Ethics of proposed rationing and triage protocols on the grounds of weight or BMI (and successes in e.g. California)
	RQ1.3: Ethics and analysis of presenting dual pandemic: "Obesity" colliding with COVID-19
2. Risk and relevance: paper(s) to respond to the association of higher weight, acquisition and impact of COVID-19	RQ2.1: Are the associations between BMI and risk of COVID-19 acquisition (as presented in the literature) robust after accounting for potential confounding variables?
	RQ2.2: Are the associations between BMI and COVID-19 health outcomes (as presented in the literature) robust after accounting for potential confounding variables?
	RQ2.3: What are the ethical issues that arise from publishing associations between BMI, risk of COVID-19 acquisition and COVID-19 health outcomes?
	RQ2.4: What are the ethical issues that arise from differential treatment of people based on assumptions made about associations between BMI, risk of COVID-19 acquisition, and COVID-19 health outcomes?
	RQ2.5: Who is most at risk from the harms arising from assumptions made about associations between BMI, risk of COVID-19 infection and outcomes?
	A2.1: Create a document detailing risk and outcomes for dissemination to the general public.
3. Living Fat During COVID-19	RQ3.1: What are the lived experiences of higher weight people during and after COVID-19 (including impact of media coverage, various guidelines, research papers, wiggles)?
	RQ3.2: What is the impact of the public health measures enacted to reduce COVID-19, including travel bans, stay at home and physical/social distancing recommendations or orders, mandatory quarantine, and recommended or mandatory face masks in public (in some countries) for higher weight people?
	RQ3.3: What is the impact of media coverage about COVID-19 infection and transmission mechanisms, morbidity and mortality rates, and public health measures for higher weight people?
	RQ3.4: What is the impact of social media memes about weight gain due to stay at home requirements for higher weight people?
	RQ3.5: What is the impact of all of these factors on mental, physical, social, spiritual and financial health and wellbeing for higher weight people?
	RQ3.6: What is the impact of all of these factors on behaviours of higher weight people and health professionals or health agencies
4. Intersection of anti-Blackness, fatness & colonisation in COVID-19	RQ4.1: How do repeated media messages regarding the disproportionate impact of COVID-19 on the black community affect mental and physical health of higher weight individuals who were at increased risk due to size and race?
	RQ4.2: Were the displays of racial/anti-black violence more impactful due to prolonged social isolation? (links with other working groups?)
	RQ4.3: Are higher weight individuals able to fully engage in peaceful protest opportunities or do they feel restricted based on physical access or fears due to increased risk of COVID-19 transmission?

	A4.1:	How can we best amplify and support the work of black clinicians, scholars and fat activists?
3. Repository Resource	A.5.1:	Create repository of articles
	A.5.2:	Prepare 1 paragraph summary of the article and counter narrative
	A.5.3:	Create 'viral unit' infographics/videos

Ethical / Methodological Considerations:

The major ethical and methodological considerations relate to the collection and analysis of experiential first person accounts. One consideration is the physical distancing restrictions of COVID-19 which limit in-person research methods. Second, we need to minimise the research burden on higher weight people. Many higher weight people have already been subjected to significant harm during the pandemic. Recounting their experience may cause anxiety and/or further harm and we will implement strategies to minimise and mitigate this risk. Third, we will explore options for social media research, drawing on stories and narratives that are already in the public domain. Here we will address ethical issues such as privacy, consent for re-use and respecting the expectations and terms of authors with regards to their stories. In addition to the empirical research, we will also undertake a range of reviews. Here we will analyse available published literature on COVID-19 infection and outcomes in higher weight people. We will use a critical weight science lens including socio-political analysis. This review will inform our understanding of risk and health disparities relating to COVID-19 for higher weight people.

Working Group Plan

Working group members appreciate the opportunity for collaboration since formation. Members wish to continue this group. We welcome new collaborators, in particular Black, Indigenous, and People of Colour. Intersectionality is key and a first action being progressed is to network with other working groups. We will continue to collaborate via online means and plan to meet via Zoom monthly. Our aim is to secure grant funding to pursue a number of the research questions identified. It is our hope that we will find a donor to facilitate the creation of a website to promote and share research progress and outcomes as well as hosting our Repository (Priority Topic 5).

Contributors in alphabetical first name order:

Angela Ballantyne, Assoc Prof, Department of Primary Health Care & General Practice, University of Otago, Wellington, Visiting Senior Research Fellow at the National University of Singapore

Angela Meadows, PhD, SSHRC, Postdoctoral Fellow, Department of Psychology, Western University, Canada

Ashley Gillen, Kaupapa Māori trans-disciplinary researcher, PhD candidate, Te Wānanga o Waipapa, Aotearoa (The University of Auckland, New Zealand)

Ashleigh Rushton, PhD candidate, Joint Centre for Disaster Research, Te Kōwhiri ki Pūwhiriāra, Aotearoa (Massey University, New Zealand)

Brandie Sendrak, Supervising Attorney, Independent Living Resource Center, San Francisco, USA

Cat Parnell, PhD, Senior Lecturer, Fat Studies scholar, Te Kōwhiri ki Pūwhiriāra, Aotearoa (Massey University, New Zealand)

Carbett O'Toole, Elder in disability communities, writer, publisher at Reclamation Press, public speaker and artist

Fiona Quigley, PhD candidate, Ulster University, Northern Ireland

Fiona Wilton, advanced accredited practicing dietitian, Weight neutral approach, professional development

George Parker, PhD, Postgraduate Lecturer, School of Midwifery, Te Kōwhiri Mātauranga ki Otago, Aotearoa (Otago Polytechnic), Lecturer, School of Medicine, Te Wānanga o Waipapa, Aotearoa (University of Auckland, New Zealand)

Jess Campbell, Medical Student, Christchurch School of Medicine, Te Whare Wānanga o Ōtago, Aotearoa (University of Otago, New Zealand), Nutritionist & Clinic Director, Body Balance Nutrition & Dietetics, Tamaki Māharaunui, Aotearoa (Auckland, New Zealand)

Lesley Gray, FPPH, MPH, Senior Lecturer, Department of Primary Health Care & General Practice, Te Whare Wānanga o Ōtago, Aotearoa (University of Otago, Wellington, New Zealand); PhD Candidate, Joint Centre for Disaster Research, Te Kōwhiri ki Pūwhiriāra (Massey University)

Lesley Williams, MD, CEHS, Medical Team Lead, Banner Behavioral Hospital, Arizona, USA

Lily O'Hara, MPH, PhD, Associate Professor, Department of Public Health, Qatar University, Doha

Louise Adams, Clinical psychologist, Trust Yourself Well-Unstuffed, University of New South Wales, Australia

Marilyn Wann, Weight diversity speaker, author of *FAT 50%*, and activist for fat rights and weight-neutral approaches to health. San Francisco, California, USA

Max Airborne, Fat/disability/queer activist California, USA

Patty Thille, Assistant Professor, Department of Physical Therapy, University of Manitoba, Winnipeg, Canada

Sandra Solvay, Attorney, Adjunct Professor of Law, content developer, and activist. Berkeley, California, USA

There is much to do!

Appendix 19: Letter to Pharmac

Needle Length and pre-packaged syringes for 2022 Flu Season

Kia ora PHARMAC and Ministry of Health.

We the undersigned would like to bring a matter to your attention and seek an opportunity to discuss this with you.

It has come to our attention that the Afluria Quad vaccines for influenza season 2022 has a 25 Gauge 16mm length needle. As the vaccine is in a preloaded syringe the Ministry of Health (online, twitter) confirmed the needle length is unable to be changed.

While the Afluria data sheet signals this vaccine can be administered *deep* subcutaneously (SC) or intramuscular (IM), a needle length of 16mm will preclude successful IM for most adults as the 16mm needle does not meet the Ministry of Health's own guidelines for most adult intramuscular injections [Appendix A overleaf]. A recent review of the evidence indicates greater immune response of intramuscular rather than subcutaneous injection (Cook, 2021). Further, the injection of a vaccine into a layer of subcutaneous fat with poor vascularity can result in slow mobility and processing of antigen that can cause vaccine failure (Poland et al, 1997) in influenza vaccines (Grosswasser et al, 1997). A selection of non-fixed needle and syringes should be available to allow vaccinators to select the length and choice of SC or IM appropriate to each patient.

We are concerned that the very people who are most vulnerable to seasonal influenza due to social and environmental determinants of health, may also present with thicker layers of subcutaneous fat and poorer vascularity. This potentially exposes vaccine recipients to a less than optimal immune response to their vaccination. In addition, for vaccine recipients who are able to self-advocate for IM vaccination, the preloaded syringes present a structural barrier, placing vaccinators who wish to appropriately select a longer needle in a difficult position of not being able to do so.

Ngā mihi,

Lesley Gray	MPH MSc, Senior Lecturer, University of Otago, 23a Mein Street, Wellington 6242
Silke Hartung	Magazine Editor and big-bodied citizen with concerns
George Parker	PhD, Lecturer, School of Health, Victoria University of Wellington
Janine Paynter	PhD, Snr Research Fellow, Dept GP & PHC, The University of Auckland
Carmen Timu-Parata	Research Fellow, registered nurse, vaccinator
Angela Ballantyne	PhD, A/Prof Bioethics, University of Otago, Wellington
Ben Gray	MBChB MSHL, A/Prof, University of Otago, Wellington
Lucy Telfer Bernard	PhD, University of Otago, Wellington
Ashlea Gillon	MPH, Fulbright Scholar, Research Fellow, University of Auckland
Jessica Campbell	MBChB, Canterbury DHB & Clinical Director Body Balance Nutrition & Dietetics
Isabelle Lomax-Sawyers	BA MBChB, junior doctor

Appendix A – excerpt from the Ministry of Health's Immunisation Guidelines 2020, section 2 Processes for safe immunisation

Older children (7 years and older), adolescents and adults	Deltoïd	23-25 G x 16 mm, or 23-25 G x 25 mm, or 21-22 G x 38 mm	Most adolescents and adults will require a 25 mm needle to effect deep IM deposition.
	Vastus lateralis	21-22 G x 38 mm	
Very large "T" person	Deltoïd	21-22 G x 38 mm	Use clinical judgment to ensure needle length is appropriate to reach muscle.

Bibliography

Cook, I. F. (2021). Subcutaneous vaccine administration—an outmoded practice. *Human Vaccines & Immunotherapeutics*, 17(5), 1329-1341.

Groswasser et al., 1997. Needle length and injection technique for efficient intramuscular vaccine delivery in infants and children evaluated through an ultrasonographic determination of subcutaneous and muscle layer thickness. *Pediatrics* 100:400-403.

Koster et al., 2009. Needle length for immunization of early adolescents as determined by ultrasound. *Pediatrics* 124(2): 667-72.

Poland et al., 1997. Determination of deltoid fat pad thickness. Implications for needle length in adult immunization. *JAMA* 277(21): 1709-11.

Appendix 20: Ngāti Porou Hauora letter



Ngāti Porou Hauora Charitable Trust
PO Box 2
Te Pahi Springs 4010
Tel: (06) 868 103

11 June 2019

Lesley Gray
PhD Candidate
Massey University Joint Centre for Disaster Research
lesley.gray@otago.ac.nz

cc: jennie.harréhindmarsh@nph.org.nz

Kia ora Lesley

PhD Research Proposal: Disaster risk reduction for people with high body mass

This letter is to confirm that, at its 29 May meeting, the Ngāti Porou Hauora Charitable Trust Board **approved** that NPH participate in your research project on the understanding this will require minimal staff time.

The Board also noted our participation would involve you convening discussions with NPH personnel and community members; displaying a project poster in health centres; and inviting some staff, patients & whānau to participate in interviews - analysis of which will contribute to identifying ways to strengthen disaster risk reduction for those with high body mass.

Ngāti Porou Hauora looks forward to working with you to finalise plans for our contribution to this project and in due course to using its outputs for the benefit of our patients, whānau and wider communities.

Please continue to liaise with our Research Coordinator, Dr Jennie Harré Hindmarsh to implement your project in the role.

Naku noā na

A handwritten signature in blue ink, appearing to read 'Rose Kahaki'.

Rose Kahaki
Chief Executive



To offset carbon emission outputs during the course of this doctoral thesis I have purchased a range of native trees from the Greater Wellington Region Council's Akura Plant Nursery. These will be planted on our land during winter 2022.

Image credit: Lesley Gray personal collection