MONASH University

Assessing Capacity and Capacity Development in Public Health Community Nutrition Interventions.

"It's not the strongest of the species that survive, but the one most adaptable to change."

– Charles Darwin

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Abstract

Public health interventions focus on maintaining the wellbeing of a population, protecting or promoting health. Improving nutrition is key to improving population health. Community nutrition interventions have been identified as one of the most promising practices in public health, as communities have local insight and can identify and mobilise resources to solve locally identified health problems. Effective public health community nutrition interventions require cohesive communities that have capacity for local interventions to be sustainable. Community capacity is therefore a key ingredient for community nutrition interventions. However, a common understanding of community capacity needs to evolve to better define and describe how capacity is assessed in both research and practice in community nutrition interventions. This thesis aimed to; 1) explore how capacity is assessed in public health community interventions through a systematic literature review and 2) explore and describe capacity and capacity development over time at individual, organisational and community levels during the implementation of a community nutrition intervention. To achieve these aims, a systematic literature review and three qualitative studies were conducted. Using a social constructivism approach that embraced multiple understandings of capacity development, this research attempted to identify what influenced capacity development in a community nutrition intervention. Although focused on a range of individuals' experiences during the intervention, this research aimed to explore and describe the multiple level relationships that influence capacity by utilising the social-ecological model (individual, interpersonal, community, organisational and environmental/policy levels). While this model is widely accepted, rarely have researchers had the opportunity to examine the importance of each level in a single community intervention study. The research described in this thesis examined the importance of the individual, community and organisation levels of capacity and the relationships between these levels longitudinally during a three-year public health community nutrition intervention.

The systematic review of the literature searched four databases (MEDLINE, CINAHL, PsycINFO and Sociological Abstracts). From 2596 records, after exclusion criteria were applied, 19 studies were synthesised to determine how capacity is assessed. The three qualitative studies across individual, community, organisational contexts were completed during a three-year (2015-2018) state-wide community nutrition intervention, implemented by a non-profit organisation, throughout Queensland, Australia. The multi-strategy intervention aimed to improve the nutritional health of individuals living in regional, rural and remote Queensland, tapping into over 80 communities and their volunteer members located throughout the state. The non-profit organisation executive team managed the budget, employment of nutritionists, strategic planning and governance of the intervention. A team of qualified nutritionists delivered the program throughout Queensland and were supported locally by non-profit community volunteers to implement interventions in each community.

Individual capacity was explored using qualitative description. Semi-structured interviews with volunteers examined their capacity and how this may influence community nutrition intervention development. Thirty of 44 volunteers completed phone interviews (75% response rate). *Organisational* capacity development was explored using a longitudinal, qualitative exploration. All executive management and nutritionists employed by the organisation (100% response rate) were included in semi-structured interviews (n= 17) at multiple intervention time points over an 18-24-month implementation period. Document analysis of program newsletters (n=21) was also undertaken. *Community* capacity development was explored using longitudinal, qualitative, multiple case study methods. In this study, purposive maximum variation sampling was chosen to select 11 diverse cases, monitored over an 18-24-month implementation period (100% response rate). Data collection included semi-structured interviews with fourteen community volunteers at multiple intervention time points (total interviews n=24), nutritionists (total interviews n=11) and document analysis of monthly program newsletters and a final management report that described local community nutrition interventions (total documents n=22). Across all three studies, interview transcripts and documents were analysed separately using thematic analysis. Codes between data sources were compared and collapsed into categories, which were then developed to build themes.

The findings from the systematic review confirm existing research that there is no standardised capacity assessment approach in community interventions. Capacity assessment was found to be heterogeneous, however the review provided clarity around twelve common capacity frameworks and capacity domains used to assess capacity in community interventions. The three qualitative studies exploring and describing capacity and capacity development in individuals, communities and the non-profit organisation indicated that capacity development was influenced by whether individuals, communities and the non-profit organisation had the ability to be flexible and responsive

to community interests to implement community nutrition interventions. The importance of autonomy to enable individuals and communities to adapt over the course of an intervention was highlighted. How and why capacity developed was influenced by relationships and communication processes between executive management, nutritionists and volunteers and this impacted on the organisational culture. Findings indicated the organisational culture created a lack of autonomy and limited the ability of individuals within the organisation to adapt and change over time and hence appeared to hinder capacity development within the community nutrition intervention. A lack of organisational strategic support and resistance to change organisational structures, processes as well as individuals' roles and responsibilities, influenced how and why capacity developed over time. The relationship between these individual, interpersonal, community and organisational factors influenced capacity development.

The findings from this research provide important recommendations for capacity assessment methods in community interventions. Assessing capacity development in community interventions may work best if tailored to local circumstances with an agreed approach to capacity assessment in advance by funding bodies, researchers and practitioners. Capacity assessment may need to remain context specific and flexible in order to capture the ever-changing nature of capacity development over time. The findings indicate the need to expand capacity assessment frameworks and models to include dynamic change processes affecting capacity development and include building relationships and communication processes as core capacity domains in capacity frameworks. This thesis highlights that individual, interpersonal, community and organisational factors influenced capacity development within a community nutrition intervention. Longitudinal designs facilitate the ability to capture the dynamic and changing nature of capacity during interventions. Using the social-ecological model framework has highlighted the importance of considering capacity assessment at multiple levels. Researchers and practitioners should approach capacity assessment acknowledging that capacity is always adapting in and between individuals, communities and organisations.

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Thesis including published works declaration

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes one original paper published in a peer reviewed journal and three results chapters that are intended to be published following thesis examination. The core theme of the thesis is capacity assessment in community nutrition interventions. The ideas, development and writing up of the manuscript and chapters in the thesis were the principal responsibility of myself, the student, working within the Department of Nutrition, Dietetics and Food under the supervision of Claire Palermo.

(The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input into team-based research.)

In the case of chapter accepted manuscripts - my contribution to the work is as follows:

Thesis Chapter	**Publication Title**	**Status** (published, in press, accepted or returned for revision, submitted)	**Nature and % of student contribution**	**Co-author name(s) Nature and % of Co-author's contribution***	**Co-author(s), Monash student Y/N***
Chapter 2	Capacity assessment in public health community interventions: a systematic review	Published	70%. Concept and collecting data and writing drafts and final manuscript	Claire Palermo, Data analysis Input into manuscript 15% Dianne Reidlinger, Data analysis, input into manuscript 15%	Yes No

*If no co-authors, leave fields blank

The published paper is presented as published in the journal. As a result, separate reference lists exist for the published study and the thesis as a whole.

Student signature: **Date:** 16/06/2020

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the student's and co-authors' contributions to this work. In instances where I am not the responsible author, I have consulted with the responsible author to agree on the respective contributions of the authors.

Main Supervisor signature: Claire Palermo **Date:** 16/06/2020

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Glossary

Adaptive Capacity	This term is described as the ability of a system to prepare for stresses and changes in advance or adjust and respond to the effects caused by the stresses (Engle, 2011).
Capacity	'Attribute of people, individual organisations and groups of organisations. Capacity is shaped by, adapts to, and reacts to external factors and actors. It includes skills, systems, processes, ability to relate to others (internally and externally), leadership, values, formal and informal norms, as well as loyalties, ambitions and power. Thus, capacity development is a change process modifying some of these factors, or their configuration' (Boesen, 2010) p147.
Capacity development	An approach to the development of sustainable skills, structures, resources and commitment to improvements in health and other sectors to prolong and multiply health gains. It increases the range of people, organisations and communities who are able to address health problems, and in particular, problems that arise out of social inequity and social exclusion (Health, 2001).
Capacity building	Capacity building is the development of knowledge, skills, commitment, structures, systems and leadership to enable effective health promotion. It involves actions to improve health at three levels: the advancement of knowledge and skills among practitioners; the expansion of support and infrastructure for health promotion in organisations, and; the development of cohesiveness and partnerships for health in communities (Smith, Tang, & Nutbeam, 2006)
Community	The term 'community' in reference to community capacity building, is usually referred to as i) a specific geographical (spatial) community, ii) a community of identity or iii) groups of people with a common interest or issue (non-spatial), for example youth, specific diseases (Craig, 2007; Laverack, 2003; Smith et al., 2006).
Community nutrition interventions	The term community-based has a wide range of meanings including community as setting, community as target, community as agent, and community as a resource. The term community-based intervention for the purpose of this research will refer to a community as the setting for interventions. As a setting, the community is primarily defined geographically and is the location in which interventions are implemented (McLeroy, Norton, Kegler, Burdine, & Sumaya, 2003).
Community capacity building	Enhancement of a community group's abilities (skills, resources and social networks) to identify and act on health concerns (Craig, 2007; Labonte & Laverack, 2001).
Community Development*	A process that involves engaging with communities, increasing their involvement in decision making about health service design and delivery. Ultimately improving their sense of ownership in the program (Fawcett et al., 2000).
Food literacy	Food Literacy is defined as: 'the scaffolding that empowers individuals, households, communities or nations to protect diet quality through change and strengthen dietary resilience over time. It is composed of a collection of inter-related knowledge, skills and behaviours required to plan, manage, select, prepare and eat food to meet needs and determine intake' (Vidgen & Gallegos, 2014) p54.

Intelligence*	Intelligence can be defined as gathering information from various sources, that can guide effective and systematic public health strategy development and problem resolution in community nutrition interventions (MacLellan-Wright et al., 2007).
Intervention	A strategic set of activities or strategies informed by the analysis of determinants aimed at bringing about change (McLeroy et al., 2003).
Leadership*	'Leaders are people with Vision – they see a future different than the status quo. They have Influence to drive change – they are able to communicate their vision and win others over to embrace and implement it. In addition, leaders are grounded in Values, which provide a foundation for Vision and a passion to achieve personal and organizational mission' (Yphantides, Escoboza, & Macchione, 2015)p1.
Non-profit organisation	A non-profit organisation does not operate for the profit, personal gain or other benefit of particular people (Anheier, 2014).
Population change	Population change is defined as the aggregate of individual changes (Merzel & D'Afflitti, 2003).
Organisational capacity	The ability of organisations to fulfil their missions in an effective manner (Backer, 2001)
Organisational development*	The structures, processes and management systems within organisations. These then may influence their contribution to capacity building (Health, 2001)
Partnerships*	Partnerships bring together individuals and organisations to pursue a shared interest. Successful capacity building partnerships are those that increase the capacity of parties to work together effectively(Baillie, Bjarnholt, Gruber, & Hughes, 2009).
Public health	Public Health can be defined as involving activities aimed at benefiting a population, with an emphasis on prevention, protection and health promotion rather than on treatment (AIHW, 2014).
Public health nutrition	The promotion and maintenance of nutrition-related health and wellbeing of populations through the organised efforts and informed choices of society (Hughes, 2008). Public health nutrition encompasses community nutrition and is distinct from clinical and community dietetics whose focus is secondary and tertiary prevention with individuals and small groups rather than primary prevention in populations (Hughes & Somerset, 1997).
Quality Project Management*	Project management refers to the planning, organising, directing and controlling of project resources to complete specific goals and objectives (Fawcett et al., 2000).
Resources*	Resources can be described as financial, human, information, specialist advice or decision-making tools that can benefit with a public health intervention (Health, 2001).

Social-ecological model of health	The social-ecological Model is a theory-based framework for understanding, exploring, and addressing the social determinants of health at many levels. The social-ecological Model encourages us to move beyond a focus on individual behaviour and toward an understanding of the wide range of factors that influence health outcomes This can help identify promising points of intervention and provide a better understanding of how social problems are produced and sustained within and across the various subsystems "Ecological" means multiple levels, beyond the individual. Thus, the social-ecological Model demonstrates that behaviour is the result of the knowledge, values, and attitudes of individuals as well as social influences, including the people with whom they associate, the organisations to which they belong, and the communities in which they live (McLeroy, Bibeau, Steckler, & Glanz, 1988).
Sustainability	The ability to maintain programs over long periods of time. This means developing set of durable activities and resources aimed at program-related objectives at the beginning of an intervention (Schell et al., 2013).
Systems thinking	In simplest terms, systems thinking is a way of finding out what to do in a complex situation. It explores relationships between the parts of a 'system', and how they interact as a dynamic whole (Stroh, 2015).
Workforce development*	Strategic investment of resources by organisations and communities in activities that reach and maintain a critical mass of human resources, develop organisational environments that enable and promote effective practices and enhance the competence of the workforce for more effective public health nutrition effort that achieves public health outcomes (Hughes, 2004).

* Common capacity domains- as per established agreement in the literature

Abbreviations

ASGC	Australian Standard Geographical Classification
CKP	Country Kitchens Program
HONW	Hands on Nutrition Workshop
NPO	Non-Profit Organisation
PH	Public Health
PICO	Population Intervention Comparison Outcome
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
SLR	Systematic Literature Review
Qld	Queensland

Chapter 1: Introduction

1.1 Preamble

There is ample evidence that public health practice is effective at improving the health of populations. This chapter presents a narrative review of the literature describing how community interventions have been identified as one of the most promising practices in public health. It defines public health and sociological theory and describes how changing the social-ecological environment through community capacity development supports improved local health outcomes. Social-ecological level (individuals, communities and organisations) and their interrelationships when assessing capacity in community nutrition interventions are discussed. Through the literature review, this chapter highlights key gaps in the evidence and then concludes with a summary of the research aims, scope and significance.

1.2 Public health theoretical perspective

Public health interventions focus on maintaining the wellbeing of a population and are aimed at protecting or promoting health and preventing illness. Public health interventions recognise that the conditions in which people live significantly influence their health (Organisation, 2012). There is ample evidence that public health interventions are effective at improving the health of populations (Jacobs, Jones, Gabella, Spring, & Brownson, 2012; Keller, Strohschein, Lia-Hoagberg, & Schaffer, 2004; Kohatsu, Robinson, & Torner, 2004). Both health promotion and public health fields adopt the social-ecological model to understand and describe population health. A theory is a set of concepts, definitions and propositions that presents a systematic way of understanding events or situations (Glanz, Rimer, & Viswanath, 2008). Social-ecological theory combines individual-focused interventions to modify health behaviour with environmental-focused efforts to enhance physical and social surroundings to improve health outcomes. The ecological perspective emphasises the interaction between, and the interdependence of, factors within and across all levels of a health problem (Stokols, 1996).

The social-ecological model (Figure 1.1) has been chosen as a useful framework to base this research on because it recognises that an individual's behaviour is influenced by multiple factors (Bronfenbrenner, 1977; McLeroy et al., 1988). The model helps to understand factors affecting behaviour and also provides guidance for developing successful interventions. The social-ecological model emphasises five nested hierarchical levels that influence an individual's behaviour (such as intrapersonal, interpersonal, organizational, community and public policy) (Table 1.1). The principles of social-ecological models are consistent with social cognitive theory concepts (Bandura, 2001) which suggest that creating an environment conducive to change is important to making it easier to adopt healthy behaviours (Bronfenbrenner, 1977; McLeroy et al., 1988). Although this model emphasises the unique contribution of each proposed dimension it does not describe extensively the relationships between dimensions. To the PhD candidate's knowledge, the social-ecological approach has not been fully applied to capacity development interventions in public health. People matter in social systems (Finegood, Merth, & Rutter, 2010). The social-ecological model assumptions that appropriate changes in the social environment will produce changes in individuals, and that the support of individuals in the population is essential for implementing environmental changes, entails those individuals need to have capacity to change within these social environments.

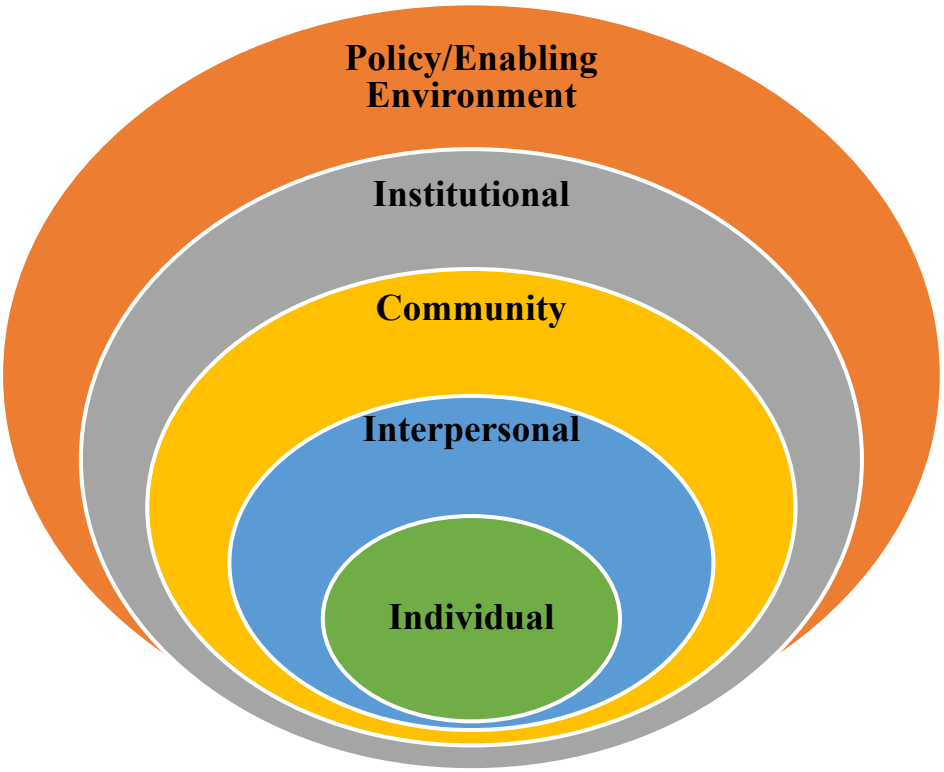

*Figure 1.1: Social-ecological levels**

* adapted from (Bronfenbrenner, 1977; McLeroy et al., 1988)

Table 1.1: Social-ecological model level descriptions (McLeroy et al., 1988)

Social-ecological model level	Description
Intrapersonal/ Individual	Characteristics of an individual that influence behaviour change, including knowledge, attitudes, behaviour, self-efficacy, developmental history, gender, age, religious identity, racial/ethnic identity, sexual orientation, economic status, financial resources, values, goals, expectations, literacy, stigma, and others.
Interpersonal	Formal (and informal) social networks and social support systems that can influence individual behaviours, including family, friends, peers, co-workers, religious networks, customs or traditions.
Community	Organisations or social institutions with rules and regulations for operations that affect how, or how well, for example, food literacy program services are provided to an individual or group.
Institutional	Relationships among organisations, institutions, and informational networks within defined boundaries, including the built environment (e.g., parks), village associations, community leaders, businesses, and transportation.
Policy/Enabling Environment	Local, state, national and global laws and policies, including policies regarding the allocation of resources for community nutrition interventions

1.3 Capacity and public health community interventions

One of the key elements of effective public health practice is the capacity and performance of communities to identify, implement, strengthen and sustain collective efforts to improve health. Capacity refers to the ability and potential of individual people, communities, organisations and systems (L. Brown, LaFond, & Macintyre, 2001; Hawe, Noort, King, & Jordens, 1997). Although capacity as a concept is inherent in public health and health promotion, it largely remains a hidden concept even within consensus health promotion documents (Fry & Zask, 2017). The Ottawa Charter for Health Promotion is a document that was produced by the World Health Organisation in 1986 in response to growing expectations for a new public health movement around the world (Organisation, 1986). The Ottawa Charter highlights that capacity is an integral aspect for public health interventions theory. It stipulates six different principles of health promotion action; 1. Build healthy public policy 2. Create supportive environments 3. Strengthen community action 4. Develop personal skills 5. Reorient health services 6. Moving into the future (Organisation, 1986). It recognises that communities need to be involved in setting priorities, making decisions, planning strategies and implementing them to achieve better health (Organisation, 1986). Although there is no specific focus on how to develop capacity in the Ottawa Charter, the elements described align with many of the capacity domains described in the literature (described in Section 1.4). Similar to the social-ecological model, the Ottawa Charter also recognises the need to develop personal skills through providing information, education for health and enhancing life skills (Fry & Zask, 2017; Organisation, 1986). Strengthening community action is defined as expanding the resources and capacity of communities to make decisions and take collective action to increase their control over the determinants of their health (Organisation, 1986; Rifkin, 2003). Actions can include developing networks, programs and advocacy for improvements in the running of organisations and/or public policy change. Community refers to the people who live in a defined geographic locality and or who share a sense of identity or have common concerns (Fry & Zask, 2017). While strategies for strengthening community action and developing personal skills strategies continue to be called for in public health interventions (Liberato, Brimblecombe, Ritchie, Ferguson, & Coveney, 2011), there is little empirical evidence that these lead to better health outcomes.

Community interventions have been identified as one of the most promising practices for capacity development in public health (McLeroy et al., 2003). Involving entire communities in programs, policies, and environments may increase the overall health and well-being of a population (Organisation, 1986).Community interventions are focused on communities rather than whole populations and use multiple interventions, targeting change among individuals, groups, and organisations, and often incorporate strategies to create policy or change the social-ecological

environment. Previous research (McLeroy et al., 2003) has described four categories of community interventions based on interpretations of community within the literature: community as setting, community as target, community as agent, and community as a resource (Table 1.2).

Table 1.2: A typology of community interventions*

Typology	Target of intervention	Level of intervention
Community as setting The term community-based often refers to community as the setting for interventions. As setting, the community is primarily defined geographically and is the location in which interventions are implemented.	Target Settings. For example, using mass media or other approaches, or may take place within community institutions, such as neighbourhoods, schools, churches, work sites, voluntary agencies, or other organisations. Engage community input via advisory committees or community coalitions that assist in tailoring interventions to specific target groups or to adapt programs to community characteristics.	Focus primarily on changing **individual's behaviours** as a method for reducing the population's risk of disease. Various levels of intervention may be employed, including educational or other strategies that involve individuals, families, social networks, organisations, public policy.
Community as target The community as a target refers to the goal of creating healthy community environments through broad systemic changes in public policy and community-wide institutions and services.	Target the health status characteristics of the community.	Focus primarily on strategies that are tied to **selected indicators**, and success is defined as improvement in the indicators over time in **a community.** For example, community indicators projects use data as a catalytic tool to go beyond using individual behaviours as primary outcomes. Indicators can range from the number of days exceeding Environmental Protection Agency standards for air quality to the amount of park and recreation facility space per capita to the proportion of residents living below federal poverty levels.

Typology	Target of intervention	Level of intervention
Community as a resource	Target community ownerships/participation. This model is commonly applied in community-based health promotion because of the widely endorsed belief that a high degree of community ownership and participation is essential for sustained success in population-level health outcomes.	Focus primarily on sustained success in **population-level health outcomes.** These programs are aimed at organising a community's internal resources or assets, often across community sectors, strategically focus their attention on a selected set of priority health-related strategies. These kinds of interventions involve external resources and some actors' external to the community that aim to achieve health outcomes by working through a range of community institutions and resources.
Community as agent The emphasis in this model is on respecting and reinforcing the natural adaptive, supportive, and developmental capacities of communities. *Closely linked to community a resource.*	Target strengths in existing community units. Aim to strengthen these units of solution to better meet the needs of community members. This necessitates a careful assessment of community structures and processes, before any intervention.	Focus primarily on **strengths in community** and building on existing connections and interactions. Requires an insider's understanding of the community to identify and work with these naturally occurring units of solution, to address community problems. This approach may include strengthening community through neighbourhood organisations and network linkages, including informal social networks, ties between individuals and the organisations that serve them, and connections among community organisations to strengthen their ability to collaborate.

*adapted from: (McLeroy et al., 2003)

Community interventions are complex and rarely fit these categories neatly and may have characteristics from each of the categories. Six core elements of community interventions have been proposed as : 1) integrated and comprehensive; 2) involve a range of locations; 3) employ multiple interventions; 4) include multiple individuals, organisations, groups; 5) involve the community in planning, implementation, management and evaluation; and 6) include multiple individual-level intervention strategies (Merzel & D'Afflitti, 2003). It is therefore important to clarify what is meant by communities, who comprises a community and the type of intervention referred to for each community intervention.

Engaging the community, as part of interventions, requires people being at the centre of decision-making processes and is considered essential for achieving health outcomes (Declaration, 1997). The process of community-based approaches may not focus on specific programs or even specific health issues. Instead, this process may attempt to create a framework for community readiness and mobilisation to address comprehensive health issues as they become identified within the community (Burnett, 2006; Edwards, 2015; Green & Kreuter, 2005). Community-level approaches have been based upon the theoretical concept of building community capacity (Wendel et al., 2009).

Although the community as a setting focuses primarily on changing individual behaviour, the latter three typologies (community as target, community as resource, and community as agent) suggest that suitable outcomes may not just be changes in individual behaviours but may also include changes in community capacity (Goodman et al., 1998; Norton, McLeroy, Burdine, Felix, & Dorsey, 2002). In fact, researchers argue that contemporary public health has two broad goals: strengthening the health of our communities and building community capacity to address health-related issues (McLeroy et al., 2003). So, cohesive communities that are skilled and have capacity are crucial if community interventions are to be successful and sustainable (A Moyer, M Coristine, L MacLean, & M Meyer, 1999). The capacity of communities is therefore a key ingredient for community interventions.

Public health theories describe the importance of capacity to create sustainable community interventions across multiple levels of the social-ecological model. Theoretically, capacity assessment should be assessed across these multiple levels, however these are rarely used to inform capacity assessment in community interventions. There is a gap between theory and application into practice of capacity assessment in community interventions.

1.4 Assessing capacity in community interventions

Capacity – needed by the individual to navigate the system and achieve behaviour change; is ill-defined and lacks assessment. Capacity is *not well defined* in the literature, making it difficult to assess consistently. There are numerous terms used to describe capacity, including capacity building, community capacity and capacity development (Baillie et al., 2009; L. Brown et al., 2001; Chaskin, 2001; Craig, 2005; Crisp, Swerissen, & Duckett, 2000; Hawe et al., 1997; Hughes & Somerset, 1997; LaFond, Brown, & Macintyre, 2002; Lempa, Goodman, Rice, & Becker, 2008; Alwyn Moyer, Marjorie Coristine, Lynne MacLean, & Mechthild Meyer, 1999; Rifkin, 2003; Simmons, Reynolds, & Swinburn, 2011). More clearly articulating these terms is vital because in order to assess capacity we need to be clear about what we are assessing, for example capacity, community capacity or capacity development. A glossary clearly describing the various capacity terms has been provided at the start of this thesis (page 15). Regardless of the variety of definitions related to capacity, there are some features common to all of them. Capacity has been described as a ***process*** by which individuals, communities or organisations ***develop*** knowledge, skills, confidence and problem-solving capabilities to improve people's own lives or a community's or organisation's ***ability*** to approach a health issue by creating new structures, resources, approaches or values (Baillie, 2010; Crisp et al., 2000; Hawe et al., 1997). For the purpose of this thesis, the term capacity development will be used acknowledging that building capacity is a process that fluctuates and changes throughout community interventions.

Capacity is *not consistently assessed* in the literature. Many conceptual capacity building frameworks exist and these describe a variety of capacity domains (Baillie et al., 2009; Bergeron et al., 2017; Chaskin, 2001; Craig, 2007; Crisp et al., 2000; Dressendorfer et al., 2005; Gibbon, Labonte, & Laverack, 2002; Goodman et al., 1998; Health, 2001; D. Horton, 2002; Jackson et al., 2003; Labonte & Laverack, 2001; Lempa et al., 2008; O'Shaughnessy, Carter, & Black, 1999). The purpose of these discrete frameworks, vary from assisting the systematic assessment, development and evaluation of capacity development activities within public health nutrition practice (Baillie et al., 2009), to mapping the relations between community capacity components and understanding how capacity may be developed (Chaskin, 2001). In previous capacity frameworks, the elements of capacity development have been referred to as 'factors', 'dimensions', 'indicators', and 'domains'. In this thesis, the components that comprise capacity development will be referred to as 'domains'. In order to achieve capacity development in community interventions, a focus on these domains as part of practice and interventions appear to be essential.

Despite ambiguity in the use of the terms capacity and capacity development in the public health field, more recently there is consensus that capacity is comprised by numerous domains (Aluttis et al., 2014; Liberato et al., 2011; Swanepoel, Fox, & Hughes, 2015) and there is general agreement on a set of core domains for assessing capacity development. There are eight key domains that are consistently cited across the recent literature, although using various terminology. These domains are 1) Community development (participatory decision making, sense of community) 2) Intelligence (evidence gathering) 3) Leadership 4) Organisational development 5) Partnerships 6) Quality project management 7) Resources and 8) Workforce development (Liberato et al., 2011). (Table 1.3)

Table 1.3: Eight common capacity domains(Liberato et al., 2011) **and descriptions**

Community Development	This process involves engaging with communities, increasing their involvement in decision making about health service design and delivery. Ultimately improving their sense of ownership in the program(Fawcett et al., 2000)
Intelligence	Intelligence can be defined as gathering information from various sources, that can guide effective and systematic public health strategy development and problem resolution in community nutrition interventions(MacLellan-Wright et al., 2007).
Leadership	'Leaders are people with Vision – they see a future different than the status quo. They have Influence to drive change – they are able to communicate their vision and win others over to embrace and implement it. In addition, leaders are grounded in Values, which provide a foundation for Vision and a passion to achieve personal and organizational mission' (Yphantides et al., 2015).
Organisational development	The structures, processes and management systems within organisations. These then may influence their contribution to capacity building (Labonte & Laverack, 2001)
Partnerships	Partnerships bring together individuals and organisations to pursue a shared interest. Successful capacity building partnerships are those that increase the capacity of parties to work together effectively(Baillie et al., 2009).
Quality Project Management	Project management refers to the planning, organising, directing and controlling of project resources to complete specific goals and objectives(Fawcett et al., 2000).
Resources	Resources ca be described as financial, human, information, specialist advice or decision-making tools that can benefit with a public health intervention(Labonte & Laverack, 2001).
Workforce development	Strategic investment of resources by organisations and communities in activities that reach and maintain a critical mass of human resources, develop organisational environments that enable and promote effective practices and enhance the competence of the workforce for more effective public health nutrition effort that achieves public health outcomes (Hughes, 2004).

There is acknowledgment that there are substantial commonalities when assessing capacity using similar capacity domains across the individual, organisational and community levels (Labonte & Laverack, 2001; N. Smith, Littlejohns, & Roy, 2003). Many of the core community capacity dimensions described decades ago are still used today (Goodman et al., 1998; Whitney et al., 2017). Community capacity (Labonte & Laverack, 2001; Wendel et al., 2009), collaboration and participation (Cargo & Mercer, 2008), partnership (DiClemente, Crosby, & Kegler, 2009), and empowerment (N. Wallerstein, Duran, Oetzel, & Minkler, 2017) are all described as central concepts of the social-ecological model. Furthermore, participation and collaboration are both central ingredients of current health promotion planning models (Eldredge et al., 2016; Fry & Zask, 2017). Some frameworks highlight the relationships between different domains, however, they do not elaborate on how to assess the relationships between the domains (Baillie et al., 2009; Jackson et al., 2003; Labonte & Laverack, 2001). A comprehensive literature review of individuals and interventions in the community context (Trickett et al., 2011), emphasises the importance of elements

pertaining to the building of community capacity and resources. Some researchers argue several key concepts (e.g. workforce) are likely to have a greater impact on community capacity than others (Aluttis et al., 2014; Bagley & Lin, 2009). Other researchers describe leadership, resources, and ability and commitment to organise action as "universal constructs" (Anderson-Lewis et al., 2012). Although there are many community capacity dimensions, the relationship between the different multiple levels of the social-ecological model and their relative contribution to community capacity remains unknown (Kendall, Muenchberger, Sunderland, Harris, & Cowan, 2012; Leeman et al., 2015).

How capacity is defined has implications for how it is assessed and how capacity assessment indicators are selected. The challenge is not that researchers disagree explicitly about these choices, but rather that researchers may be unaware that they are defining or measuring capacity determinants differently (Siders, 2019). Despite the relative agreement on capacity domains, they are reported selectively and therefore capacity assessment is not always consistent (Crisp et al., 2000; D. Horton, 2002; Labonte & Laverack, 2001; Liberato et al., 2011; O'Shaughnessy et al., 1999). Qualitative methods, including semi structured interviews and focus groups with academic representatives, community leaders, and members, in addition to the case study approach, have been extensively used to assess community capacity (Gibbon et al., 2002; Jackson et al., 2003; Minkler, Vásquez, Tajik, & Petersen, 2008).There is a need to further investigate capacity assessment methods used in the literature and possibly develop a more standardised approach to enable better capacity assessment. Explicitly describing the relationships between the domains across multiple levels using a social-ecological lens needs further investigation. This may possibly develop a more standardised approach, in line with social-ecological models, to improve capacity assessment in community interventions.

1.5 Individual, organisational and community capacity contexts.

Capacity development involves actions to improve health across three levels of capacity - individual, community and organisational. This includes the advancement of knowledge and skills among health practitioners (individual); the expansion of support and infrastructure for health promotion in organisations (organisation); and the development of cohesive partnerships for health in communities (community) (Smith et al., 2006). This highlights that capacity development is context-specific, influenced by local stakeholders, organisations and cultural norms. Context can be broadly defined as the circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood (Moore, 2004). Community interventions require work across multiple contexts i.e. they need to be comprehensive and integrate multiple individuals, community groups and organisations (McLeroy et al., 2003; Merzel & D'Afflitti, 2003; Poland, Frohlich, & Cargo, 2008). This requires acknowledging the complexity of the social-ecological perspective, which assumes that multiple facets of the physical environment, the social environment, and an individual's personal attributes, work together to influence health and health behaviours (McLeroy et al., 1988). Although complexity is acknowledged as important it is rarely assessed in the community capacity assessment literature (Lempa et al., 2008). Most of the literature focuses on assessing capacity either using existing frameworks that describe the eight core capacity domains (Liberato et al., 2011) either in individuals or communities or organisations- without exploring the relationships between these multiple facets.

Individual capacity focuses on people as individual, social or organisational actors (Flaman, Nykiforuk, Plotnikoff, & Raine, 2010; Hawe, 2001). People matter in social systems (Finegood et al., 2010). Individual capacity has been described as the most critical level of capacity development because it affects an individual's knowledge and skill potential to bring about change, not only at a personal level but also in supporting broader population health efforts (Hughes & Margetts, 2012). At this level, capacity development strategies and activities (such as building skills, trust, health communication) can involve individuals who are members of communities and organisations as well as individuals who might directly participate in or benefit from a program.

Community capacity focuses on developing capacities at the level of a community (Simmons et al., 2011). Individuals belonging to these entities act as social or organisational players. Many community interventions work in partnership with communities and organisations. Community groups may not have the infrastructure of formal organisations, but their collaborative action can be very powerful in bringing about desired change. A community in this sense might be a group of people living in a geographical area, a group with something in common, or a group working towards a common goal (Goodman et al., 1998). Many researchers see community capacity and its assessment (and especially

the participatory nature of its assessment) as a useful and flexible approach for community work (Gibbon et al., 2002; Health, 2001; Laverack, 2003; Liberato et al., 2011). A recent systematic review looking at what strategies are used to build practitioners' capacity to implement community interventions, found the most common settings for capacity development interventions were communities; including those done with community-based coalitions, schools, and community-based organisations (Leeman et al., 2015). However, there is no agreement in the literature on how to assess capacity development in community interventions (Liberato et al., 2011).

Organisational capacity is a multidimensional concept which includes capabilities, knowledge and resources, but also human capital to actuate the service mission with a focus on individual formal and informal procedures to achieve this mission (W. A. Brown, Andersson, & Jo, 2016; Kontinen, 2018; Tam & Gray, 2016). Several studies have assessed capacity development by involving organisations in the evaluation process, as a way to strengthen the organisation's capacity (Garza, Abatemarco, Gizzi, Abegglen, & Johnson-Conley, 2009; Hailey, James, & Wrigley, 2005; Wakerman et al., 2009). Researchers have found the mutually reliant concepts of engagement (mobilisation), systems (practices, structures, methods), learning (individual and organisational), focus, self-sustaining collaborative action, beliefs, values and choice as the key ingredients for creating organisational change sustainability within a complex environment (Australian Bureau of Statistics. 2016 Census QuickStats site. Canberra, 2018; Despard, 2017; Hailey et al., 2005; Malone, 2007; Nargiso et al., 2013; Rosenborg, 2003). Limitations of many of these studies are they use individual capacity domains to assess capacity without recognising or clearly stating the multiple facets of individual and community influences on organisational capacity.

Organisational and community capacity are closely linked due to the fact that much action to improve communities occurs in, and through, organisations. Strong, effective organisations can play a significant role in building and supporting community capacity (Bach-Mortensen & Montgomery, 2018). Given the complexity of social issues and the persistent pressure to reduce the cost of creating and implementing solutions, interorganisational and community collaboration present ways to develop and share knowledge and weave together capacities that can achieve greater impact (Plastrik & Taylor, 2006). At the heart of organisations and communities are the individuals who work and live in these environments (Finegood et al., 2010). However, there is limited evidence that demonstrates some of the ways that individual learning and organisational capacity are linked (Johnson & Thomas, 2007). While this study was grounded in social-ecological theory that also recognised intrapersonal and political level influences on individual behaviour – individual, organisational and community were the focus of this research as these are typically the levels at which capacity is described.

Recognising and assessing the complex and inherently social relationships between individual, organisational and community capacity is essential for public health community interventions success. For example, one study described the aim to foster community capacity by including nutritionists, local government, local agencies, and project participants and developing participants' skills and knowledge of health promotion to attain individual and community change. This entailed the assessment of the social interaction between individual, organisational and community capacity (Anderson-Lewis et al., 2012). This study used mixed methods to measure the perception of community capacity in an academic–community partnership for a walking intervention. They reported baseline results in this study. No mixed methods have been completed in community nutrition interventions to date. Lempa and colleagues (2008) state "community capacity is not solely an internal construct and should be examined from various points of view and at different levels of the social-ecological framework." They recommend exploring external forces on community interventions to enable exploration of community capacity via the broader social-ecological levels (Lempa et al., 2008).

The social-ecological perspective (described in Section 1.2) emphasises the interdependence of, factors within and across all levels of a health problem (Rimer & Glanz, 2005). An ecological framework is particularly well suited for identifying factors and processes that may relate to capacity of individuals (Cross et al., 2015; Golden & Earp, 2012), communities (Busza et al., 2012; Trickett et al., 2011) and organisations (Hughes, 2006). At the level of the individual, this framework views development, coping efforts, and adaptation as occurring within dynamically interacting systems and contexts, ranging from the family, school, and workplace to the community and the larger society. At the community-level, functioning and well-being are best understood as the result of connections across multiple settings (e.g., schools, social service agencies) and levels of influence (e.g., cultural, historical, environmental, political) that change over time (Kelly, 2006; Trickett et al., 2011). This approach accounts for the influence of contexts in which one engages in direct interaction (e.g., families, work groups, classrooms), as well as broader organisations and structures (e.g., schools, coalitions, local business groups and organisations), neighbourhoods, and macro-level forces (e.g., societal values and belief systems, mass media) (Bronfenbrenner, 1979). In sum, this framework emphasises the need for multiple levels of analysis and multiple levels of action and emphasises the underlying utility of studying the social behaviour across the three elements, as it unfolds in a natural environment, as opposed to a contrived laboratory, where behaviour is recorded as an outcome of a controlled setting (Bronfenbrenner, 1979).

Many capacity development interventions remain focused at the individual level, despite acknowledgement that individual behaviour is shaped by interaction with the environment at multiple

levels (MacLellan-Wright et al., 2007; Merzel & D'Afflitti, 2003). While many researchers acknowledge multiple level influences on capacity development of community interventions (Baillie et al., 2009; Dressendorfer et al., 2005; Hawe & Potvin, 2009; Leeman et al., 2015; Lempa et al., 2008; Robinson et al., 2005), these studies do not explicitly explore or describe the relationships between the multiple levels and how these may influence capacity in community interventions. A recent review characterised the social-ecological model as comprehensive for structuring a research framework, because it allows analysis of two-way dynamics between social and ecological systems (Binder, Hinkel, Bots, & Pahl-Wostl, 2013). This means research to examine the interactions between humans and the natural world (Whitney 2017). For example, this means for this research when community capacity development elements are explored, individual and organisational elements will be too, acknowledging the importance of explicitly exploring the multiple level influences. Thus, this thesis uses the social-ecological perspective to explore capacity development as it acknowledges that community interventions are complex and multilevel. Framing this thesis within the social-ecological perspective allows exploration of the multiple level influences (individual, organisational and community levels) that potentially impact on capacity development in community interventions.

1.6 Capacity development in community nutrition interventions

Improving community nutrition arguably offers a key to improving population health. Healthy food behaviours are a key factor in the prevention of nutrition related disease (Danaei et al., 2014; Franchi, 2012; Story, Kaphingst, Robinson-O'Brien, & Glanz, 2008) with poor diet being a major risk factor linked to obesity and other comorbidities (Crosland, Ananthapavan, Davison, Lambert, & Carter, 2019). Public health nutrition researchers have acknowledged the social-ecological model to address public health nutrition issues (Aboueid, Pouliot, Nur, Bourgeault, & Giroux, 2019; Stark, Devine, & Dollahite, 2017). This model recognises the interplay that various environments have on populations and the effect this has on population health (Hughes, 2006).The majority of interventions which aim to alter food choice and related behaviours have been developed using principles from health psychology and health education, with interventions largely targeted at individuals (DeCosta, Møller, Frøst, & Olsen, 2017; Perez-Cueto, 2019; Whatnall, Patterson, Ashton, & Hutchesson, 2018). Over time, these interventions have become more sophisticated, moving from a relatively simplistic model in which behaviour was largely determined by knowledge and attitudes, towards theories and concepts including social cognitive theory, the trans theoretical model and health literacy (Glanz et al., 2008). However, it has been increasingly recognised that food choice and consumption are strongly influenced by a range of other factors operating at multiple levels of influence across domains including the environment, social context, policy and culture (Brug, Kremers, Van Lenthe, Ball, & Crawford, 2008; Simmons et al., 2009).

Public health nutrition programs are faced with multiple challenges in responding to complex issues such as obesity and food insecurity. Australian food and nutrition policies continue to acknowledge the need for food skills. Community nutrition interventions aiming to improve cooking skills are a popular strategy to promote healthy eating (Garcia, Reardon, McDonald, & Vargas-Garcia, 2016). Nutrition education cooking interventions are behaviour change interventions designed to increase cooking skills and confidence, with the aim of increasing healthy meals cooked at home to improve overall diet quality (Begley, Gallegos, & Vidgen, 2017). The term 'cooking skills', within public health nutrition, has been generally used to portray a combination of routine and tangible skills that are applied during home food preparation, such as 'chopping vegetables', 'stir-frying', or 'cooking rice' (Short, 2003). Recently, the term 'food literacy' has been proposed as a concept that encompasses a more holistic approach to describe the practicalities needed to meet nutrition recommendations: planning, management, selection, preparation, and consumption (Vidgen & Gallegos, 2014).

There is some evidence that nutrition education and food literacy cooking programs have a positive impact on fruit and/or vegetable intake, body weight and cooking confidence and knowledge (Reicks, Kocher, & Reeder, 2018; Reicks, Trofholz, Stang, & Laska, 2014). However, there is limited conclusive evidence of the effect of such cooking programs, due to heterogeneity in intervention type across programs and variation in the outcome measures used and methods of their assessment (Garcia et al., 2016). Regardless, there has been a sharp increase in the number of nutrition education and food literacy cooking programs reported in recent years, despite a lack of valid and reliable outcome measurement tools and conclusive evidence that these interventions produce a desired, sustainable change in behaviour (Garcia et al., 2016; Maugeri, Brimblecombe, Choi, Kleve, & Palermo, 2020; Reicks et al., 2014).

Capacity development is a critical prerequisite for achieving nutrition objectives in community nutrition interventions, to reduce obesity (de Silva-Sanigorski et al., 2010; Millar et al., 2011; Sanigorski, Bell, Kremer, Cuttler, & Swinburn, 2008) reduce maternal and child under nutrition in low to middle income countries (Brazier, Fiorentino, Barry, & Diallo, 2015) and to improve food literacy (Cullen, Hatch, Martin, Higgins, & Sheppard, 2015; H. A. Vidgen, 2014). The capacity to act in nutrition has been signalled as a critical element limiting the large-scale implementation of nutrition programmes for several decades (Shrimpton et al., 2014). Capacity development has been constrained by ambiguous conceptualisations of what capacity development involves and how it can be realised (Shrimpton et al., 2014) as well as lack of concerted effort to invest in capacity development strategies as part of intervention planning and implementation.

Capacity assessment in nutrition community nutrition interventions has been inadequate (Begley et al., 2017). Limited studies have reported on the role of capacity development for nutrition education cooking and food literacy programs (Palermo, van Herwerden, Maugeri, McKenzie-Lewis, & Hughes, 2019). Frameworks to assist with assessing capacity development in public health nutrition exist (Baillie et al., 2009). Some community nutrition interventions have assessed capacity (de Groot, Robertson, Swinburn, & de Silva-Sanigorski, 2010; Downey et al., 2010) by measuring individual domains (Mathews, Moodie, Simmons, & Swinburn, 2010), or a community capacity index (de Groot et al., 2010; Millar et al., 2013), but have not described relationships between capacity domains or relationships across multiple levels of the social-ecological model. Capacity development efforts to improve the success of community nutrition interventions requires further investigation. In particular, understanding the relationships of different levels of capacity across the social-ecological model is required.

1.7 Approaches to explore capacity development

Community capacity development occurs as an iterative cycle and is an ongoing transformational process that takes a long time, although how long remains unclear (Crilly, Kloseck, & Lubell, 2003; Hawe & Potvin, 2009; Rutter et al., 2017; Simmons et al., 2011; Whelan, Love, Millar, Allender , 2018). Despite this, approaches to measure and describe capacity have tended to describe certainty around individual domains being key determinants of capacity development and proposing quantitative methods by which these can be accurately 'measured' (Baillie et al., 2009). There appears to be limited capacity assessment around the iterative cycle and relationships between capacity domains in the literature (Bagley & Lin, 2009; Bergeron et al., 2017; Liberato et al., 2011; Underwood et al., 2012), even though many researchers have described the transformative nature when aiming to develop capacity in community nutrition interventions in practice (Greenwood-Lee, Hawe, Nettel-Aguirre, Shiell, & Marshall, 2016). Capacity development in community nutrition interventions requires multiple level and interrelated interventions (Bronfenbrenner, 1979; McLeroy et al., 1988; Organisation, 1986). Capacity assessment therefore needs to capture the multiple level influences; however, researchers largely assess capacity in community nutrition interventions at only the one level of the social-ecological model (Liberato et al., 2011). Qualitative methods may add more depth and understanding to capacity changes than quantitative capacity methods (Lovell & Rosenberg, 2016; Patton, 2014) To capture capacity changes over time requires a longitudinal research approach (Saldaña, 2003). Exploring and describing how community nutrition interventions adapt to changes in capacity, may improve capacity assessment in community nutrition interventions. Longitudinal organisational capacity (Costello, Taylor, & O'Hara, 2015) and community capacity assessment studies exist (Millar et al., 2013; Nargiso et al., 2013; Van den Broucke et al., 2010). However, few

longitudinal capacity assessment studies explore the relationships that exist at multiple levels between individuals, communities and organisations, in an attempt to get a better understanding of how capacity develops over time in nutrition community nutrition interventions.(Poland et al., 2008). Many longitudinal studies are retrospective and acknowledge possible participant bias, subjective rating or inaccurate descriptions due to the recall nature of retrospective data collection (Brazier et al., 2015; de Groot et al., 2010; Mathews et al., 2010). Limited assessment of capacity development to date has considered prospective longitudinal or qualitative description of capacity development over time (Anderson-Lewis et al., 2012). Utilising qualitative methods may increase the ability to describe the multiple level influences that occur in community nutrition interventions, as these methods allow iterative change processes between individuals, the community in which they live and the organisations in which they work to be captured. The relationships that exist at multiple levels of the social-ecological model between individuals, communities and organisations, prospectively and longitudinally needs further investigation**.**

1.8 Summary

The importance of capacity development in public health and community nutrition interventions is unquestioned. Public health theories and frameworks all describe the importance of capacity to create sustainable community nutrition interventions, however these are rarely used to inform capacity assessment in community nutrition interventions. There is research describing the process of community capacity development, but research is limited on specific assessment of the process. To date there is no agreed approach on capacity assessment over the course of implementation of a community intervention. There is general agreement about the capacity domains important to assess capacity and there are a variety of frameworks that describe capacity domains, however there is limited evidence around an agreed approach to assessing capacity in community interventions. The social-ecological model frames individual behaviour as shaped by factors at multiple levels, including institutional, community, and policy levels in addition to intrapersonal and interpersonal levels. Hence theoretically, capacity assessment in community nutrition interventions should be assessed across these multiple levels. However, in practice this is rarely the case. This gap needs further exploration as it may improve capacity assessment in community interventions. This research aims to explore and describe the multiple levels that influence capacity development in a community nutrition intervention by utilising the social-ecological model. The research described in this thesis examines the importance of the individual, community and organisation levels and the relationships between these longitudinally during a three-year public health nutrition community-based intervention. In summary, this thesis defines capacity as capacity development, explores capacity development in terms of eight domains across levels of the social-ecological model.

1.9 Research purposes

This thesis aimed to:

1. Explore how capacity is assessed in public health community interventions.
2. Explore and describe capacity and capacity development over time at individual, organisational and community levels during the implementation of a community nutrition intervention.

To fulfil these aims a systematic literature review and three qualitative studies were undertaken encompassing: (i) a qualitative exploration of individual capacity 2); (ii) a longitudinal qualitative exploration of organisational capacity; and (iii) a longitudinal qualitative multiple case study exploration of community capacity.

1.10 Significance of the research, scope and definitions

This thesis will contribute to new knowledge through:

Exploring how capacity is assessed in public health community interventions as described in the literature.

This thesis aims to address the research gaps around capacity definitions, frameworks, methods and timeframes used to assess capacity, through a systematic review describing the evidence of how capacity is assessed in public health community interventions.

Exploring and describing capacity and capacity development over time in various contexts, through longitudinal studies of a community nutrition intervention.

This research explicitly explores the overlap between individual, organisational and community factors when assessing capacity in community nutrition interventions. Underpinned by the social-ecological model, it uses multiple lenses in each qualitative study, acknowledging that the relationships between individual, organisational and community capacity together influence capacity development in community interventions. A deeper understanding of capacity development in various contexts over time will be of theoretical and practical significance to public health practitioners working to develop capacity in community nutrition interventions. This will improve longitudinal capacity assessment that is targeted for specific contexts, facilitate understanding of how to integrate capacity assessment across contexts, as well as how one context influences the other.

The findings from these explorations in individual, organisational and community contexts are designed to guide capacity assessment in community nutrition interventions in practice.

Exploring more appropriate ways to assess capacity in community nutrition interventions.

The research will provide evidence to establish that relationships exist between individual, organisational and community level capacity. Being able to better describe the relationships between contexts and capacity development over time will provide new evidence to support improved capacity assessment and development processes in community nutrition interventions. This may ultimately lead to a greater understanding of the role of capacity development in community nutrition interventions.

1.11 Thesis Outline

This chapter has provided an overview of the literature and has identified the gaps that the thesis aims to address. Chapter 2 outlines the systematic literature review that answered the research question *'How is capacity assessed in public health community interventions?'*. The systematic review then informs the further three qualitative studies, which were context specific to answer the research question exploring and describing *"how and why does capacity develops over time in community nutrition interventions?"* through individual, organisational and community lenses. Chapter 3 outlines the Methodology and research design. Chapters four to six describe the key research findings relating to individual, organisational and community capacity with a brief discussion of these findings. Following these key findings chapters is the discussion chapter (Chapter 7). In this chapter, the overall findings of the research are discussed. It highlights the new contributions to knowledge this thesis makes, provides recommendations for research and practice and provides final conclusions.

Chapter 2: Systematic Literature Review

2.1 Preamble

The aim of this systematic review was to describe how capacity is assessed in public health community interventions in the literature. This review was important as there was a lack of consensus on how to assess capacity in community interventions. As a concept capacity is not well understood and as a result capacity has been associated with a variety of meanings, frameworks and assessment tools. Hence this literature review aimed to update and build on a previous review (Liberato et al., 2011) that acknowledged the need for a standardised approach to defining capacity and planning capacity processes in various contexts, to enable better capacity assessment. The systematic review was first published online in *Health Promotion International* in September 2018, and the published manuscript is presented in the remainder of this chapter.

Manuscript 1:

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Article

Capacity assessment in public health community interventions: a systematic review

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Summary

The importance of building capacity in community interventions is well recognized. There is general agreement about the determinants of capacity and a range of existing capacity frameworks, however there is limited evidence or consistency in practice around assessing capacity in community interventions. The aim of this review was to describe how capacity is assessed in community interventions. A systematic review of the literature across four databases (MEDLINE, CINAHL, PsycINFO and Sociological Abstracts) was performed. Studies in English from 2000 to 2017, that explicitly described how capacity building processes were assessed in community interventions in healthy populations, were included. All types of empirical study designs were eligible. From 2596 records, after exclusion criteria were applied, 19 studies were included describing 12 different capacity assessment frameworks or tools. Seventeen studies assessed capacity processes by measuring individual capacity domains in community interventions. The most common capacity domains used to assess capacity were leadership, resources, partnerships and intelligence. The majority ($n = 15$) of studies used qualitative or mixed methods designs to measure capacity. Nine studies assessed capacity prospectively over time; three before/after and six multiple times during the intervention. Five studies assessed capacity retrospectively. The findings suggest that capacity assessment may need to remain context specific and flexible in order to capture the ever-changing nature of capacity building over time. Future research should explore the utility of theoretical adaptive capacity assessment guidelines that direct researchers and practitioners when describing capacity assessment in community interventions.

Key words: capacity assessment, community intervention, public health, community capacity building, capacity domains

INTRODUCTION

Public health practice is concerned with the capacity and performance of communities to identify, implement, strengthen and sustain collective efforts to improve health. Capacity refers to the ability and potential of individual people, communities, organizations and systems (Hawe *et al.*, 1998; Brown *et al.*, 2001). It includes skills, resources, leadership, ability to relate to others and to work together, acknowledging different values, formal and informal norms (Boesen, 2010). The term 'capacity building' refers to an approach to the development of sustainable skills, structures, resources and commitment to improvements in health to prolong and multiply health gains. It increases the range of people, organizations and communities who are able to address health issues (Health, 2001). Capacity as a process

varies contextually, with the outcome of building capacity being sustainable health outcomes (Thompson and Smith, 2000; Jackson *et al.*, 2003; Garza *et al.*, 2009; Nargiso *et al.*, 2013).

Capacity building processes are important to capture, in order to understand why some communities are able to improve their health gains while others are not. However, there is a lack of consensus on how to actually measure capacity in community interventions (MacLellan-Wright *et al.*, 2007; Liberato *et al.*, 2011). As a concept, capacity is not well understood and as a result has been associated with a variety of meanings, frameworks and assessment tools (Hawe *et al.*, 1997; O'Shaughnessy *et al.*, 1999; Crisp and Swerissen, 2000; Banks and Shenton, 2001; Labonte and Laverack, 2001; Horton, 2002; Craig, 2007). There is a general consensus on eight core capacity domains, but methods to evaluate capacity and its impact on the success of community interventions are lacking. Researchers describe the importance of capacity domain interactions (Baillie *et al.*, 2009; Liberato *et al.*, 2011) often stating that community capacity is not an inherent property of a particular locality, nor of the individuals or groups within it, but of the interactions between both (Laverack, 2007). However, studies that explicitly assess these interactions are scarce. Concepts underpinning community capacity building have one common characteristic: they are all context specific, transformational or developmental (Hawe *et al.*, 2009).

A previous systematic review by Liberato *et al.*, which searched the literature up to 2010, identified a set of domains consistently used in the literature to describe and assess capacity building in community interventions. The review did not specifically examine capacity assessment methods or tools or how capacity was measured over time and acknowledged the need for a standardized approach to defining capacity and planning capacity processes in various contexts, to enable better capacity assessment.

Our review aimed to update and build on the previous Liberato review to identify the methods used to measure capacity and capacity assessment over time in public health community-based prevention interventions.

METHODS

Search strategy

A search strategy was developed to answer the question 'How is capacity assessed in public health community-based prevention interventions?' The protocol was registered with PROSPERO (CRD42017069364) and the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) checklist (Moher *et al.*, 2009) was followed for reporting purposes. A systematic search of four databases (MEDLINE, CINAHL, PsycINFO and Sociological Abstracts) and Google Scholar (first 5 pages) was undertaken in June 2017, using terms outlined in Table 1. Reference lists of included studies and relevant systematic reviews identified in the primary search were manually examined.

Inclusion and exclusion criteria

Studies published in English between 2000 (when capacity began to be a focus in the literature) and 2017 were included if their main objective(s) was to assess capacity, capacity building or community capacity in community-based prevention interventions; and discussed at least one of the capacity domains and frameworks identified in a previous systematic review (Liberato *et al.*, 2011). Inclusion criteria were; a community-based prevention intervention conducted in a healthy community population of any age, in any country. Community-based prevention interventions were defined as those interventions that are focused on promoting the health of communities, with a strategic set of activities that enhance the community groups abilities and potential to

Table 1: Database search terms

Capacity search terms AND	Community-based intervention search terms AND	Assessment search terms
Capacity building or Leadership or Partnership* or Community engagement or Workforce development or Organi?ational development or Project management or Intelligence	Communit* intervention or Public health	Program evaluation or Measure* or Sustainability

identify and act on improving their own health outcomes (McLeroy *et al.*, 2003). All types of empirical study designs were included. Specifically, studies were included if they had; measured baseline capacity domains, monitored capacity over a point(s) in time or at the completion of the community intervention.

Studies were excluded if capacity was not specified in the aim of the study, not assessed or there was no description or analysis of how capacity changes were explored. Studies were also excluded if they described community-based interventions in unwell populations (any disease or mental illness), did not have a health focus, was not a community intervention or was less than 12 months in duration, as evidence suggests capacity takes time to develop in community interventions (Scheirer and Dearing, 2011). When there were multiple reports arising from the same study, they were treated as a single study.

Screening and selection of studies

Titles and abstracts of all identified articles from the search were screened by two authors. Full-text reviews were also performed in duplicate. When authors were not in agreement, a resolution was reached by involving a third author. If there were disagreements between two authors, the third author would be consulted to reach a consensus. The reference lists of all relevant articles were screened to identify additional articles, which were retrieved and screened for inclusion.

Quality assessment

The quality of each included study was assessed using the Mixed Method Appraisal Tool, which assessed quality based on robustness of qualitative, quantitative and mixed methods (Pluye *et al.*, 2011). Studies were categorized according to risk of bias as low, unclear or high. This was completed independently by two authors, with disagreements resolved by a third author, so consensus was reached about the quality of included studies.

Data extraction and synthesis

A data extraction template was developed based on the research question. Data extraction was performed independently by two authors, with any disagreement resolved by discussion with the third author. Information extracted from each study included: author and year, capacity objective description, country, population and ethnicity, sample size, study type/design, method description and capacity frameworks or tools. Synthesis was categorized as follows: (1) capacity assessment frameworks and tools, (2) capacity domains, (3) capacity assessment methods and (4) capacity assessment timeframes. Due to the heterogeneous characteristics of included studies, commonalities and differences between capacity assessment tools and methods were identified, collated and described narratively.

RESULTS

Database searching recovered 2596 records when duplicates were removed (Supplementary Figure S1). After exclusion criteria were applied, 19 studies were included in the final analysis. Characteristics of included studies are summarized in Supplementary Table S1.

Capacity was assessed predominantly using established frameworks and tools, while two studies developed their own models (Jackson *et al.*, 2003; Dressendorfer *et al.*, 2005). Domains frequently used to assess capacity were leadership, resources, partnerships and intelligence. The majority of studies used mixed methods and qualitative methods ($n = 15$), with four studies using quantitative methods only to assess capacity. Nine studies assessed capacity prospectively over time; three before/after and six multiple times during the intervention. Five studies assessed capacity retrospectively (Figure 1).

Quality assessment

The Mixed Method Assessment Tool for quality assessment (Pluye *et al.*, 2011) found overall quality was variable for included studies, particularly for mixed method studies (Supplementary Figure S2). The combined risk of bias was low, except for those studies using mixed methods and qualitative studies, where it was common that researchers did not appropriately consider how they influenced the findings. There was also unclear risk in quantitative non-randomized studies, which frequently did not report complete outcome data, response rate or follow-up rate for cohort studies.

Capacity building frameworks and tools

Nine established capacity building frameworks and tools were used or adapted in assessing capacity in the 19 included studies (Goodman *et al.*, 1998; Health, 2001; Labonte and Laverack, 2001; Jackson *et al.*, 2003; Plested *et al.*, 2006; de Groot *et al.*, 2010; Mathews *et al.*, 2010; Millar *et al.*, 2013; Waqa *et al.*, 2013). The most common framework was the NSW Health Capacity Building Framework for Workers (Health, 2001) used to assess capacity in five studies (Horton, 2002; de Groot *et al.*, 2010; Mathews *et al.*, 2010; Millar *et al.*, 2013; Waqa *et al.*, 2013), This

Fig. 1: Synthesis of capacity assessment: overview of timelines, study design, capacity domains, frameworks and tools used to assess capacity of included studies.

framework provides a guide for enhancing the capability of the system to improve health. It is mainly focused on building capacity within programs, with an emphasis on five key action areas in capacity building: organizational change, workforce development, resource allocation, partnerships and leadership.

Three established Community Capacity Questionnaire tools were used to assess capacity building processes in included studies (Goodman *et al.*, 1998; Bush *et al.*, 2002; Lempa *et al.*, 2008). Lempa describes the development of a quantitative (Lempa *et al.*, 2008) measure of community capacity that employed the findings from a multiple-case study for instrument construction and testing among 291 initiatives nationwide. Lempa's capacity tool was used by two studies included in this review (Anderson-Lewis *et al.*, 2012; Brazier *et al.*, 2015). Goodman (1998) identified dimensions of community capacity as leadership, citizen participation, skills, resources, social and organizational networks, sense of community, understanding of community history, community power, values and critical reflection. Goodman's tool was used by two studies included in this review (Downey *et al.*, 2010; Brazier *et al.*, 2015). A further two included studies (de Groot *et al.*, 2010; Van den Broucke *et al.*, 2010) used the Community Capacity Health Development Index developed by Bush, which describes three core dimensions of health promotion capacity (Bush, 2002); network partnerships, infrastructure and problem-solving capacity, as well as knowledge transfer. The index allows for three capacity level assessments in each of four domains (Bush *et al.*, 2002). A community readiness tool, used by one included study (Millar *et al.*, 2013), assesses capacity of a community's readiness for action using six dimensions (community efforts, community knowledge of the efforts, leadership, community climate, community knowledge about the issue and resources related to the issue) (Plested *et al.*, 2006).

Table 2: Capacity domains used to assess capacity of included studies ($n = 19$)

Study	Capacity domains assessed									
	Community development	Community participation	Intelligence	Leadership	Organizational development	Partnerships	Quality project management	Resources	Workforce development	Other
Anderson-Lewis, C, 2012	*			*		*	*	*		Relationships
Brazier, E, 2015		*		*		*		*		
de Groot, FP, 2010			*	*	*	*		*	*	
Downey, LH, 2010	*	*	*	*				*		
Dressendorfer, RH, 2005				*				*		Policy making
Garza, MA, 2009				*		*		*	*	
Griffiths, R, 2009	*	*								Social capital, relationships
Horton, JE, 2008*										
Jackson, SF, 2003#										
Kemner, AL, 2015 (b)				*		*				Perceptions
Mathews, L, 2010				*	*	*		*	*	
Millar, L, 2013			*	*				*		
Nargiso, J. E, 2013				*	*	*	*			Mobilization
Postama, J, 2015	*	*	*	*	*	*		*		
Robinson, K, 2005			*			*		*		
Thompson, D, 2000	*	*	*	*				*	*	
Underwood, C, 2013				*			*			Social cohesion, self-efficacy
Van den Broucke, S, 2010			*			*		*		
Waqu, G, 2013				*	*	*		*	*	

*Capacity building is explored—meaning and process of capacity building, build on strengths descriptive only. No individual domains.

#Community capacity: overall indicators are described, as perceived by community members, as community strengths and weaknesses. Proposed indicators of facilitators and barriers to community capacity are grouped. No individual domains.

Capacity domains

A summary of capacity assessment domains of included studies can be found in Table 2. Seventeen studies assessed individual capacity domains, but did not specifically assess interactions between the domains. One study attempted to describe the interactions between various capacity domains, represented in a new conceptual model, with a spiral representative of the iterative, rather than linear, process in community capacity building (Dressendorfer *et al.*, 2005). Two studies did not use capacity domains to assess capacity, focusing on describing community capacity building processes qualitatively (Jackson *et al.*, 2003; Horton and MacLeod, 2008).

Capacity assessment methods

Capacity assessment methods were heterogeneous (Figure 1). The majority of studies utilized mixed ($n = 8$) and qualitative ($n = 7$) methods. Studies used a combination of individual or group interviews, focus groups, log books, document analysis or a variety of community capacity questionnaires. Four studies used quantitative capacity assessment methods only. Most studies ($n = 16$) provided narrative descriptions of capacity building processes. Triangulation of quantitative and qualitative data was used to describe capacity processes. Two studies used descriptive and qualitative data, but also ranked capacity domains using an octogram web design, visually showing how capacity was built over the intervention timeframe (Thompson and Smith, 2000; Millar *et al.*, 2013). Other studies reported descriptive evaluation of the capacity building process of a community. These studies assumed that it is the process of building capable communities that leads to sustainable health outcomes in community interventions (Thompson and Smith, 2000; Jackson *et al.*, 2003; Garza *et al.*, 2009; Nargiso *et al.*, 2013).

DISCUSSION

This review aimed to systematically identify and describe how capacity is assessed in public health community-based prevention interventions. Diverse capacity assessment processes were identified. No two studies used exactly the same method to assess capacity, although six commonly used frameworks and tools were identified. The New South Wales Health Framework, published 18 years ago primarily for health promotion workers, was the most frequently used to assess capacity. Indicators to support capacity evaluation using the framework were also developed (Hawe *et al.*, 2000), which may explain its widespread use in the studies reviewed. Our findings support Liberato's review in again highlighting the common domains used to measure capacity but strengthens her findings highlighting the diversity of methods used to assess the domain of capacity and which instruments can be used to assess capacity over time.

This review highlights that no one universal tool assesses capacity in community interventions. However, the community capacity index by Bush *et al.* was used most frequently to assess capacity by included studies. Several variations were identified in this review (de Groot *et al.*, 2010; Downey *et al.*, 2010; Van den Broucke *et al.*, 2010; Brazier *et al.*, 2015), which may indicate its usefulness as a tool to assess community capacity. There is an emphasis in included studies on the critical role of engaging the community initially to create a sense of ownership, and to use local knowledge, skills and resources to guide the intervention. Such an approach increases the likelihood of a community to sustain the benefits and to continue to develop beyond the life of an intervention (Kostadinov *et al.*, 2015). Community readiness tools to assess capacity were also identified in this review (Oetting *et al.*, 1995; Plested *et al.*, 2006). Community readiness to act on an identified health issue has been identified as an important contextual factor to account for the planning and evaluating of complex interventions and can impact on program success. The community readiness tool is well suited for planning and evaluating complex community interventions given its flexibility to accommodate diverse definitions of community and issues (Kostadinov *et al.*, 2015).

The findings of this review are consistent with previous literature on the core domains for assessing capacity. It provides new insights into the variety of tools used to assess capacity, the value of mixed methods approaches to describe the process and outcome of capacity building and highlights that capacity building takes time (Rutter *et al.*, 2017; Whelan *et al.*, 2018). This review provides researchers with a range of assessment tools to enable better planning of capacity assessment and processes in community interventions. In contrast, other reviews have only described one or two elements of capacity assessment, primarily capacity frameworks with domains (Baillie *et al.*, 2009; Liberato *et al.*, 2011; Kostadinov *et al.*, 2015; Bergeron *et al.*, 2017). A recent review (Bergeron *et al.*, 2017) provides public health practitioners with a menu of potentially usable theories, models and frameworks to support capacity building efforts, rather than tools to measure capacity.

The finding that mixed methods surpass single method studies for assessing capacity highlights the need

to measure the contextual characteristics of capacity, as highlighted as important in the previous literature (Hawe *et al.*, 2009). The addition of qualitative methods adds more depth and understanding to capacity assessment than quantitative capacity assessments alone (Patton, 2015). This finding is not surprising given the complexity of capacity building as a process and outcome. Utilizing a variety of methods increases validity, as well as the ability to describe the adaptive capacity interactions that occur in community interventions. Adaptive capacity, or adaptability; meaning the ability of a system to prepare for stresses and changes in advance or adjust and respond to the effects caused by the stresses (Engle, 2011), may be a useful indicator for capacity assessment in community interventions. Generally, a community that is more exposed and sensitive to a stimulus, condition or hazard will be more vulnerable, and a community that has more adaptive capacity will tend to be less vulnerable, with other conditions remaining the same (Smit and Wandel, 2006). In social systems, the existence of organizations and networks that learn and store knowledge and experience, create flexibility in problem solving and balance power among interest groups, play an important role in adaptive capacity (Berkes *et al.*, 2008). This may be interpreted and applied to community interventions as people who are flexible and can problem solve, i.e. have adaptive capacity, may increase capacity building of community interventions. Hence, measuring adaptive capacity may be an important domain influencing capacity building of community interventions. The studies in our review did not capture adaptive capacity. Adaptive capacity is effectively a feedback loop capturing the response of the system to changes in the environment (factors it cannot control) in which it operates. This could be important to assess in various contexts over time when assessing capacity in community interventions. Further research should explore the importance of adaptive capacity and how it may be assessed when exploring capacity building processes in public health community interventions. This may guide researchers to improve capacity assessment by acknowledging this 'new' capacity domain in the area of public health, and would assist in describing the capacity interactions, so far lacking in capacity assessment. Future work should also consider multiple methods and assessing adaptive capacity when aiming to measure community capacity.

Evidence suggests that it takes years to build sustainable community capacity interventions (Scheirer and Dearing, 2011; Rutter *et al.*, 2017; Whelan *et al.*, 2018). In our review capacity assessment timelines were ambiguous. Studies varied greatly with assessment either at baseline only, throughout or retrospectively at the end of the intervention. Studies ranged in intervention length from 3 years (Griffiths *et al.*, 2009; Mathews *et al.*, 2010; Nargiso *et al.*, 2013) to 6 years (Garza *et al.*, 2009; Van den Broucke *et al.*, 2010). These findings suggest that it may be beneficial to assess capacity building processes rather than capacity building outcomes.

Our findings suggest researchers should focus on capacity building processes. This is supported by previous frameworks that have considered capacity building as a process rather than an outcome (Jackson *et al.*, 2003; Dressendorfer *et al.*, 2005; Laverack, 2007; Baillie *et al.*, 2009). Some studies reported descriptive capacity evaluation of the capacity building process of a community, without a specific community intervention. These studies assume that it is the process of building capable communities that leads to sustainable health outcomes (Thompson and Smith, 2000; Jackson *et al.*, 2003; Garza *et al.*, 2009; Nargiso *et al.*, 2013). This would focus attention on process indicators that reflect progress in capacity building, rather than trying to measure capacity building as an outcome. Capacity is dynamic—regularly transforming and adapting to external changes, such as changes in project funding, leadership or community participation. A focus on describing how interventions adapt to changes in capacity throughout community interventions, may lead to better translation of interventions to other contexts. As described above 'adaptive capacity' may be a better way to assess community interventions in the future and be better suited to complex processes and systems that interact and develop over time to create sustainable healthy communities. Adaptable communities are capable communities, and it follows that adaptive capacity will lead to more sustainable healthy community outcomes.

The notion that conditions and context for capacity building in community interventions will change constantly with time is supported by this review. This suggests that focusing on what works, i.e. a strengths-based approaches, and the process of community engagement, participation and working with communities, leads to more sustainable health outcomes (Jackson *et al.*, 2003; Horton and MacLeod, 2008) An approach that builds on existing community strengths and resources, and embraces local experience and knowledge for planning, implementation and evaluation appears to be most effective in building community capacity.

Whilst this review provides insights into the range and use of capacity assessment frameworks, domains, methods and timeframes, it does not assess the

effectiveness of the interventions in building capacity. Future research should focus on how well is capacity built in community interventions. Our findings of the heterogeneous nature of capacity assessment, support previous research that highlights the need for an agreed approach to defining capacity and planning capacity processes in various contexts, to enable better capacity assessment (Liberato *et al.*, 2011). Further research should explore the important elements to include in assessing and reporting capacity in community interventions, taking into account capacity is a fluid transformational process. Such a process would need to have enough flexibility to accommodate different communities, explore interactions between different capacity elements and adaptive capacity.

Strengths and limitations

This is the first review to analyse and synthesize how capacity is assessed in community interventions, in a systematic way. The review methods were robust, involved independent screening, quality assessment and synthesis processed by multiple researchers. The review captures capacity assessment across a variety of community interventions throughout the world, making the findings applicable to a wide range of researchers and practitioners. A limitation is the ambiguity of the terms 'capacity' and 'capacity assessment'. The inconsistent reporting of capacity assessment in the literature made it difficult to develop search terms, inclusion and exclusion criteria that fully capture studies that assessed capacity in community interventions. As a result, further searching of other relevant documents such as unpublished articles and grey literature searches may have yielded a greater number of included studies. However, the search process was explicit, systematic and involved multiple researchers in the screening and selection processes. Further, the methods included a limited search of google scholar which identified some potentially relevant grey literature as part of the search methods.

CONCLUSION

Capacity building processes are not assessed systematically in community interventions, as they are context specific and complex to measure. This review confirms that there are a variety of capacity building frameworks, tools, methods and modes that describe capacity assessment in community interventions. Mixed method approaches and triangulation of data add context and describe the process of building capacity. The transformative process of capacity could be captured systematically by developing an agreed approach to capacity assessment and exploring adaptive capacity assessment for community interventions. These findings can be used to better design capacity assessment methods for community interventions. Future research should explore the utility of adaptive capacity assessment, to guide researchers and practitioners when describing capacity assessment in community interventions.

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SUPPLEMENTARY MATERIAL

Supplementary material is available at *Health Promotion International* online.

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Supplementary Material

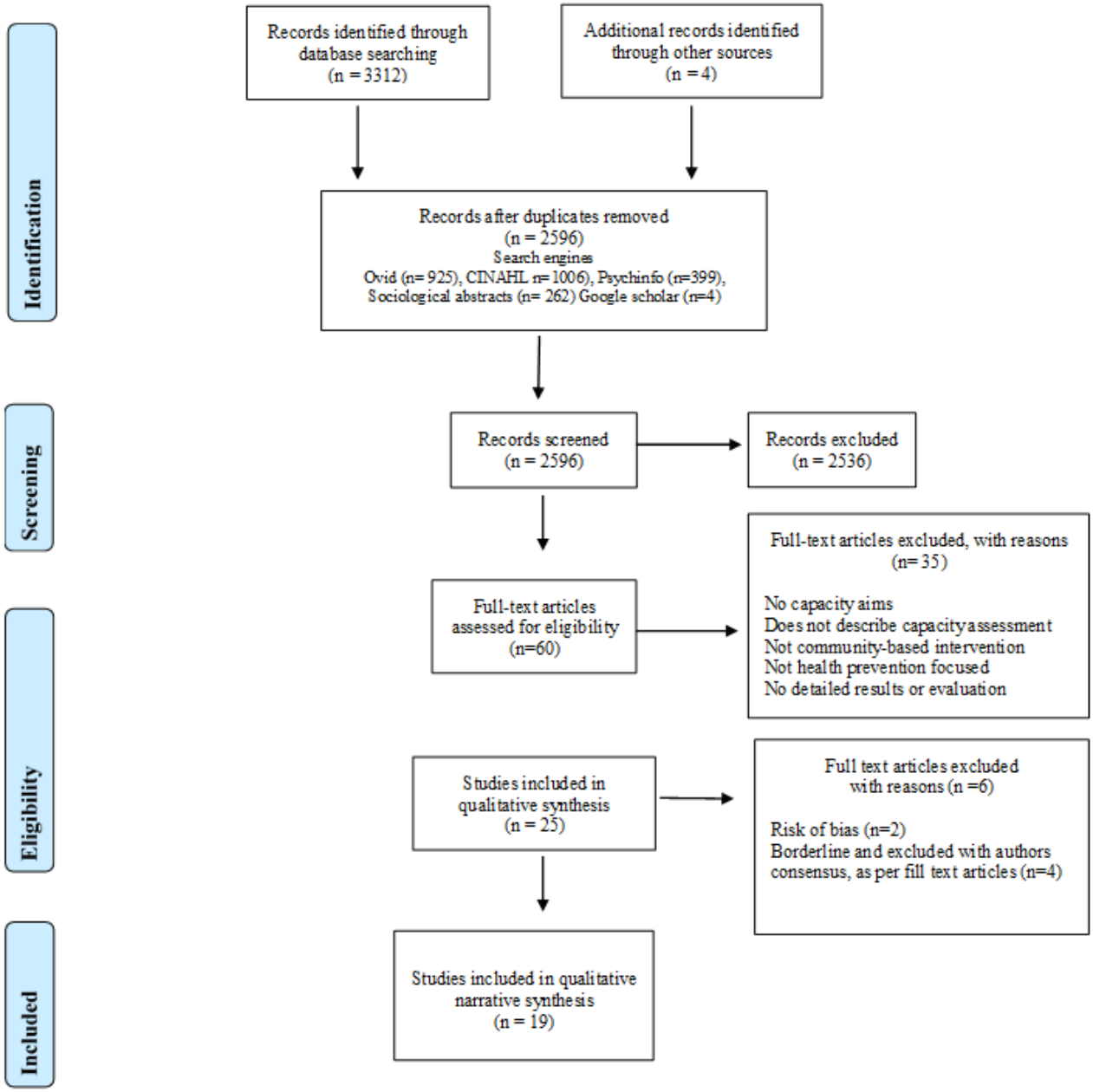


Figure S1: PRISMA 2009 Flow Diagram describing systematic review of studies assessing capacity in community interventions

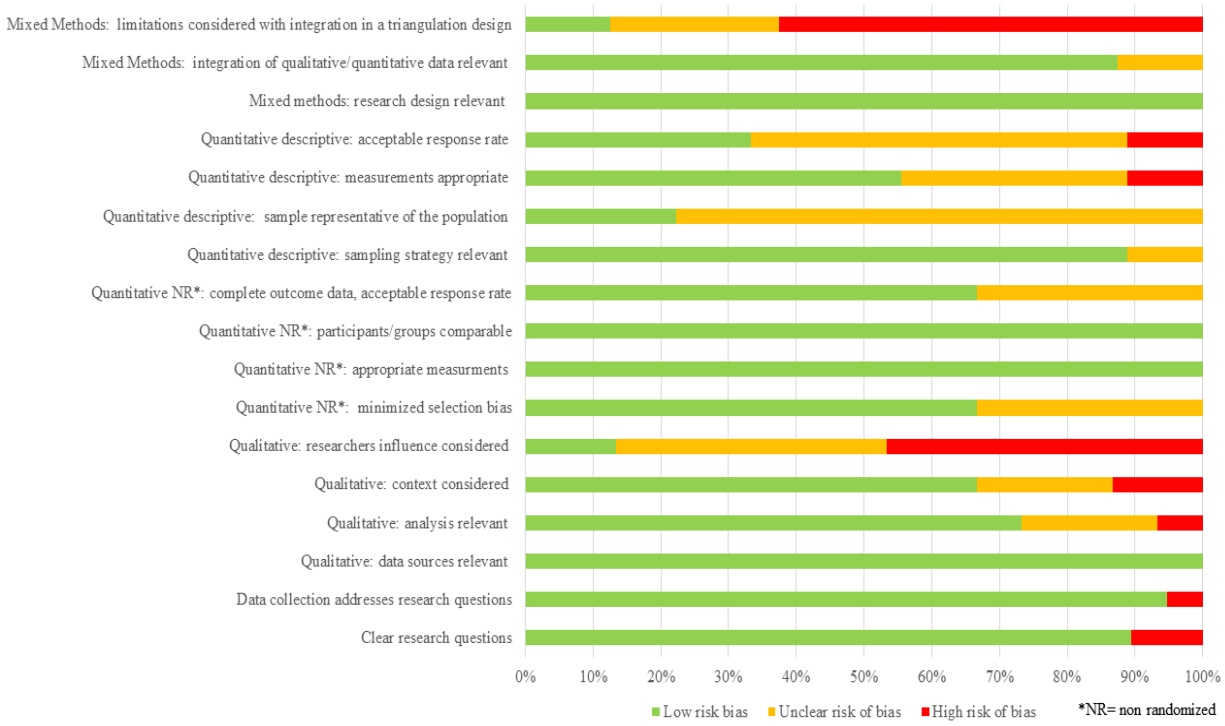


Figure S2: Risk of Bias (n=19)

2.2 Conclusion

The findings of this systematic review highlight that capacity assessment is heterogeneous with a variety of capacity frameworks, models and tools available that tend to focus on measuring individual capacity domains, to assess capacity in community interventions. Mixed or qualitative methods over time may provide more comprehensive approaches to assessing capacity compared to quantification. Although the complex non-linear relationships between elements of capacity is acknowledged in some instances, these relationships do not appear to be overtly assessed in the literature. No studies describe relationships between individual, organisational or community capacity on capacity development. Capacity assessment may need to remain context specific and flexible in order to capture the ever-changing nature of capacity development over time. The review recommended future research should focus on describing how capacity is developed in community interventions, taking into account capacity is a fluid transformational process. Such a process would need to have enough flexibility to accommodate different communities, explore relationships between different capacity elements and adaptive capacity. The systematic review therefore informed the further three qualitative studies, exploring and describing *"how and why capacity develops over time in community nutrition interventions?"* to describe relationships between individual, organisational or community capacity on capacity development.

Chapter 3 Methodology and Research Design

3.1 Preamble

This thesis aims to explore and describe capacity and capacity development across a public health community intervention. Chapter 1 and Chapter 2 highlighted that a variety of approaches are used to assess capacity in the various contexts from individual, organisational and community capacity, yet the focus is on siloed and linear assessments. This research therefore aimed to explore whether it is possible to assess capacity across individual, organisational and community capacity contexts using a social-ecological model approach. This chapter (Chapter 3 Methodology and Research Design) describes the philosophical approach to the research and the qualitative methods employed for the individual, organisational and community capacity studies in greater detail, and provides the rationale for the methods chosen. Findings for each individual study are then subsequently described in Chapter 4 Individual Capacity, Chapter 5 Organisational Capacity and Chapter 6 Community Capacity. Chapter 7 provides the discussion for the thesis.

3.2 PhD candidate positioning- background, beliefs, biases (Axiology)

The PhD candidate's experiences and knowledge of a particular phenomenon (in this case, capacity assessment in public health community nutrition interventions) influences the research process. Reflexivity recognises that researchers are inescapably part of the phenomenon that they are researching and acknowledges the personal experiences of the researcher as an integral part of the research process (Pillow, 2003). As such, making the researcher's 'lens' transparent is important to maintain the credibility of data presented. It is acknowledged that researcher subjectivity influences research choices and interpretations. The PhD candidate's position will now be described. The first person will be used when appropriate to show where my own perspective may have influenced the research process in this thesis.

I have worked as a community nutritionist, health promotion coordinator and public health nutritionist in the field for over 24 years. Therefore, as a researcher I have a lived experience and sound understanding of the theory and practice influencing capacity in public health and the importance of capacity in community nutrition interventions. My work experiences include coordinating community capacity interventions (examples: "Healthy Eating in Juvenile Justice Centres"- Department of Health, "Food for All"- Food Security Demonstration Project VicHealth, "Romp and Chomp for under 5's" - Obesity Prevention Community Demonstration project Deakin University. As a health promotion coordinator, I managed a three-year operational plan around increasing capacity for health promotion within a community health organisation. I have also taught the theory of capacity in public health nutrition for nutrition and dietetic students at various university institutions.

Having worked in the field as a community prevention worker for over twenty years, I have a wealth of experience around capacity development in public health community nutrition interventions that guided and informed this research. Participatory research is unique among public health research approaches in recognising the importance of inclusivity and engaging all stakeholders in the research process, creating collaborative action (Cargo & Mercer, 2008). Based on my experience, community nutrition interventions have been more successful when the researchers or practitioners engaged community members in decision making from the outset of an intervention. Hence, I instinctively took a community-based participatory research approach (Minkler & Wallerstein, 2011).

My belief is that there is no one 'right' model or approach to research. However, I think that the model I have chosen to use, a qualitative approach is appropriate (Maxwell, 2008), as it recognises the components of a research study and the ways in which these components may affect and be affected by one another. Hence the qualitative approach model was chosen due to its fit with the real-

life nature of the research project context. There were restrictions about the timing of recruiting the sample for data collection as the research was conducted opportunistically, as part of an external research team funded to evaluate the intervention and build health promotion capacity across rural and remote Queensland. The intervention had an implementation plan and was rolling out food literacy programs throughout 80 communities when I commenced the research. I was required to use existing timelines and participants to gather data to answer my research questions.

3.2.1 Ontology and epistemology

Ontology can be described as the nature of reality or being (Crotty, 1998). Ontology is a system of belief that reflects an interpretation by an individual about what constitutes a fact. In other words, ontology is associated with a central question of whether social entities should be perceived as objective or subjective. Accordingly, objectivism (or positivism) and subjectivism (constructionism) can be specified as two ontologies (Blaikie, 2007; Crotty, 1998). All researchers approach research with some form of personal philosophical positioning which affects the way they see the world and the way they choose to conduct the research (Patton, 2014). My philosophical approach is social constructivism. According to social constructivism learning is a collaborative process, and knowledge develops from individuals' interactions with their culture and society. My belief is that understanding is constructed via reflection of personal experiences and relating new knowledge to the knowledge that the researcher already possessed.

My constructionist philosophy entailed the following assumptions:

1. Reality is multiple, processual, knowledge is constructed- but under particular conditions
2. The research process emerges from interaction between the researcher and participants
3. It takes into account the PhD candidates' positionality, as well as that of the research participant
4. The researcher and researched co-construct data

Epistemology in research is a branch of philosophy that deals with the sources of knowledge. Specifically, epistemology is concerned with possibilities, nature, sources and limitations of knowledge in the field of study. In simple words, epistemology focuses on what is known to be true. Training, experience and personal values tend to lead researchers to favour one epistemological perspective over another (Blaikie, 2007). Key features of my epistemological constructionism position for this research are outlined in Table 3.1.

This research took a social constructivist approach, whereby knowledge developed from the PhD candidates' interactions with the participants and the communities over a three-year period (Gergen, 1999; Guba & Lincoln, 1994). In this research multiple ways of understanding capacity in the implementation of community nutrition interventions were embraced, with the aim of informing future practice in the assessment of capacity development in public health.

Table 3.1: Key features of epistemological constructionism position of the candidate*

Key Features	Knowledge is co-constructed through human interaction
Research Truths	Participants co created the truths with the researcher through regular interactions (phone, email, in person).
The purpose of research	The aim of the research was to understand and describe complex human interactions in communities and the funded organisation and how these interactions influenced capacity changes in community nutrition interventions.
The role of the researcher	As a researcher, I acted as an interpreter of the participants lived experience of implementing community nutrition interventions over a three-year period.
Relationship between researcher and participants	As a researcher, I developed relationships with the participants, generating multiple interpretations through collaboration with the participants from various communities as well as the project and funded organisation executive team nutritionists.
Fact-Value distinction	The values inherent in this research provide a lens for understanding and have been made explicit in Chapter 1

* adapted from (Jones, Torres, & Arminio, 2013)

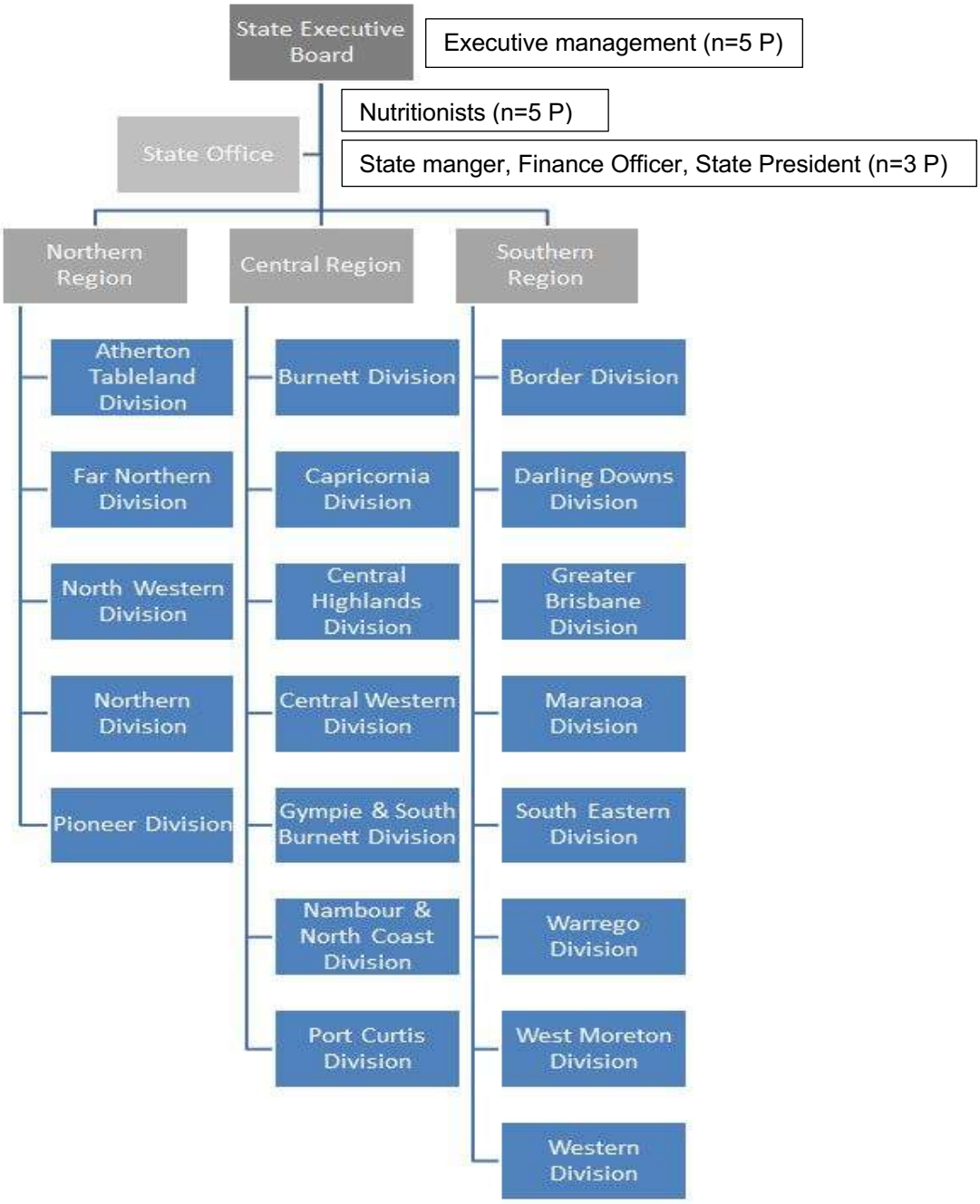
3.3 Methodology

This research aimed to explore how capacity is assessed in public health community nutrition interventions and describe capacity and capacity development over time in various contexts, through one cross sectional and two longitudinal qualitative studies of a community nutrition intervention.

3.3.1 Community intervention overview and research context- the Country Kitchens program intervention components

The research was conducted throughout Queensland, Australia between 2016 and 2018. In Australia, investment in cooking skills development with health department funds in many states continues to be directed towards food literacy programs (Alexander, 2013; Maugeri et al., 2020). As part of this investment, the Queensland Government funded a large, well established non-profit organisation, with around 3800 volunteer women members throughout the state of Queensland to implement a food literacy program. The funding was to deliver a four-year food literacy program, called the Country Kitchens program from 2015-2018. A Country Kitchens project team was employed to implement the program. There was one senior public health nutritionist who managed another four nutritionists to implement the various program strategies (Table 3.2). The primary aim of the Country Kitchens program was to improve food literacy and nutritional intake, specifically fruit and vegetable consumption. A secondary, yet explicit aim, was to develop health promotion capacity of both the communities in which the program was implemented and the organisation leading the initiative (Palermo, van Herwerden, Maugeri, & Hughes, 2018).

The non-profit organisation is structured around three Regions, 20 Divisions and 240 Branches, providing an existing governance structure and potential pool of resources and people to support health improvements as illustrated in Figure 3.1.



P=Paid staff

Figure 3.1: Structure of the non-profit organisation and staffing numbers

A state executive board governs the non-profit organisation. The state executive board is made up of a state president, international officer and three vice presidents from each of the regions (northern, central, southern). These positions rotate bi-annually and are voluntary. The state office has three paid staff to manage organisational funds and resources. Together the executive board and paid staff are referred to as the 'executive management team' for the purposes of this research.

Intervention Description

The Country Kitchens program was a multi-strategy community nutrition intervention that aimed to deliver a food literacy program in 80 communities in rural and remote Queensland, and to build health promotion capacity. Therefore, the state-wide implementation enabled exploration of capacity development across different geographical and demographical contexts. The Country Kitchens food literacy strategy was built around group-based, peer-led, experiential learning workshop series named Hands on Nutrition Workshops (HONWs) (Appendix 1). These workshops were supported by complementary strategies including training, showcases, foodie talks, social media, the development of recipes/cookbooks and healthy catering guidelines to support healthy food provision at non-profit events as outlined in Table 3.2. Specific capacity building strategies involved nutritionist support for engaged communities to lead the implementation of community nutrition interventions themselves.

Intervention implementation roll out phases

The community nutrition interventions had two implementation phases which represented a staged approach to Program rollout.

Phase 1 involved implementing the *Hands-on Nutrition Workshops (HONWs) and training of volunteer facilitators* in pilot communities by employed nutritionists. For the pilot, the HONWs was rolled out in 11 communities during 2016. The pilot phase enabled processes to be reviewed and iterative changes to the HONWs were made before wider roll out to another 42 communities in 2017. HONWs were further implemented in 19 communities in 2018.

Phase 2 involved each of the participating communities from Phase 1 implementing local *community nutrition interventions* with support from the program nutritionists. Each volunteer participant acted as a gatekeeper for their respective community, facilitating discussions with local stakeholders and engaging community members to become involved with the community nutrition intervention planning and implementation.

The *individual volunteer capacity study* reported in Chapter 4 focused on phase 1 of the Country Kitchens program. The *organisational capacity study* reported in Chapter 5 focused on both phase 1 and phase 2 of the Country Kitchens program. *The community capacity study* reported in Chapter 6 focused on phase 2 of the Country Kitchens program (Table 3.2).

Table 3.2: Overview of non-profit organisation Country Kitchens program strategies*

Country Kitchens Program Strategies	Brief Description	Country Kitchens Program *Roll Out Phases*
1. Facilitator Training for Volunteers	Initial training of branch member volunteers to become local Country Kitchen volunteers. Content included understanding the health problem of obesity, how to run a Hands-on Nutrition workshop. Follow-up training of local volunteers to support extended learning in health promotion and capacity building occurred.	Phase1
2. Hands on Nutrition Workshops (HONWs)	Nutrition education sessions with a hands-on cooking skills development component for community members. Run by nutritionist and trained volunteer. Sessions were run either three or five times, once a month.	
3. Promotional Materials	A range of recipes, postcards, pens, balloons, stickers, magnetic notepads, tea towels, aprons, Foodie Journals, nutrition education handouts were developed for use in the Hands-on Nutrition workshops, showcases, foodie talks and community activities.	
4. Showcases	Stalls at shows which showcase the Country Kitchens messages and interventions taking place in that community.	
5. Foodie Talks	One-hour session on recipe modification relating specifically to the recipe criteria within the Country Kitchens Healthy Catering Guidelines.	
6. Community Interventions	An activity led by the local volunteer that involved promoting healthy eating or being active. There was no clear expectation that trained volunteers would partner with schools or service organisations.	Phase 2
7. Healthy Catering Guidelines	A booklet designed to promote safe food handling and healthy recipe modification (includes a set of criteria by which to check the healthfulness of a recipe). Includes information for catering for large numbers.	
8. Healthy Cookbooks	Cookbooks released which contain recipes that meet the criteria within the Healthy Catering Guidelines. Recipes contributed by local members.	
9. Capacity Workshop for volunteers	Capacity training run by nutritionists for trained volunteers who were tasked with implementing community interventions. Occurred in the last year of the three-year intervention.	

* Adapted from (Palermo et al., 2018)

The Country Kitchens program was initiated by a collaboration between the then Minister for Health and the non-profit organisation's President, who recognised the potential of the non-profit as a health promoting organisation in Queensland (although with no track record in this area), primarily due to having strong connections in rural communities. The non-profit sector has become a major economic and social force integral to health provision (Anheier, 2014) and has been identified as an important vehicle and partner for health promotion interventions to create sustainable healthy communities (Smith et al., 2006). Non-profit organisations play a crucial role in the development of the community and maintain social connections for those who otherwise may not access conventional health services (Colbran, Ramsden, Stagnitti, & Toumbourou, 2019). These non-profit organisations not only deliver services, but also provide a channel for individuals to remain connected to the community to support their growth and development. Non-profit organisations are better positioned to interact with people and provide the networks and bridges to form and establish the relationships and trust that support the community (Passey & Lyons, 2006). Non-profit organisations are frequently community-based, with the focus being on supporting a range of health and social issues within their community. Therefore, these non-profit organisations can be particularly important to the development and maintenance of community capacity. In addition, given the complexity of social issues and the persistent pressure to reduce the cost of creating and implementing solutions, interorganisational and community collaboration present ways to develop and share knowledge and weave together capacities that can achieve greater impact (Plastrik & Taylor, 2006). Research to date suggests two levels of non-profit capacity; 1) Individual expertise that includes the skills, knowledge, and experience that volunteers bring to the organisation and 2) Organisational resources and procedures that enable agencies to use individual expertise productively (Schuh & Leviton, 2006). Non-profit organisations require capacity to support effective health promotion practice, however whether non-profits have the capacity for health promotion actions is unclear (Bach-Mortensen & Montgomery, 2018; Despard, 2017).

Evidence suggests that volunteer programs can create community benefits. Every year, in countries around the world, millions of people devote substantial amounts of time and energy helping as volunteers to a cause they believe in. Volunteering has been defined as engaging in chosen and deliberate activities over time, without expectation of reward or other compensation. Volunteering often occurs through formal organisations and is performed on behalf of causes or individuals who want assistance (Snyder & Omoto, 2008). Volunteers often provided assistance on a sustained and ongoing basis, and they frequently fill gaps in services and programs that support individuals and communities. Volunteers in non-profit organisations have taken on increasingly important roles in providing community-based health services, however whether these volunteers have capacity to

implement such interventions is unknown. Volunteers can provide a direct link to the community as they can contact more people than the organisation's resources would otherwise allow. These contacts can generate funds and further volunteers, as word of mouth recommendation is a common recruitment method, as well as general support and good feeling towards the organisation (Handy & Srinivasan, 2004).

There was an assumption from the funding body that the non-profit organisation could implement a large state-wide public health community nutrition intervention. It is rare that a single non-profit organisation receives as much funding as was the case for the Country Kitchens program, which made this research unique in its ability to study health promotion capacity development of a large non-profit organisation with a state-wide geographical spread. Organisational development refers to processes that ensure that the structures, systems, policies, procedures and practices of an organisation reflect its purpose, role, values and objectives and ensure that change is managed effectively (Health, 2001). An organisation that is more likely to take up new ways of working in order to respond to changes in strategic directions is one that is often described as a learning organisation. For non- profit organisations, the wide diversity in size, resources, environments, and services plays a significant role in the needs and abilities of these organisations to build and sustain capacity (Schuh & Leviton, 2006).

The Country Kitchens program also attempted to build organisational capacity. The underlying assumption was that this would occur through individual capacity building through developing the skills, knowledge, and experience of volunteers and through their participation in Hands on Nutrition Workshops (HONW) that would increase food literacy of community members and through enhancing member involvement in the organisation who were enthused by the energy of the programs interventions. The emphasis was placed on building the capacity of individual volunteers in branches to conduct their own HONW and instigate community interventions not on organisational capacity development. There was no clear expectation who trained volunteers would partner with, such as schools or service organisations, to implement community nutrition interventions.

Therefore, the Country Kitchens program focus was primarily on community capacity development of local volunteers in their communities. There was an assumption that organisational capacity of executive management nutritionists would organically develop alongside the local community capacity development interventions. There was very little focus on organisational capacity development at an executive management level, with limited strategies to build leadership, health promotion or project management skills implemented. As stated, the Country Kitchens program focused on HONWs with community volunteers, which also involved training them to develop

community interventions with a nutritionist as their buddy for support. Branch volunteers and the Country Kitchens project team co-designed resources involving educational materials and interactive sessions for the branch volunteers to deliver in their local community. A range of organisations and key stakeholders were involved in planning, implementing and evaluating the Country Kitchens program. The assumption that the funding of a state-wide community-based food literacy program implemented within the non-profit organisation would build organisational capacity was not well founded in the literature (Palermo et al., 2019) or in the capacity building practice experience of the PhD candidate, but none the less provided an opportunity to advanced our understanding of capacity development. Viewing capacity from a social-ecological lens would ensure researchers and practitioners consider the non-profit organisational, community and individual capacity multiple level components. Capacity development planning across the multiple levels would enable strategies linking between the individual, community and nonprofit organisation to be identified and addressed to improve capacity development across multiple levels of the social-ecological model.

Research context

Monash University was successful in tendering for the external evaluation of the Country Kitchens program. I was employed as a research assistant in August 2016 as part of the Monash University evaluation team, responsible for data collection and analysis. The research assistant role involved primarily supporting data collection and analysis of the food literacy program goal of the Country Kitchens program. This thesis, focused on capacity and capacity development, was completed as additional research supported by a PhD scholarship funded by the evaluation grant. There was some overlap with data collection from the interviews utilised as part of the research assistant and PhD candidate research. The opportunistic nature and tight timelines for sample selection impacted how the research unfolded. I 'hit the ground running' having only four months to plan the research methodology and design around the Country Kitchens program's existing implementation strategy and timelines. In addition, as such, there was overlap with the data collection process for the purpose of the Country Kitchen program evaluation and the research completed for this thesis. While a report was produced for the funder, the research findings from this thesis have not been reported elsewhere.

3.3.2 Research aims and design

This thesis aimed to:

1. Explore how capacity is assessed in public health community interventions.
2. Explore and describe capacity and capacity development over time at individual, organisational and community levels during the implementation of a community nutrition intervention.

To answer these questions the thesis involved a systematic literature review (aim 1) and three qualitative studies (aim 2), with an overview of research design as outlined in Table 3.3 and also outlined in Section 1.9.

The literature reviewed and reported in Chapter 1 and Chapter 2, highlighted that capacity assessment appears to be focused on measuring individual capacity domains (van Herwerden, Palermo, & Reidlinger, 2019). Although the complex non-linear relationships between elements of capacity is acknowledged in some instances, these relationships do not appear to be overtly assessed (van Herwerden et al., 2019). Many studies focus on a single context of capacity (individual, community or organisational) when assessing capacity (Aluttis et al., 2014; Chaskin, 2001; Costello et al., 2015). Therefore, a research design was chosen with particular attention paid to the different levels within the social-ecological model, i.e. individual, community and organisational, to understand how the different contexts may have influenced how health promotion capacity was developed as part of public health efforts. Although this research focused on these three contexts due to acknowledgement that capacity development can occur at individual, organisational and community levels, the other levels of the social-ecological model (interpersonal, environmental/policy) were also considered.

Table 3.3: Overview of research design

	Capacity assessment in public health community interventions	Volunteer Capacity study (n=30)	Non-profit organisation capacity development Study (n=17)	Community capacity development Study (n=11)
Research Question	How is capacity assessed in public health community interventions?	What initial capacity do volunteers from a non-profit organisation describe to implement community nutrition interventions?	How and why does organisational capacity develop over time during community nutrition interventions?	How and why does community capacity develop over time during community nutrition interventions?
Setting	Public health community interventions	Volunteers living in regional, rural and remote Queensland	Non-profit organisation	Communities across regional, rural and remote Queensland
Design	Systematic review with narrative synthesis	Qualitative description	Longitudinal Qualitative description	Longitudinal Multiple Case Study
Sample selection	Community based public health intervention that aimed to develop capacity	A self-selecting sampling technique	A self-selecting sampling technique	Purposive maximum variation sampling
Data collection	Primary published studies, no grey literature	Semi structured interviews	Semi structured interviews; Document analysis	Semi structured interviews; Document analysis
Data Analysis	Narrative	Thematic analysis (deductive and inductive coding)	Thematic analysis (deductive and inductive coding)	Thematic analysis (deductive and inductive coding)
Theories and frameworks	Established community capacity domains (Liberato et al, 2011)	Hybrid capacity domains framework (Appendix 4)	Adaptive capacity framework (Gupta et al, 2010) (Appendix 7)	Community Health Development Framework (Rubin 1992, Whitney 2017), VicHealth partnership tool (VicHealth, 2011),Community typology* (McLeroy et al., 2003)
Strategies to ensure trustworthiness	Duplicate screening; quality assessment of included studies	Researcher triangulation; Reflexivity	Researcher triangulation; multiple perspectives; Reflexivity	Researcher and data triangulation; multiple perspectives; Reflexivity

A qualitative approach was used for this research (Maxwell, 2008). Qualitative research follows a flexible and interpretative research design focused on understanding the meanings people attach to phenomena within their social worlds. This approach recognises the components of a research study and the ways in which these components may affect and be affected by one another. This research was opportunistic as described above. Hence the qualitative approach was chosen due to its fit with the real-life nature of the research project context. There were restrictions about the timing of recruiting the sample for data collection as the research was conducted opportunistically, as part of an external research team funded to evaluate a state-wide food literacy program and build health promotion capacity in rural and remote Queensland. As previously described, the program had an implementation plan and was aiming to roll out food literacy programs throughout 80 communities when I commenced the research. I was required to use existing timelines and participants to gather data to answer my research questions. The qualitative approach does not presuppose any particular order, or any necessary directionality of influence on capacity development (Maxwell, 2008). In developing a conceptual framework for this research, my purpose was to be descriptive, but also to be critical of existing frameworks and literature. I considered "the literature" not as gospel, but also as a useful but imperfect source of ideas about what was going on, and attempted to see alternative ways of framing the issues around capacity assessment in various contexts (individual, community, organisational) (Poland et al., 2008). I developed relationships with project and non-profit organisation executive and nutritionists, as well as the many volunteers throughout Queensland communities who participated in the community nutrition interventions. This involved an iterative, dynamic process as a researcher, much like capacity development itself. I used reflexivity to acknowledge my position in relation to the research and what I uncovered throughout the research process. Reflexivity is further described in Section 3.7.

Three qualitative approaches were used, including a qualitative descriptive individual volunteer capacity study (directly related to the individual level of the social-ecological model), longitudinal qualitative capacity study (focused on the organisational level of the social-ecological model) and a longitudinal multiple case study (focussed on the community level of the social-ecological model).

3.3.3 Ethics

This research was approved by the Monash University Human Research Ethics Committee (approval number 7075). Participant information sheets and consent forms are provided in an Appendix 2.

The remainder of this chapter will provide a detailed description of the various qualitative methods utilised for the three qualitative studies. The results of each of these studies will be reported in the following Chapters 4-6.

3.3.4 Overview of sample selection, data collection, analysis and timelines for the three qualitative studies

An overview of *sample selection* and *data collection* for each study is provided in Table 3.4. Data collection was from multiple sources using two methods including qualitative semi-structured interviews and program documents (monthly newsletters and a final management report).

Table 3.4: Sample selection and data collection description for each study completed in this research

	Individual volunteers Capacity Study	Non-profit Organisation Capacity Study	Community Capacity Study
Sample Selection	A self-selecting sampling technique	A complete sampling technique	Purposive maximum variation sampling
Sample focus	descriptive	longitudinal	longitudinal
Sample size	Volunteers n=30 (Interview n=30)	Executive team n=3 Nutritionists n= 8 (Interviews n=19)	Volunteers n= 14 Nutritionists n=8 (Interviews n=48)
Sampling Description	30 interviews, from a possible 44 participants, were completed November 2016 (n=11) and between January and June 2017 (n=19).	Entry and exit interviews with executive managers and nutritionists captured throughout the intervention where possible (Table 3.5). (45% nutritionists' turnover during intervention phase).	Purposive sample selection (volunteers n=14, and nutritionists=8) from 30 cases# where the intervention was implemented, to adequately capture diversity of communities, to enable optimal time, interactivity between participants, their communities, their situations and hence enable detailed descriptions of community capacity development.
Response rate	75%	100%	100%
Data Collection	Phone interviews with volunteers throughout rural and regional Queensland	Phone interviews with executive mangers and nutritionists of the non-profit organisation Newsletters (n=21)	Phone interviews with volunteers throughout rural and regional Queensland. Phone interviews with nutritionists of the non- profit organisation Newsletters (n=21) Final management report (n=1)
Geographical Location*			
Major Cities	n= 4	n/a	n=2
Inner Regional	n=13	n/a	n=3
Outer Regional	n=9	n/a	n=3
Remote	n=3	n/a	n=2
Very Remote	n=1	n/a	n=1

*(Australian Government Department of Health, 2018) #11 cases selected from the 30 individual volunteers study

Data collection is described in detail below (Section 3.4.2 individual volunteer capacity, Section 3.5.2 non-profit organisation capacity and Section 3.6.2 community capacity). In summary data collection involved a self-selecting group of volunteers being interviewed (n=30) for the individual volunteer capacity study in 2016. For the community capacity study, 11 cases were selected from the 30 cases from the individual volunteer capacity study. These 11 cases were therefore followed longitudinally from 2016, 2017 and 2018, as community nutrition interventions were planned and implemented. Interviews with the nutritionists (n=8) coordinating the Country Kitchen Program was also collected longitudinally from 2016 (n=5) and 2018 (n=4) for the community capacity study. Staff turnover was captured by interviewing each nutritionist starting (n=3) or leaving the program (n=2). For the non-profit organisation capacity study, data was collected from the same interviews with the nutritionists (n=8), as well as members of the executive management team (n= 3) from the non-profit organisation, longitudinally from 2016 to 2018. Data from the Country Kitchen Program documents (n=22) were collected for data analysis for the community case and non-profit organisation capacity studies during 2017-2018 (Figure 3.2).

Data analysis is described in detail below (Section 3.4.3 individual volunteer capacity, Section 3.5.3 non-profit organisation capacity and Section 3.6.3 community capacity). In summary the data analysis process took an inductive and deductive approach whereby the PhD candidate and her two supervisors derived patterns and developed themes from interpretations of the data, aligning with a social constructionist approach (Patton, 2014; Willig, 2013). In each study, inductive coding was conducted and then compared to existing capacity frameworks (identified from the literature reported in Chapter 2 for the individual volunteer capacity study). The common capacity domains (Table 1.3) are used for coding purposes to inform exploring and describing capacity development in all three qualitative studies (Appendix 4). The thematic analysis process for each study built on the previous study/ies in an iterative approach. This approach involved adapting the capacity coding frameworks (inductive and deductive) developed initially for the individual capacity study for the non-profit organisation capacity study. In order to explore and describe organisational capacity change over time, an organisational adaptive capacity framework (Gupta et al., 2010) (Appendix 7) was utilised to guide questions and then applied for deductive coding during the analysis process. These capacity coding frameworks were further modified for the community capacity study. In order to explore and describe community capacity development over time an additional partnerships tool (VicHealth, 2011) and community-based interventions typology (McLeroy et al., 2003) were applied for deductive coding during the analysis process of the community capacity study.

The PhD candidate and her two supervisors discussed the difference between themes and categories and agreed with Morse's interpretation – that "a category is a collection of similar data sorted into the same place" whereas a theme is "a meaningful essence that runs through the data" (Morse, 2008). Where categories are important to answer "What" is in the data, a theme aims to elicit the meaning a participant has attributed to the experience by answering "What is this data about?" (Morse, 2008) Therefore, the themes identified throughout the qualitative studies in this thesis, are not simply a quantified aggregation of the most commonly reported participant experiences. Rather, they reflect the researcher's interpretation of the meaning behind participant experiences that ran throughout entire participant data sets.

Participant validation was not aligned with the social constructionist approach in this thesis, as asking participants to validate the researcher's *interpretation* of the data is not a constructionist approach and was therefore not employed (Willig, 2013). The researcher's interpretation was of participants' collective experiences throughout the entire data set, not simply one participant's experience (Prawat, 1999; Varpio, Ajjawi, Monrouxe, O'Brien, & Rees, 2017).

An overview of *timelines* for each study are represented diagrammatically in Figure 3.2.

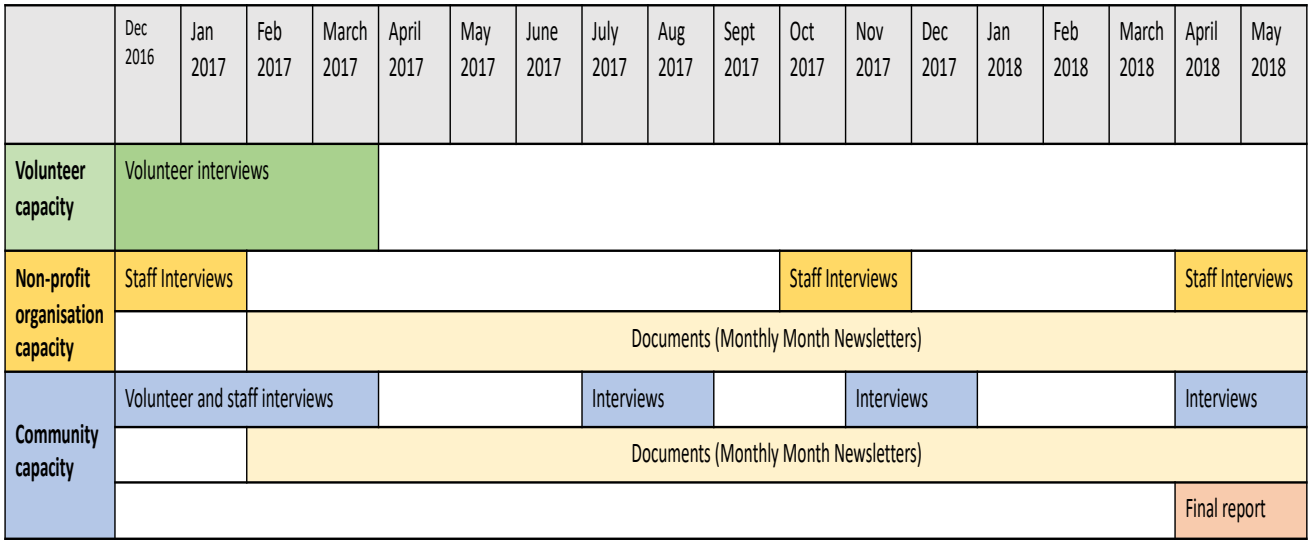


Figure 3.2: Overview of sample data collection timelines for the three qualitative studies

The methods including sampling, data collection, data analysis will now be described in detail for each qualitative study individually.

3.4 Individual Volunteer Capacity Study

Aim: To explore and describe the initial **volunteer capacity** existing within the non-profit organisation to implement community nutrition interventions.

Design*:* Qualitative descriptive research design (Sandelowski, 2000)

3.4.1 Sampling

The participants were all female volunteers of the non-profit organisation. Volunteers were existing members from branches of the non-profit organisation who agreed to participate in the Country Kitchens program. Sample selection was opportunistic due to the real-life community nutrition interventions occurring throughout Queensland from 2016-2018. A summary of the sample selection and description for each study is outlined in Table 3.4.

A self-selecting sampling technique (Patton, 2014) was used to recruit volunteer participants as potentially rich sources to provide information to answer the research questions. Self-selecting sampling is a type of convenience sampling with clear inclusion criteria where the participants volunteer to participate. All of the volunteers trained to assist in the implementation of the Hands-on Nutrition Workshops in their communities were invited by email to participate in the research (n=44). All 44 participants (one from each of the 44 communities engaged in the intervention at that point in time) were invited by email to participate in a telephone interview with the researcher. Thirty volunteers self-selected to participate in a telephone interview with the PhD candidate (a 75% response rate). The location of participants' communities was classified by geographical location, using; 1) the non-profit organisations' structural regional classification of northern, central and southern Queensland (Figure 3.1) and 2) Australian Standard Geographical Classification (Australian Government Department of Health, 2018) to depict representation of all areas of the organisation involved in the program.

3.4.2 Data collection

Data was collected by the PhD candidate at a single point for each volunteer between December 2016-March 2017 (Figure 3.2). Volunteers had already acquired new food literacy knowledge and skills because they had completed a food literacy program by the time of these interviews (Section 3.3.1 in Methodology Chapter and Appendix 1).

Interviews

Semi-structured interviews were chosen as the primary method of data collection, as they enabled rich, in depth exploration of initial volunteer capacity from various perspectives. Semi-structured interviews were conducted with the volunteer facilitators (n=30) within three months of completion of the participant's initial engagement with the intervention through the Hands-on Nutrition Workshops.

Interview schedules with open-ended questions (Appendix 3) were developed, based on established capacity domains (Liberato et al., 2011; van Herwerden et al., 2019). This provided participants the opportunity to describe their capacity experiences and how these may have influenced community nutrition intervention development (Rubin & Rubin, 2011). The line of questioning enabled capacity elements, and the dynamics and relationships between multiple levels of the social-ecological model, to be explored. The interview was iterative, changing depending on the context described by the participant, while keeping in mind the various elements required to assess capacity. This flexible method of interviewing was adopted to allow the PhD candidate to probe important concepts as they surfaced and allow new viewpoints to emerge. Participants were asked about their experiences of implementing the intervention, perceived enablers and barriers and their thoughts about implementing future community nutrition interventions (Appendix 3). All interviews were conducted over the telephone and recorded on a digital audio recorder (Sony ICD-PX470), transcribed by a transcribing company and checked against the recordings for accuracy and to aid familiarisation with the data, prior to analysis. A de-identification process applied to all transcripts ensured anonymity of participants.

3.4.3 Data analysis

Thematic Analysis

Data was explored using thematic analysis (Braun, Clarke, Hayfield, & Terry, 2019), with the assistance of NVivo software (version 11, QSR international) (Software, 2012). Thematic analysis is a method for analysing qualitative data that focuses on identifying patterned meaning (themes) across a dataset (Braun & Clarke, 2019). Thematic analysis can be approached in an inductive; deductive, sematic, latent, realist or constructionist way or using a cluster of these approaches (Braun et al., 2019). For this research, a reflexive thematic analysis approach was chosen, which involved a six-phase process for completing analysis as described by Braun and Clarke (Figure 3.3) (Braun et al., 2019). Six phases were used as a series of conceptual and practice orientated tools that guided the analysis to facilitate a rigorous process of data interrogation and engagement. In accordance with this thematic analysis approach, themes are defined as patterns of shared meaning underpinned by a central concept or idea.

Initially, interview transcripts were inductively coded, followed by deductive coding. Coding refers to labels attached to a segment of data (Braun et al., 2019). Inductive open coding of the first transcript was completed independently by the PhD candidate and her supervisors. This inductive code list was found to somewhat reflect an existing public health capacity frameworks (Health, 2001). A coding framework was therefore developed from several existing capacity frameworks used to guide public health capacity practices (Health, 2001; Kostadinov, Daniel, Stanley, Gancia, & Cargo, 2015; Liberato et al., 2011; MacLellan-Wright et al., 2007; van Herwerden et al., 2019; VicHealth, 2011) whereby the common capacity domains (Table 1.3) were coded, which were then applied deductively to subsequent interviews (Appendix 4). The researcher kept an open mind which also allowed new inductive codes to continue to be described from the data in subsequent transcripts, resulting in a hybrid deductive and inductive coding framework which was applied to all interview transcripts. Inductive and deductive codes were then categorised into clusters and the aligning text were examined one by one with the research questions in mind, aiming to seek interpretation of the data by identifying themes that described the common initial capacity stories. Coding into categories was continued by the PhD candidate through the remaining interviews using this coding framework to support further description of themes.

The data analysis process for the volunteer capacity study began during data collection, allowing the PhD candidate to ‘move back and forth’ between thinking about the existing data and generating strategies for collecting new data (Braun et al., 2019). This researcher’s own subjective experiences were logged and reflective dialogue with one supervisor was conducted. As previously described,

researchers are instruments in the research process who bring with them their own experiences, values, beliefs and interests. The PhD candidate was aware she was inherently involved in the research and contributing to the construction of themes and meaning to shape the research findings (Willig, 2013). The PhD candidate created extensive memos and turned these into narrative snippets for each interview, including documenting her own thoughts and reflections while coding. Reflexivity also involved robust and in-depth discussions between the PhD candidate and her supervisors while themes were being developed and identified. Reflexivity is discussed further in Section 3.7.

In addition, the frequency of all the codes were counted as is typical of a qualitative descriptive approach (Sandelowski, 2000). Similar codes were collapsed into one category, for example emotions that had individual codes (angry, confused, anxious, happy) were formed into one category. The number of references for codes were recorded from most to least frequent. Frequencies were used to verify the most common categories and concepts described in the data. These were used to support the final development of themes.

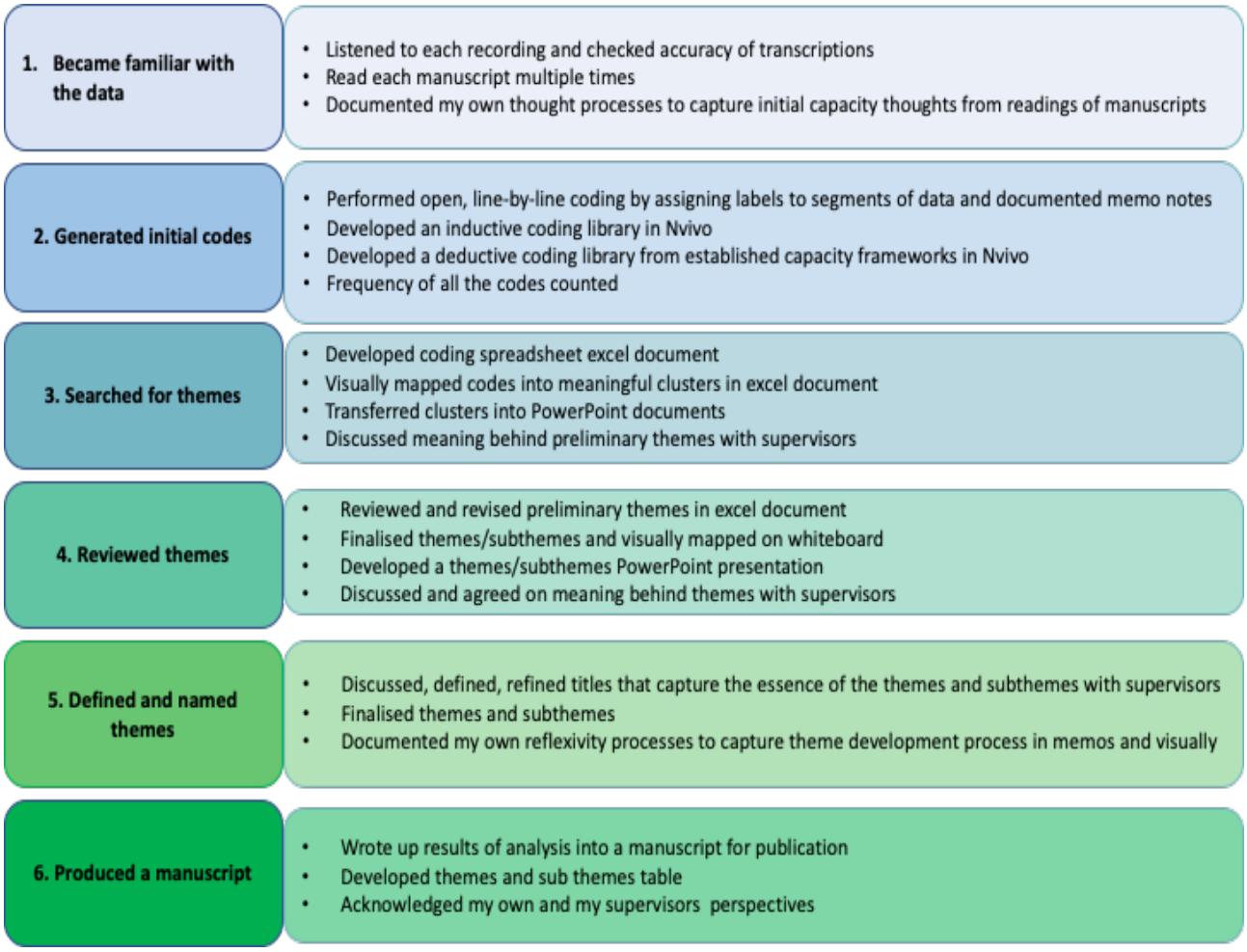


Figure 3.3: Thematic analysis process during volunteer capacity study (Braun et al., 2019)

1) Familiarisation with the data entailed the PhD candidate listening to each interview recording, reading each transcript multiple times and making initial notes in a notebook on the volunteer participants' perspectives, to become immersed and thoroughly familiar with its content. Familiarisation was also achieved by checking each transcript for accuracy. Initial codes were generated when sections of data were deemed interesting, significant or relevant to understanding initial volunteer capacity.

2) *Generating initial codes* involved open coding, whereby data was broken down into concepts and given discrete labels to enable new relationships to be formed across the data set. This was performed by the PhD candidate for all thirty transcripts. A coding library in in Nvivo software (version 11, QSR international) (Software, 2012) was established based on the inductive and deductive frameworks, that identified important elements of the data that may be relevant to understanding initial volunteer capacity (Appendix 4). This involved generating concise labels (codes) for the entire dataset, both inductive and deductive code generation. The supervisors were able to review the coding library, including codes assigned to data segments, as developed by the PhD candidate. All codes were exported from Nvivo software (version 11, QSR international) (Software, 2012) into Microsoft Excel (version 4.5.0, 2018) spreadsheet documents for the subsequent stages of analysis. Frequencies were used to verify the most common concepts described in the data from all interviews (Bowen, 2009). The data analysis process involved sorting information into groups, making a matrix of categories and sorting information into these categories, examining the relationships between categories to make sense of the story.

3) *Generating initial themes* involved examining the categories and collating data to identify significant broader patterns of meaning (potential themes) to understanding initial volunteer capacity. The process of visually mapping categories into related groups was achieved by affixing excel spreadsheet category groups and transferring them to PowerPoint presentations. Two researchers (the PhD candidate and her main supervisor) led the analysis and developed preliminary themes. Through a series of meetings with the other primary supervisor for this thesis, categories were moved around and combined into clusters which had a shared meaning and represented a potential capacity theme. The PhD candidate transferred the groups onto a whiteboard and took photos of potential initial themes, then used PowerPoint to map the potential themes for further discussion with the PhD candidates' supervisors. This method of auditing involves the 'independent' third supervisor cross-checking the other researchers' interpretations of the data enhances interpretive validity (meanings attributed by participants)(Sandelowski, 2000). Engaging multiple researcher perspectives is a valuable strategy to provide divergent views and the emergent findings (Barbour, 2001; Varpio et al., 2017). It was not the intention of PhD candidate and her supervisors' perspectives to unite on a 'right'

or ‘valid’ answer. Rather, these multiple researcher perspectives were included to add diversity, comprehensiveness and richness to the findings generated through data analysis (Varpio et al., 2017)

4) *Reviewing themes* encompassed the PhD candidate revisiting and re-working potential themes multiple times and checking the themes against the dataset. This process was used to determine that the researcher told a credible story from the data, and one that answered the research question; *what initial volunteer capacity exists?* The two supervisors reviewed a subset of two transcripts each and provided their perspectives on the themes. The themes were refined, which required some themes to be split, combined, or discarded. This process was captured in a series of evolving PowerPoint diagrams.

5) *Defining and naming themes* involved the PhD candidate and her supervisors refining and naming the main or overarching themes and the sub-themes that sat within them (Liamputtong, 2007; Tong, Sainsbury, & Craig, 2007). A small number of codes which did not seem to ‘fit’ within any of the themes were set aside from the thematic map. The PhD candidate and her supervisors discussed each theme and subtheme identified, to articulate their interpretation of the ‘essence’ or the meaning behind it.

6) *Writing up* required intertwining the analytic narrative and data extracts and contextualising the analysis in relation to existing literature (Braun et al., 2019). While the study aimed to express the patterned meaning developed from the data, it also enabled divergence and different perspectives to be captured and illustrated through participant quotes.

The findings of this study are reported in Chapter 4.

3.5 Non-Profit Organisation Capacity Study

The learning from the *volunteer capacity study* findings informed future capacity development exploration for this non-profit *organisation capacity study*.

Aim: To explore and describe how and why organisational capacity develops during a three-year public health community nutrition intervention.

Design: A prospective qualitative longitudinal study design (Saldaña, 2003) enabled the PhD candidate to explore capacity development over time, learning from each interview to inform data collection in follow up interviews. Longitudinal research design is context specific and studies time and change (Saldaña, 2003). There is no consensus about the minimum time required for a qualitative study to be considered longitudinal, although many researchers agree more than 12 months represents sufficient time for adequate follow up and multiple waves of observations (Saldaña, 2003).

3.5.1 Sampling

A complete sampling technique (Patton, 2014) was applied to recruit participants for the interviews. Complete sampling is a technique that involves all those that satisfy inclusion criteria, in this case staff that were employed by the non-profit organisation and had a role in the development, implementation and management of the Country Kitchens program (Palermo et al., 2018). Given the focus on organisational capacity the sample included the 1) nutritionist project manager and nutritionists, who were in charge of implementing the various Country Kitchens program strategies, and 2) executive management staff that were already employed by the non-profit organisation and who managed the budget and organisational operational processes for the program. All participants (n=11) were invited by email to participate in a face to face or telephone interview with the PhD candidate at commencement, during and end of the program points. If there was no response to the email within a week, the email was resent, if there was still no response a final email was sent. All nutritionists and executive management staff agreed to participate in the interviews (100% response rate). A summary of the sample selection is outlined in Table 3.4.

Available documentation was examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge (Bowen, 2009) to supplement the interview data. All editions of the Monthly Munch Newsletters (n=21), released every month online on the non-profit organisation website and mailed out to a mailing list, was collated from February 2017-December 2018. The newsletter was compiled by the nutritionist project manager. Monthly Munch newsletters consisted of 1) project updates, which included new nutritionists, project reach and travel schedules 2) volunteer facilitators in the spotlight and 3) nutrition education and recipes.

3.5.2 Data collection

In this study, data collection was from multiple sources using two methods including qualitative semi-structured interviews and program documents. The use of multiple sources improved trustworthiness through data triangulation (Patton, 2014). Data was collected by the PhD candidate between December 2016 - May 2018 (Figure 3.2).

Interviews

The same interview guide from the *Volunteer Capacity Study* was adapted for the *Non-Profit Organisation Capacity Study* (Appendix 5 and Appendix 6). The open-ended questions were derived from a review of the literature on established capacity domains (Despard, 2017; Health, 2001; Kostadinov et al., 2015; Liberato et al., 2011; MacLellan-Wright et al., 2007; van Herwerden et al., 2019). An additional organisational adaptive capacity framework (Gupta et al., 2010) was used to guide questions exploring organisational capacity change over time. This enabled different world views to be captured depending on who was being interviewed (non-profit organisation executive management or nutritionists). In addition, the interview guide aimed to explore capacity development through the lens of the social-ecological model (McLeroy et al., 1988), exploring influences on organisational capacity across all three levels simultaneously (individual, organisational and community) to assist with describing the relationships between the multiple levels (Liberato et al., 2011). In particular, the factors that may facilitate capacity development of the non-profit organisation and the individual relationships within the organisation. The interview schedule questions were adapted for interviews at the end of the Country Kitchens program (Appendix 5 and Appendix 6), to give participants the opportunity to describe their experiences on organisational capacity changes from 2016 to 2018. Questions were open-ended to enable the interviewer flexibility to adapt to each participants' unique role and experiences. All interviews were conducted over the telephone, audio recorded (Sony ICD-PX470) and transcribed verbatim, checked against the tapes for accuracy and familiarisation with the data, de-identified and labelled for later analysis. Interviews lasted between 24 to 90 minutes.

Nutritionists and executive management turnover were monitored by keeping in regular contact via email and phone with all participants recruited. The PhD candidate was able to interview every new nutritionists' and executive management member as they became involved in Country Kitchens program and also completed exit interviews with any participants who left the program. This sample retention strategy added rigour and depth to the sample and data collection, as there was a clearer picture about real life changes which influenced how and why capacity developed.

Documents

All twenty-one Monthly Munch newsletters (Appendix 8) released during the Country Kitchens program implementation, were collected for later analysis. Refer to the Appendix for a sample Monthly Munch newsletter. Each newsletter was labelled "MM" with the month and year of publication e.g.: MM May 2018.

Table 3.5: Non-profit organisation study data collection, sample size and timeline

Data collection source	2016	2017	2018	Total
Interviews				**19**
Nutritionists working in case communities (n=8)	3		4	7
Entry nutritionist's (staff turnover)		3		3
Exit nutritionist's (staff turnover)	2	1	1	4
Executive management (n=3)	2	2	1	5
Documents				***21***
Monthly Munch newsletters (n=21)		11	10	21

3.5.3 Data analysis

The data analysis process occurred concurrently with data collection, allowing the PhD candidate to 'move back and forth' between thinking about the existing data and generating strategies for collecting new data (Braun et al., 2019). For the non-profit organisation capacity study interview and document data were analysed using a thematic analysis process similar to *volunteer capacity study* previously described (page 73-77). However, to capture non-profit organisational capacity development a longitudinal analysis was conducted.

Interviews

Interviews were aggregated across multiple non-profit executive management and project team nutritionists, to avoid reliance on single viewpoints or time points. Data was explored using thematic analysis (Braun et al., 2019), with inductive and deductive coding, to inform theme development (as previously described in the volunteer capacity data analysis pages 71- 77). A brief recap of this process is now provided. Initially interview transcripts were inductively coded, followed by deductive coding with the assistance of Nvivo software (version 11, QSR international) (Software, 2012) The deductive coding framework was adapted from the *individual volunteer study* and new capacity frameworks from the existing literature on organisational capacity domains and adaptive capacity were also included (Gupta et al., 2010). Codes added from this framework included; fair governance, leadership, learning capacity, room for autonomous change, variety (Appendix 7). The PhD candidate kept an open mind and new inductive codes were also developed from the data from this process (Appendix 4). Inductive and deductive coding of the first transcript was completed independently by all researchers (PhD candidate and 2 supervisors). After discussions with all authors following coding of the first transcript, coding continued through the remaining interviews using this framework to support further description of categories. The PhD candidates' own subjective experiences were logged and reflective dialogue with the main supervisor was conducted regularly throughout the analysis process.

Documents

Document analysis (Bowen, 2009) of all twenty-one Monthly Munch newsletters used the previously described coding framework applied to interview data (Appendix 4). Line by line coding process was performed by the PhD candidate, with the assistance of Nvivo software (version 11, QSR international) (Software, 2012), whereby codes, from the framework were assigned to pieces of text within the documents. A sample of newsletters (n=2) were coded independently by the PhD supervisors to verify the approach. Codes from the documents were grouped into categories which were analysed to identify relationships between categories and to support the theme development. In addition, the frequency of codes was counted. As for interview analysis, an organisational adaptive capacity framework (Gupta et al., 2010) was utilised for deductive coding during the document analysis process. Codes added from this framework included; fair governance, leadership, learning capacity, room for autonomous change, variety (Appendix 7).

Integrating the data analysis

Longitudinal qualitative analysis (Osborn & Rodham, 2010; Saldaña, 2003) enabled the PhD candidate to capture 'natural evolvement of change' (Saldaña, 2003), offered multiple vantage points and important insights into how changing environmental and physical contexts influenced experiences over time. Longitudinal analysis helped to identify the determinants and direction of change (Saldaña, 2003) and generated an understanding of the individual people, communities and the non-profit organisation as dynamic rather than static entities for this research (Osborn & Rodham, 2010). The thematic analysis codes were grouped into timelines in Microsoft Excel (version 4.5.0, 2018), providing a detailed data analysis journal for 2016, 2017 and 2018. This timeline journaling was used for interviews and document thematic analysis. Comparisons across the data sets from 2016 to 2018 enabled consideration of similarities and differences between cases over time.

Themes to reflect organisational capacity development over time were generated from all data sources. This added to trustworthiness, as capacity change descriptions could be contrasted and compared from the various data sources which provided different viewpoints. Therefore, themes that described the common non-profit organisational capacity changes that occurred over time were developed from the codes collapsed into categories across both the interview data and documents. The PhD candidate looked for replication and contradictions of possible explanations of how and why capacity developed in the non-profit organisation using both interview and document analysis processes. Data source quotes were tagged as follows: nutritionist (year), volunteer (year), newsletter (month/year). The social-ecological model lens was used throughout the data analysis by looking at individual, organisational and community factors as well as considering interpersonal and possible policy influences.

Patterns across capacity domains descriptions (Gupta et al., 2010; Liberato et al., 2011), number and type of community connections, (networking, coordinating, cooperating, collaborating) (VicHealth, 2011), number and type of community interventions (McLeroy et al., 2003), multiple relationships between individual, organisational and community levels (McLeroy et al., 1988), were identified. The purpose of this data integration was to identify patterns across all data sets, to determine whether organisational capacity development was described consistently from the various data sources.

The findings of this study are reported in Chapter 5.

3.6 Community Capacity Multiple Case Study

Aim: To explore and describe the individual, organisational and community influences on community capacity development, during a three-year public health community nutrition intervention.

Design: A qualitative longitudinal multiple case study design (Saldaña, 2003; Stake, 2013) was adopted. Case study is a holistic and in-depth exploratory methodology for investigation of causal relationships between a phenomenon and the context of the environment where it occurs, taken from the perspective of those involved (Maxwell, 2008; Stake, 2013). It is a frequently used approach in social science and health care research for studying people and programs. An important advantage of this research strategy is that it facilitates the collection of data from multiple sources within the case which is clearly defined and provides a rich and detailed understanding of reality in its context (Stake, 2013). The application of this strategy of inquiry for the *community capacity* study allowed the PhD candidate to gain deep insights of the complexity of capacity changes occurring in communities.

The Design of Case Study Research in Health Care (DESCARTE) model (Carolan, Forbat, & Smith, 2016) underpinned the methods selected for data collection, analysis and interpretation (Table 3.7). This model provides guidance on how to conduct high quality multiple case study. A cross-case analysis of 11 cases in which volunteers developed capacity to implement community nutrition interventions over an eighteen to twenty-four-month period was undertaken. The focus was on exploring community capacity development in the 11 cases during the intervention period.

Theoretical frameworks and models informing research design

This multiple case study design used a theory-first approach with prior development of theoretical propositions about community capacity development to guide data collection and analysis. As described in Chapter 1, there is limited research on capacity development interventions that include theoretical foundations (Bergeron et al., 2017) and community capacity may be better understood using the **social-ecological model of health** (McLeroy et al., 1988). A social-ecological framework is particularly well suited for identifying factors and processes that may facilitate community changes (Busza et al., 2012; Trickett et al., 2011) (Chapter 1 section 1.1).

To describe **community development**, the *community health development framework* (Rubin, Rubin, & Doig, 1992) was used. The community health development framework is an interdisciplinary, community driven framework used to mobilise local resources for problem-solving, focusing simultaneously on population health improvement and strengthening community capacity (Felix, Burdine, Wendel, & Alaniz, 2010; Rubin et al., 1992; Wendel et al., 2009). This was deemed

appropriate to use to explore and describe capacity relationships between individual, community and non-profit organisational settings during data analysis.

3.6.1 Sampling

The units of analysis were the communities, therefore, each community has been labelled as case 1-11, to reflect community capacity being a community-level property (Goodman et al., 1998; Lempa et al., 2008). Eleven cases were selected in 2017 from the 30 cases included the individual volunteer capacity study sampled in 2016.

This study focused on **Phase 2** of the Country Kitchens program, which involved the trained volunteer facilitators and the nutritionists supporting implementation of a community nutrition intervention in their local community (Section 3.3.1). Purposive maximum variation sampling was undertaken to ensure final sample:

a. adequately captured the diversity of communities throughout Queensland that were implementing community nutrition interventions, to ensure that the conclusions adequately considered a range of geographical locations;
b. allowed for the examination of how capacity develops (or does not) in various community interventions over the maximum available intervention time (18-24 months); and
c. enabled the establishment of particular patterns to illuminate the reasons for capacity development differences, within and between communities, considering individual characteristics of the communities and organisational influences (Maxwell, 2008).

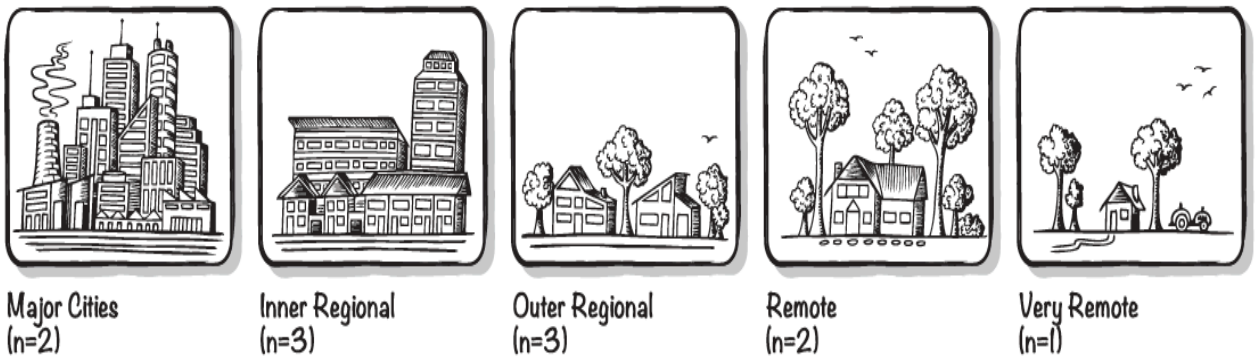


Figure 3.4: Cases selected for investigation of community capacity development

The sample was drawn from communities that were involved from the commencement of the intervention. That is, they participated in Phase 2 of the Country Kitchens program, and that were also involved in the Phase 1 pilot in 2016 and in early 2017, in order to capture community capacity development over a time. The longitudinal sampling technique provided the PhD candidate with an

18 month to 24 months follow up period (Figure 3.1). From 30 possible cases where volunteer and nutritionists interview data were available, in various geographical locations throughout Queensland, 11 cases were selected by the PhD candidate based on the principles outlined above (a to c). Volunteers and nutritionists from these 11 communities (cases), had all agreed to participate in initial interviews (100% response rate) over the 18-24-month intervention period. In three cases, two volunteers from the one community were interviewed over time. For the remaining eight cases, one volunteer from each community was interviewed over time. For all eleven cases, the volunteers were female and had received training to facilitate Hands-on Nutrition Workshops (Phase 1) in their communities with the nutritionists employed by the organisation to coordinate the Country Kitchens program. The nutritionists implementing community nutrition interventions in the 11 cases were interviewed in 2016 and 2018, with staff turnover captured during the 18-24-month intervention period (Table 3.6). The content, quality and richness of the dialogue from the interviews with volunteers and nutritionists from the eleven cases, in conjunction with selected documents (Section 3.6.2), was deemed theoretically sufficient to answer the research question, due to the diversity of sample cases, multiple data sources and theoretical foundations from which the study was founded (Varpio et al., 2017).

3.6.2 Data collection

Taking a constructivist position (Guba & Lincoln, 1994), the multiple factors affecting community capacity development were explored via qualitative semi-structured interviews and key documents collected (Table 3.6). The use of multiple sources improved trustworthiness through data triangulation and increased confidence in the research findings as recommended in case study methodology (Stake, 2013). Combining and appraising the evidence collected from the various communities also contributed to the robustness of the study (Patton, 2014). Data sources included interviews from 2016 to 2018 with community volunteers (n=14), nutritionist program manager and nutritionists (n=8), together with 22 key documents: the program monthly newsletters from 2017 to 2018 (n=21) and the final management report in 2018 (n=1). This report was written by the nutritionist program manager and summarised data from across all three years of the intervention. The report captured the community interventions implemented during the intervention period in all communities. Data for the 11 cases was collected on the number and type of community interventions from this report. Only data pertaining to the included cases was extracted from the newsletters and report.

Table 3.6: Case study data collection, sample size and timeline

Data collection source	2016	2017	2018	Total
Interviews				**48**
Nutritionists working in case communities	3		4	7
Entry nutritionist's (staff turnover)		3		3
Exit nutritionist's (staff turnover)	2	1	1	4
Volunteers in case communities	14#	6	14#	34
Documents				**22**
Monthly Munch newsletters (n=21)		11	10	21
Final management report (n=1) *			1	1

 # 2 volunteers in 3 cases, 1 volunteer in eight cases.

Community volunteer interviews

Interviews with volunteers from each of the cases were collected. Two or three in-depth interviews with each volunteer was undertaken in 2016, 2017 and 2018 (Table 3.6) whereby interviewees were encouraged to tell their story about their experience of implementing community nutrition interventions (Appendix 3 Interview Questions Volunteers 2016 and Appendix 9 Interview questions Community Volunteer 2018). Questions also explored what happened in their community as a result of being involved in the Country Kitchens program, why and how effective they thought the program was in their community. Volunteers were also asked about what motivated them, enablers and barriers encountered with undertaking a community nutrition intervention. Their opinions about the impact and sustainability of the community nutrition intervention across all cases were also explored.

Nutritionists interviews

Nutritionists were interviewed to provide data from another perspective on each case. The nutritionists employed to implement the intervention were considered to be a rich source of data because they were based at the non-profit organisation, had also travelled to each community case to deliver the Hands-on Nutrition Workshops on three to five occasions and had supported the volunteers in initiating community interventions. These interviews focused on the organisational relationships with the community cases to ensure the multilevel influences on community capacity development were captured (McLeroy et al., 1988). To explore the community capacity development, nutritionists were also asked about their experience being involved with the volunteers in the community cases, whether they thought their involvement had changed the non-profit organisation in any way and if so, how. A schedule of open-ended questions was developed and designed to elicit stories about the nutritionist's experiences of implementing the intervention (Lieblich, Tuval-

Mashiach, & Zilber, 1998). The interview schedule used in 2016 was adapted for the follow up interviews in 2018 (Appendix 6 Nutritionist Interview questions 2016 and 2018). The interview was semi-structured and hence the questions evolved and were adapted for each interviewee to ensure they adequately captured the context for the community case.

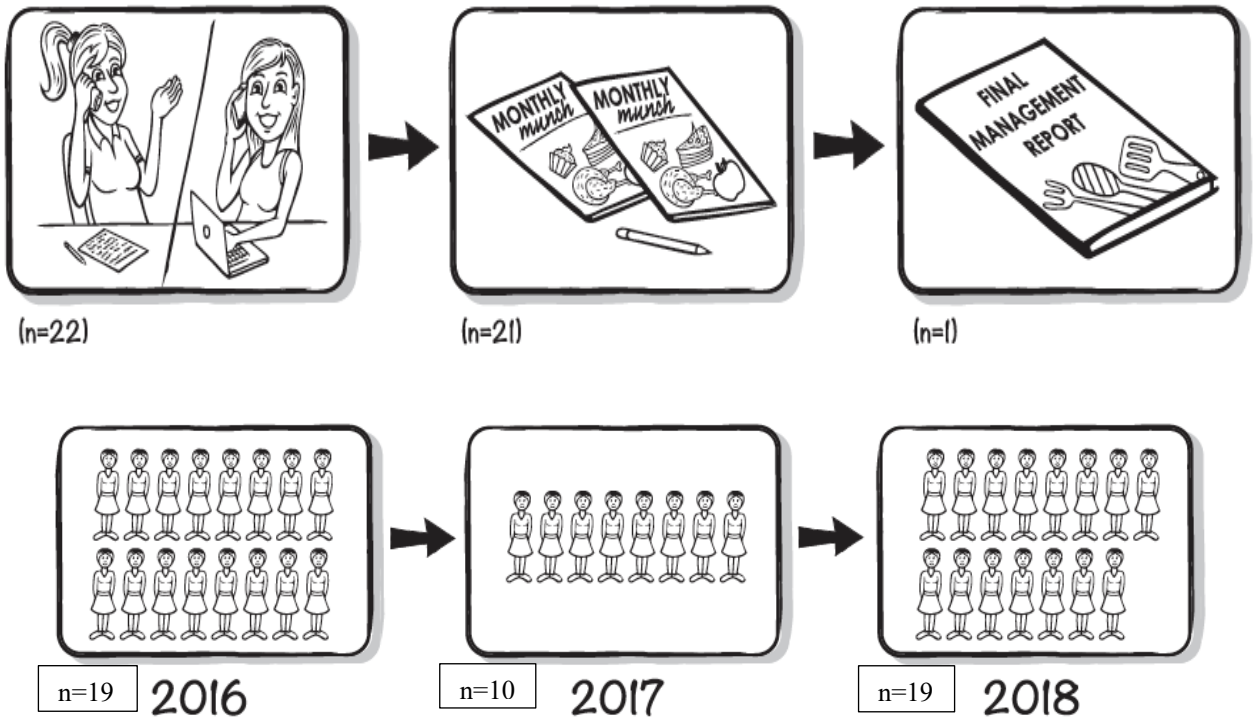


Figure 3.5: Data collection sources and interview schedule timelines

Interviews for each new nutritionist were conducted as they became involved in the intervention, if they resigned during implementation and at the completion of the intervention (Table 3.6). These interviews provided additional data on the cases as they capture what was happening in the larger organisation and supports the multiple level analysis of capacity as informed by the social-ecological model. All interviews were conducted by the PhD candidate. The volunteer interviewees and nutritionists were not known to the interviewer for the first interviews (2016). However, the interviewer actively engaged with the volunteer interviewees and nutritionists during the intervention period as a research assistant as part of the Monash University evaluation team. This entailed attending the non-profit organisations national conference, various training workshops and visiting communities where feasible to support the community nutrition interventions. The PhD candidate also maintained email contact between interview periods to build a relationship with volunteer interviewees and nutritionists. The interviews lasted between 30 and 120 min and were recorded by digital audio recorder (Sony ICD-PX470) sound recorder. They were transcribed verbatim by a commercial company.

Documents

Written documents were a second source of data that added to the interview data to verify and triangulate analysis. Written documents and records are an important source of data that enable researchers to acquire an insider's perspective, providing a deeper knowledge of the context in which events occurred. Documentation may at times be inaccurate and may be subject to bias, however the documents are still useful in case study research as they help to corroborate and augment evidence from other sources (Bowen, 2009). A key benefit of documentation is that these sources are generally easy to access, meaning that re-checking is easier and there is less reliance on individuals' memories of events (Bowen, 2009).

Available documentation (monthly newsletters and the final project management report) was examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge (Bowen, 2009). The key documents consisted of publicly available monthly newsletters (n=21) (Appendix 8) and the final project management report, which was prepared for the funding body (Queensland Health) by the nutritionist manager, describing community interventions. These documents described the evolution of the program and implementation process in the various communities and therefore were chosen as most appropriate to describe changes in the interventions over time.

All editions of the Monthly Munch Newsletter (n=21), released every month online on the non-profit organisation website and mailed out to a mailing list, were collated from February 2017-December 2018. The Monthly Munch Newsletters documented community interventions to create an illustration of events as they unfolded in each community case. Monthly Munch newsletters consisted of 1) project updates, which included new nutritionists, project reach and travel schedules 2) volunteer facilitators in the spotlight and 3) nutrition education and recipes. Only details pertaining to the 11 cases were extracted from the newsletter. Refer to the Appendix 8 for a sample Monthly Munch newsletter.

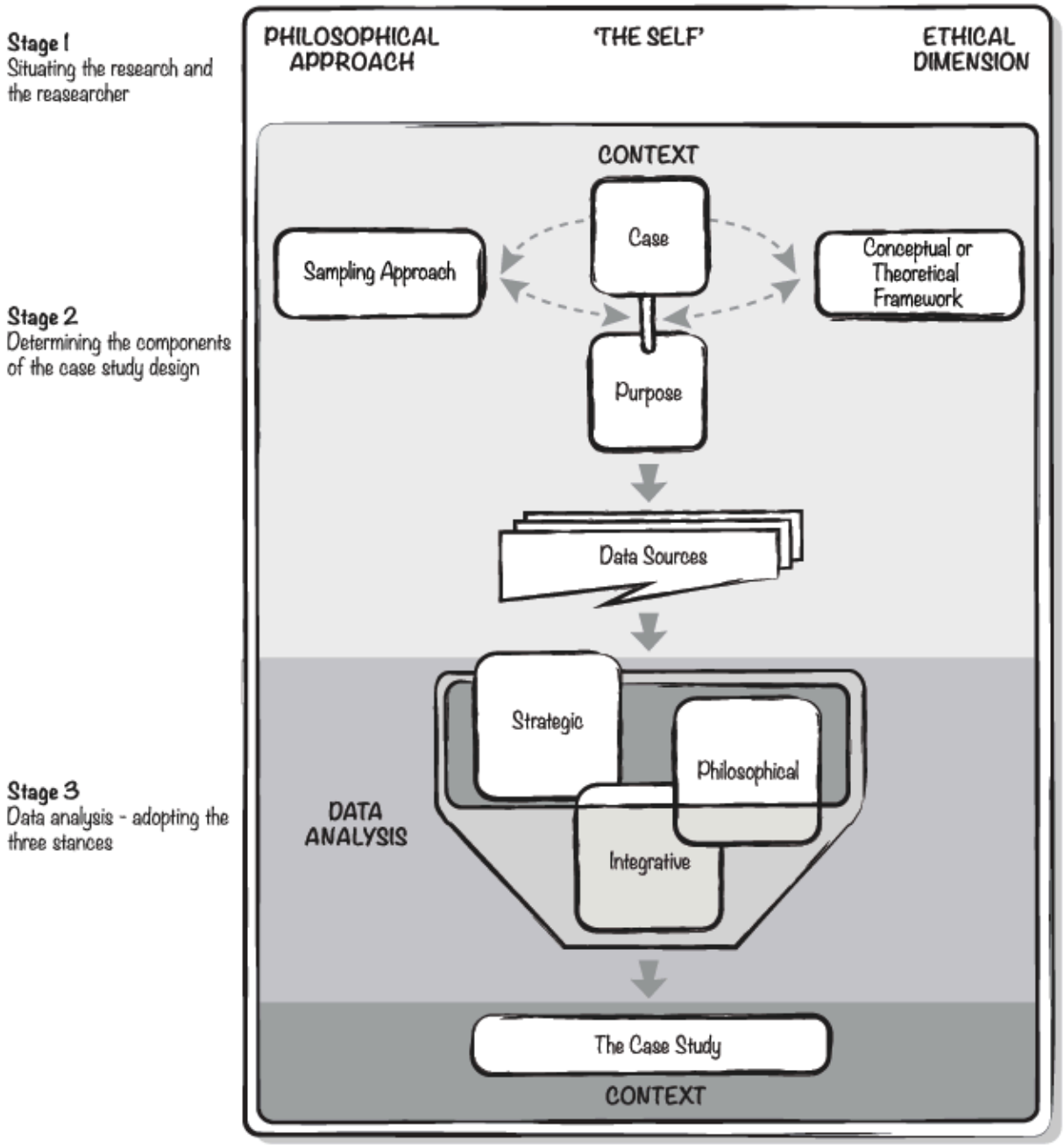


Figure 3.6: DESCARTE Model adapted from (Carolan et al., 2016)

#refer to Table 3.7: The DESCARTE model# of case study research *page 92*

3.6.3 Data analysis

Researchers used case-based and variable-based analysis for this study, exploring both the particularities of each case and identifying general patterns across cases to ensure rigour and trustworthiness (Abma & Stake, 2014; Miles, Huberman, & Saldaña, 2014). Within-case analysis was informed by Huberman, Miles & Saldana 2014 five distinct methods of analysis: exploring, describing, ordering, explaining, and predicting (Miles et al., 2014). Between-case analysis was modelled on Stake's 2013 method of Multiple Case study Analysis (Stake, 2013), where the analyst (PhD candidate) adapted a set of seven worksheets to assist with the cross-case analysis process. Thematic analysis was used for each of the case's data sources; 1) interviews with community volunteer facilitators 2) interviews with nutritionists 3) monthly newsletters and 4) final management report. Details of the analysis for each of these data collections is provided in the next section. Variables of interest included geography of the community, credentials of volunteer, resources (physical, financial, human, environmental), community networks, partnerships and changes over time. Triangulation of this data (Stake, 2013) was instrumental to understanding community capacity development in the community nutrition interventions. Qualitative data analysis software Nvivo software (version 11, QSR international)(Software, 2012) was used in the thematic analysis of the individual cases for all data sources. Worksheets (Stake, 2013) were formulated in excel to complete between-case analysis. The interview and document data analysed across cases generated themes (Table 3.7: The DESCARTE model). Data source quotes were tagged as follows for each case: nutritionist (year), volunteer (year), newsletter (month/year), final management report.

Interview Analysis

The analysis process was iterative, whereby data was coded using a hybrid capacity coding frameworks from previously described for volunteer and non-profit organisation studies (Appendix 4). In order to explore and describe capacity change over time the previously described five dimensions of the Adaptive Capacity Framework (Gupta et al., 2010) were used (Appendix 87). The adaptive capacity of social systems refers to the ability of human actors and communities to respond to change and maintain human well-being over time (Smit & Wandel, 2006). Analysis incorporating adaptive capacity was deemed important as capacity is dynamic- regularly transforming and adapting to external changes, such as changes in project funding, leadership or community participation. A focus on describing adaptive capacity of community nutrition interventions, may lead to better translation of interventions to other contexts (van Herwerden et al., 2019) as detailed in Chapter 2. This analysis involved modifying the framework developed for the organisational capacity study to capture community adaptive capacity (Appendix 7). The coding framework for this study also included codes derived from a partnership tool to get a clearer insight into the types of

partnerships developed over time (networking, coordinating, cooperating, collaborating) (VicHealth, 2011). In addition, community capacity elements were also examined in the data (Appendix 4).

The data was coded by the PhD candidate using this coding framework to support further description of categories. The candidates own subjective experiences were logged and reflective dialogue with one other researcher was conducted. New inductive codes were also identified from the data in subsequent transcripts and added to the coding framework and then applied to all interview transcripts. Inductive and deductive codes and categories, and the aligning text from the data were examined multiple times with the research questions in mind, to interpret data and develop themes from the common community capacity development stories.

Document Analysis

Data related to each of the 11 cases was extracted from the Monthly Munch newsletters (n=21) and the final project management report (n=1) and coded in Nvivo software (version 11, QSR international) (Software, 2012) using the same coding framework as the interviews (Appendix 4). The frequency of each code in the newsletters were totalled for each case each year (2017 and 2018). A subset of four newsletters were independently coded by the PhD candidates' supervisor. This coding was cross checked by the candidate, contradictions and discrepancies in the coding were resolved through discussions, then the candidate coded all remaining newsletters. The codes from the newsletters were summarised in an excel spread sheet for each case and each year and compared and contrasted with interview codes. The number and type of community interventions in each case described in the newsletters and community interventions report were counted and recorded for each case chronologically. These community interventions were classified using typology of community nutrition interventions classifications that focuses on communities as setting, target, resource or agent (McLeroy et al., 2003), with the aim of understanding community interventions as a proxy measure of community capacity development. A second analysis approach involved classifying cases as communities with substantial, moderate or low capacity development over time based on descriptions of type of partnerships (networks, cooperating, coordinating, collaborating) formed during community activities e.g.: one off foodie talks (low capacity), and number and type of community nutrition interventions developed over the three-year intervention period (high capacity) (McLeroy et al., 2003; Trickett et al., 2011; VicHealth, 2011). These two analysis processes were then integrated during cross-case analysis purposes.

Integrating the data analysis

The researchers (PhD candidate and supervisors) looked for replication and contradictions of possible explanations of how and why capacity develops in community nutrition interventions. Pattern matching (Stake, 2013) was based on individual volunteer characteristics, geographical location (Australian Government Department of Health, 2018), capacity domains descriptions (Gupta et al., 2010; Liberato et al., 2011), number and type of community connections, (networking, coordinating, cooperating, collaborating) (VicHealth, 2011), number and type of community interventions (McLeroy et al., 2003), multiple nested levels relationship descriptions between individual, organisational and community levels (McLeroy et al., 1988). This was first completed chronologically from 2016 to 2018 for each case in excel data spreadsheets. Then the PhD candidate carried out pattern matching analysis across cases and time (Stake, 2013). The purpose of this cross-case synthesis was to identify patterns across cases, to determine whether community capacity development followed a similar process. Cross-case analysis was chosen as the focus to protect community anonymity.

The PhD candidate also explored hypothetical propositions based on previous research and experience in practice. Propositions included an assumption that community capacity descriptions would occur more in communities with volunteers with higher education credentials or worked in the health sector, communities with more of any or a combination of resources (physical, financial, human, environmental), existing community networks, partnerships and local community agencies. Explanation building involved chronologically from 2016 to 2018, exploring the data across cases to discover if any of these propositions had emerged.

The data analysis process for this study began during data collection in 2016, allowing the PhD candidate to 'move back and forth' between thinking about the existing data and generating strategies for collecting new data (Braun & Clarke, 2019). Comparisons across these data sets from 2016 to 2018 enabled consideration of similarities and differences between cases over time. Themes to reflect community capacity changes over time were generated from all data sources. This added to trustworthiness, as capacity change descriptions could be contrasted and compared from the various data sources which provided different viewpoints. Reflexivity is further described in Section 3.7.

Table 3.7: The DESCARTE model[#] of case study research

Stages of the DESCARTE Model	Guiding Questions for Researcher	Response
Stage 1: Situating the research and the researcher	1. What is my philosophical approach?	Social constructivism. A main focus of social constructivism is the role that social interaction and social processes play in creating knowledge
	2. How do I situate my "self" in this research?	I am the instrument interacting with interviewees in my research (nutritionists, non-profit volunteers) as part of the intervention process. I believe learning cannot be separated from social context.
	3. What are the ethical dimensions of this research?	Ethical approval obtained. Large non-profit organisation with communities easily identifiable, which affected how data could be presented.
Stage 2: Determining the components of the case study design	4. How is the case defined?	Each case is a community. Case selection defined by: a. Diversity by geographical location b. Time (2016-2018) c. Different data sources to capture diverse viewpoints and interpretations
	5. How is context defined?	Longitudinal study during a three-year community nutrition intervention implemented throughout Queensland, Australia
	6. What is the purpose of the case study?	To explore and describe the individual, organisational and community influences on community capacity development, during a three-year community nutrition intervention program.
	7. What is the conceptual/ theoretical framework for the case study?	Theoretical social-ecological framework (McLeroy et al., 1988). Community Health Development Framework (Rubin 1992, Whitney 2017)
	8. What is my sampling approach?	Purposive maximum variation sampling
	9. What is the rationale for my choice of data sources?	**Interviews** with community *volunteer facilitators* and *nutritionist* provided in-depth narrative of what and how things were developing in communities from two perspectives. **Newsletters** provided a snapshot as events unfolded in communities during phase 2. **Final project management report** provided a record of community interventions implemented over the intervention period for all cases.

Stages of the DESCARTE Model	Guiding Questions for Researcher	Response
Stage 3: Data analysis—adopting the three stances	10. Is data analysis congruent with the philosophical approach?	Qualitative thematic analysis was applied to interview data and coding framework developed from the interviews applied to documents used for analysis (newsletters and report).
	11. Is my analysis adopting a case-based or a variable analysis-based approach?	Researchers used case-based and variable-based analysis for this study, exploring both the particularities of each case and identifying general patterns across cases. Cases are not identified or labelled in any way for privacy and ethical reasons.
	12. How and why is data integrated during data analysis and interpretation?	Data was integrated at each data collection point of the analysis 2016, 2017, 2018 to describe the holistic story over time. Narratives for each case for volunteers and nutritionists' interviews were integrated and verified with the document analysis. Data integration involved pattern matching, linking data to propositions, explanation development, time-series analysis at each point in time in single case analysis, then across all those point in time, during cross-case synthesis.

(Carolan et al., 2016)

The findings of this study are reported in Chapter 6.

3.7 Rigour

Qualitative research is accepted as a legitimate and appropriate tool for studying people's subjective experiences and understanding the meanings and interpretations that individuals have within the context of their lives (Liamputtong, 2007; Padgett, 2016). Qualitative enquiry requires rigour, which refers to the means by which integrity and competence are demonstrated (Rolfe, 2006; Tobin & Begley, 2004). Rigour helps to demonstrate the legitimacy of the research process, without which the research may become futile and not contribute to new knowledge. The key methods for establishing rigour in the methods used for this thesis are briefly described below.

Credibility- refers to the internal validity and demonstrates that what the participants say fits with how the PhD candidate represented these viewpoints (Bazeley, 2013). Credibility is based on the constructivist assumption that there is no single reality but rather multiple realities that are constructed by people in their own contexts and require authentic representations of experience that can be seen as reasonable by the participants (Patton, 2014). For the volunteer capacity study, the participants who agreed to be interviewed, lived in rural and regional communities throughout Queensland. In the organisational capacity study and community capacity study participants were purposively and carefully selected for their knowledge and unique characteristics. This strategy gives the research credibility (Bazeley, 2013). The PhD candidate frequently reflected what the participants described back during the interview process to ensure credibility. The participants could immediately recognise the description and interpretation made by the PhD candidate ensuring the realities held by the participants were as accurate and adequate as possible.

For the multiple case study, the within-case analysis, triangulation of interview data from multiple sources (interviews with community volunteers, nutritionists and documents) from a single community served to increase the internal validity of this study (Morse, 2015). For the between-case analysis, pattern matching was used (Cronin, 2014; Yin, 2014), whereby results were compared with an empirically predicted pattern based on the literature (van Herwerden et al., 2019) and alternative explanations to strengthen data triangulation. Generalisability was strengthened by analysing multiple cases. Case study worksheets were used as a standardised schema for the PhD candidate's line of inquiry, thereby heightening the between-case reliability. Through reflexivity, the candidate and supervisors acknowledged how these attributes and their positionality may influence the analysis of data and therefore the research findings (Willig, 2013).

Transferability- is concerned with whether the findings can be transferred to a similar context (Bazeley, 2013). The transferability of this qualitative research can be assessed as applicable to other similar contexts incorporating individual volunteers of non-profit organisations and community nutrition interventions in rural, regional and remote communities in Australia. The rich in-depth descriptions of the settings, participants, the methods and processes undertaken during this research enables readers to make decisions about transferability. This research was cautious about providing too much detail on participants' demographics to ensure participants anonymity (Liamputtong, 2007).

Dependability- refers to whether the research findings fit the data from which they have been derived (Bazeley, 2013). All chapters included in this thesis are based on and incorporate clear step by step data collection and analysis processes. To enhance the consistency of the analysis across studies, researcher triangulation was employed whereby the same three members of the research team analysed the data and findings represent triangulation of multiple researcher interpretations. Methodological triangulation refers to the use of multiple methods to study a single problem and can involve the use of different qualitative methods or a combination of qualitative and quantitative techniques (Bazeley, 2013). The researcher strengthened data interpretations by adopting a range of methods (interviews, document analysis), collecting information from different data sources (nutritionists, executive management team, and community volunteers). The process of triangulation of all analysis sources was continuously recorded for the individual capacity and organisational capacity studies. To assist with the case study quality assessment a detailed audit trail was recorded (Rolfe, 2006). Decision making processes were recorded in extensive field notes during the case selection, sample recruitment and data generation phases of the research. This included a document that recorded each iteration of the analysis, plus a detailed data analysis journal for recording thoughts, decision making processes which guided reflexivity. Copies of the coding structure at different time points, indicating evolving analytical ideas about each cases' codes, categories and theme development were stored on an external hard drive for audit purposes. The conduct of all studies was guided by COREQ criteria (Tong et al., 2007)(Appendix 11) for reporting qualitative studies.

Reflexivity- in qualitative research, researchers are instruments in the research process who bring with them their own experiences, values, beliefs and interests (Willig, 2013). Through reflexivity, researchers acknowledge how these attributes and their positionality may influence the analysis of data and therefore the research findings. The principles of qualitative teamwork and being reflexive as a team were applied by the researchers in this thesis (Pillow, 2003). In addition to acknowledging their positionality at the commencement of the research (as outlined in Section 3.2), communication between the research team during data analysis enhanced reflexivity. The research team were clear about their roles, the contribution they could make and the process to be undertaken prior to data

analysis proceeding while also accepting that the research process is fluid and evolving. The two researchers who led the analysis (PhD candidate and main supervisor) met at least fortnightly via video conference to initiate, progress and finalise the themes identified from the data. Following data collection, researchers engaged in discussions to articulate the main patterns that were becoming apparent from the participants' experiences. This was further facilitated via video conference by using PowerPoint slides to discuss initial themes. Reflexivity was evident through the robust and in-depth discussions between researchers while themes were being developed and identified. Being close to the data enabled the PhD candidate to recall individual participant experiences to help support their perspectives on the meaning behind emerging themes. In addition, memos (both in handwritten documents and word documents) were kept by the PhD candidate as themes were developing for later reflection and consideration. Memoing is recognised as a valuable audit trail to document the PhD candidates' thinking processes and development of ideas throughout data analysis (Creswell & Poth, 2016; Tong et al., 2007). For the multiple case study, to support reflexivity, new ideas and interpretations were written as memos and summarised for each case using the previously described pattern matching process (individual characteristics, eight capacity domains, number and type of community connections, number and type of community interventions). Results of data analysis were themed by case and then across case themes were developed. The social-ecological model lens was used to support data analysis whereby individual; community and organisational factors were used to assist interpretation of themes.

3.8 Summary

This chapter outlined the methodology and research design, including the PhD candidates'' position and approach to the research. This chapter described the qualitative methods for *individual*, *organisational capacity* and *community capacity* studies and provided the rationale for the methods chosen. The three qualitative studies across individual, organisational and community contexts were completed during a three-year state-wide community-based intervention, implemented by a non-profit organisation, throughout Queensland, Australia. *Individual* capacity was explored using a qualitative description approach. *Organisational* capacity changes were explored using a longitudinal, qualitative exploration approach. *Community* capacity changes were explored using a longitudinal, qualitative, multiple case study approach. Across all three studies, interview transcripts and documents were analysed using thematic analysis and drawn together depending on the study focus. The key methods for establishing rigour in the methods used for this thesis; credibility, transferability and dependability were described. The following Chapters 4-6 will report on the key findings from this research.

Chapter 4 Key Findings Individual Volunteer Capacity

4.1 Study overview

This qualitative descriptive study aimed to explore and describe the initial capacity of *volunteers* of a non-profit organisation to implement community nutrition interventions. This study was important because although non-profit organisations are increasingly playing a crucial role in delivering community-based health services, little was known as to whether volunteers of non-profits have capacity to implement such community nutrition interventions. The full methods for this study are outlined in Section 3.4. In brief, *individual* volunteer capacity was explored using qualitative description. Semi-structured interviews with volunteers examined their capacity and how this may influence community nutrition intervention development. Thirty of 44 volunteers completed phone interviews (75% response rate). Using thematic analysis of interviews with volunteers engaged in the intervention, this study aimed to explore and describe the initial capacity of these volunteers as they embarked on their journey of being involved in the intervention. The social-ecological lens was utilised throughout the data analysis by looking at community and organisational factors influencing individual capacity development. The findings will now be described in further detail.

4.2 Findings

4.2.1 Sample size, demographics and volunteer characteristics

Thirty participants (n=30), completed interviews ranging from 30 to 120 minutes' duration. The participants were from a range of communities with the majority classified as inner regional 43% (n=13) or outer regional 30% (n=9), followed by major cities (13%) (n=4), remote 10% (n=3), and very remote 3% (n=1) communities. All volunteers were female (n=30), married (n=27), separated (n=1) or widowed (n=2). Volunteer age ranges included those between 30-49 years (n=5), 50-65 years (n= 12), 66-80 years (n=12) and 81+ years (n=1). Education levels of volunteers varied from completing high school (n=18), vocational education and training (n=7) to tertiary qualifications (n=5). This distribution is reflective of the communities participating in the intervention (Palermo et al., 2018).

Across 452 pages and 146,606 words of data, the most frequent categories from deductive coding using previously identified capacity domains were quality project management (177), partnerships (171), intelligence (138), leadership (123) and workforce development (112). The most frequent categories from inductive coding were reflective practice (225), community interventions (187), facilitator demographics (180), social connections (70), timelines (69), behaviour change (56) and branch support (55).

4.2.2 Individual volunteer capacity findings

Themes describing the initial capacity of female volunteers that existed in the non-profit organisation to implement community nutrition interventions were that; *1) volunteers had an understanding of the health issue of obesity* and *2) Volunteers were amenable to trying something new* (Table 4.1).

The codes from the hybrid capacity framework (Appendix 4) were sorted into categories, which involved using the multiple levels of the social ecological model lens and then mapping of these to themes and sub themes (Table 4.1).

Table 4.1: Key themes and sub themes and descriptors

Key Themes	Sub-themes	Categories (social-ecological lens[#])
1. Volunteers had an understanding of the health issue of obesity	a. Addressing the dietary causes of people being overweight or obese	[a] **Cooking and meal preparation skills** [b] Resources- physical (stove, fridge, storage) [c] Food availability (access, supply) [b,c] Resources- finances/costs [e] Geographical location influences [e] Environmental factor influences [e] Equity influences [d] Population demographics
	b. Targeting a population to work with to do community nutrition interventions	[a] **Intelligence of volunteers to focus on a target population most in need regarding poor food literacy.**
	c. Involving the population in the process of developing community nutrition interventions	[a,b,c,d] **Involving community stakeholders** in asking why being overweight or obese is a health issue for them and problem solving together to reduce people being overweight or obese
2. Volunteers were amenable to trying something new	a. Being driven and enthusiastic	[a] **Determined to implement a community nutrition intervention and behaviour was directed towards achieving this.** [a] Intense and eager enjoyment to implement a community nutrition intervention
	b. Volunteers leading	[a] **Guiding** and the ability to adapt to new opportunities, within themselves, their community or organisation. Bringing others along.

a=Individual, b= Interpersonal, c= Organisational, d= Community, e= Public Policy/ Enabling Environment

4.2.2.1 Volunteers had an understanding of the health issue of obesity

This theme found that volunteers had an understanding of the health issue of overweight and obesity. Within this theme were three sub themes around the volunteers understanding *a) about the dietary causes of people being overweight or obese, b) targeting a population* and c*) involving the population in the process of developing community nutrition interventions.* Initial volunteer capacity was attributed in part to volunteers completing the food literacy program with the nutritionists on commencing with the Country Kitchens program.

a) Addressing the dietary causes of people being overweight or obese

Volunteers described a range of factors associated with why people are overweight or obese in their communities. Descriptions included unhealthy diets due to high take away food intake, low fruit and vegetable intake and limited meal planning, cooking or food preparation skills. Volunteers also explained the need to consider what is happening in the broader community and the influence on people's food intake, such as population demographic shifts, socio-economic issues and access to affordable fruit and vegetables (Table 4.1).

"Well, you know what? The (obesity) stats really are that bad, and that we really do need to do something, and is this a way that it can work?" *(volunteer 8)*

".... at the moment, our town's very poor .... a lot of shops are closing, our fruit and veggie shop - our local fruit and veggie shop closed...." *(volunteer 19)*

"There's so many that are not cooking at all at home. They're overweight themselves, and so therefore their babies are most likely to follow that path." *(volunteer 17)*

A consistent concern raised by volunteers interviewed was that there were too few volunteers within the non-profit organisation who saw the importance of poor food literacy leading to health issues such as obesity, as important. Many volunteer members not involved in the food literacy intervention in 2016 were described as resistant to change. Volunteers acknowledged that it would take time to recruit more members and change their mindset to see the health issue as important. There were no solutions described by volunteers on how to address low levels of volunteer support from the broader organisation.

b) Targeting a population to work with to implement community nutrition interventions

Volunteers explained that they were planning to target a variety of population groups to work with to implement community nutrition interventions. Some volunteers mentioned sub population groups they thought were more likely to be at risk of overweight and obesity, these were described as children, their parents, young mums, people with disabilities, Indigenous people, those socially isolated or unemployed (Table 4.2).

"I'm going to get in contact with the teacher that cooks with the kids … I wanted to talk to her and see if we can do something with them, with their cooking……" *(volunteer 28)*

"So, we've started off thinking that maybe we could run some simple little workshops that would help people particularly with intellectual difficulties and that would help them plan some recipes and food plans or whatever" *(volunteer 7))*

One volunteer described a group of miners in her community, recognising that many were large in size and had specific health needs because of the type of work they do, including being shift workers. Volunteers described trying to understand the issue of obesity in their community by engaging with community members, while also sourcing data provided by Country Kitchens nutritionists to attempt to understand the underlying causes of obesity. However, few described using this data to develop appropriate, targeted community nutrition interventions. Volunteers wanted to address rising obesity concerns but reported being unsure about the strategies to make informed decisions to reduce overweight and obesity.

"Well, I'm not sure how we're going to do it, but the chaplain of that school wanted this program, teaching about nutrition – 'cause we're very, very on the bottom scale of that low socio-economic demographic" *(volunteer 29)*

"…most of us every day that you pick up a newspaper or magazine, or watch the television, there's messages about how poor eating and fast food eating affect our lives, you know, that it's not a good thing. Most people know that. But doing something about it, you know, how to make those changes is the really difficult thing." *(volunteer 21)*

" I feel we're getting a lot of interest from groups who are disadvantaged in some way. Some mentally, some physically - yes. There's some interesting observations there." *(volunteer 16)*

Table 4.2: Volunteer descriptions of targeting population groups 'at risk' of overweight and obesity in their communities in 2016

Population group identified by volunteer	Nutritional issues described by volunteer	Stakeholders identified by volunteer in their local community	Types of community nutrition interventions
Indigenous populations	Poor diets for sugar control	Diabetes nurse clinic*	Three sessions planned over a three-month period
Homeless populations	Lack of access to food	Soup kitchens church volunteers*	Weekly provision of soup kitchens planned indefinitely
Miners and shift workers	Poor eating habits, weight issues and being tired	Human Resources at mining company	Three sessions over a three-month period planned
People with disabilities	Lack of menu planning, cooking and shopping skills	Disability support services*, special needs schools*	Provision of a series of Train the trainer workshops planned with disability support services workers
Primary school children	Support menu planning, cooking and shopping skills	Local schools and Girl Guides association	Provision of a series of hands on nutrition workshops planned
Adolescents	Support menu planning, cooking and shopping skills	Local schools, youth service	Provision of a series of hands on nutrition workshops planned
Women survivors of domestic violence	Lack of access to food and cooking facilities	Local domestic violence crisis shelters nutritionists*	Unclear- details not described
Young mothers	Food access issues due to limited finances, lack of cooking and shopping skills for themselves and infants	High school program for young mothers with infants' support workers	Provision of a series of hands on nutrition workshops planned
Older adults	Lack of access to food and cooking facilities	Neighbourhood Centre*, Men's Shed*	Unclear- details not described

* Existing relationships (interpersonal level of social-ecological lens)

Note: This table summarises what has been described or had commenced for ongoing community interventions. The Country Kitchens program volunteers also described foodie talks and other one-off events, but these were not included in this study, as the focus of the thesis is to explore capacity development in community nutrition interventions over time.

c) Involving the population in the process of developing community nutrition interventions

Volunteers described becoming aware and focusing on the poor food literacy issues in specific population groups and trying to synthesise information and knowledge to plan targeted, appropriate nutrition interventions with their communities. Volunteers described talking to a wide variety of people in their community. Some volunteers described planning to or had already approached several local community groups or agencies who worked with the target populations (Table 4.2), to get support to implement a food literacy program or other nutrition intervention.

"and as I say, you talk to community groups, you talk to individuals, anyone you can get hold of. You talk to grandparents; you talk to parents if you have the opportunity. Yeah, so everywhere I go I try rope them in and get them involved." *(volunteer 16)*

"So, I actually, because I'm P&C at the special school, and have been for ten years, and I work as a respite worker for disabilities and mental health, I've got a fair few contacts. So, the local member (of parliament) knows me fairly well." *(volunteer1)*

There was a focus on connecting with people they knew in their communities (Table 4.2). The majority of volunteers were thinking about how to implement community interventions, by involving local target populations and community agencies they had existing relationships with for discussions. Volunteers described they had existing networks with health care professionals, other volunteers at various charity organisations, nutritionists at schools and disability services. This demonstrated the first steps of developing new networks or connecting with existing networks with local stakeholders.

"we're looking at getting the students to help also with the things, the things like chocolate brownies or something like that, that we can take all of the sugar out, make the portions applicable to have their - freeze without affecting their sugar." *(volunteer 3)*

"So, I try and work closely with the neighbourhood centre to – 'cause they're all about getting communities and people involved, volunteers." *(volunteer 26)*

4.2.2.2 Volunteers were amenable to trying something new

Volunteers were enthusiastic, determined, flexible and adapted to new opportunities to implement a community nutrition intervention and they described behaviours that were directed towards achieving community nutrition interventions. (Table 4.1).

a) Being driven and enthusiastic

Many volunteers expressed enthusiasm and eagerness to facilitate a community nutrition intervention. Several had personal motivations to facilitate interventions in their community with specific target groups, whether they had a child at school or with a disability in a supported residential facility. The existing connections and networks the volunteers had in their local community tended to influence their actions.

" .... well, it's not hard when you're passionate about what you're talking about and dealing with and helping people." *(volunteer 3)*

"I actually outlined an attack - how and where to get (advertisements) published. You know, I have a whole page of ideas which I've fed out to other people, too." *(volunteer 7)*

Volunteers acknowledged that other volunteers were not as enthusiastic and that even they themselves had been resistant to change, before becoming involved in the food literacy program. This was one of the biggest obstacles consistently identified by volunteers to implementing an activity in their community.

"They're older ladies, they don't like change and to get them to change you've got to keep at them and at them until they eventually see it and then they go ahead." *(volunteer 27)*

Volunteers who had completed the food literacy program and training described this process enabled them to become more open minded and enthusiastic to plan or implement a community activity. These volunteers described being flexible while engaging with various community members, stakeholders and settings such as schools and disability services.

"but you learn as you go along" *(volunteer 8)*

b) Volunteers leading

The implementation of a community nutrition intervention was often instigated by a single volunteer and relied on the continued investment of that individual. Many volunteers described being aware they were the driving force and had initiated the community nutrition intervention, indicating self-awareness. They also described being aware of the limited resources, whether physical or financial, and the impact that these had on their ability to implement an intervention.

"I'm hoping that when I leave that somebody else will step up……. because I've been away actually the meetings didn't even happen while I was away. I don't know what the future will be." *(volunteer 29)*

The volunteers described the important role of project management and various leadership attributes. Volunteers described conscious knowledge of their own character and feelings as well as personal growth and learning. However, they rarely described systems and strategic thinking, advocating or visioning for the future.

"They're not thinking about the wider picture, that is what we should be doing for others" *(volunteer 16)*

Components of quality project management, such as careful planning, monitoring, evaluation, and adjustment as required were rarely mentioned. Many volunteers were aware they were perceived as leaders, however they found it difficult to recruit other volunteers or community members to step up and lead. Most volunteers appeared happy to follow instructions from the few leaders that facilitated community interventions.

The notion of teamwork varied greatly amongst volunteers, with many describing a sense of struggling to feel supported by their local members. Recognition and encouragement for coming up with new ideas were rarely described by volunteers. Some volunteers explained that they provided support for other volunteer facilitators who were planning community interventions.

"We do have a lot of communication between the different branches, and divisions, which is great. And that's really what we need. We don't want to be just one branch, or one division, we want to get out there and be a team - the whole lot of us. And that's the way it's working". *(volunteer 22)*

Volunteers were apprehensive about there being sufficient volunteers supporting community interventions to improve food literacy and reduce diet related illnesses. There were limited descriptions in the data around the actual level of knowledge and how the volunteers were going to implement a community nutrition intervention by volunteers.

Figure 4.1: Initial individual volunteer capacity key themes and sub themes (n=30)

Figure 4.1 illustrates the individual volunteer capacity to understand the health issue of obesity and themes and sub-themes regarding the capacity of the volunteer to implement a food literacy program and/or other community nutrition intervention.

4.3 Discussion

This study aimed to explore the capacity of volunteers of a non-profit organisation to implement local community nutrition interventions. Findings highlight that the volunteers had the capacity to understand the health issue of obesity, were able to describe the dietary causes of people being overweight or obese and were targeting specific at-risk population groups in their communities to develop community nutrition interventions. Volunteers were leading others in their communities to become involved with implementing a community nutrition intervention. They were enthusiastic and driven, determined, flexible and embraced new opportunities to try new activities and form connections with others. Previous research supports that local interventions are strengthened by community support, local knowledge and leadership which enable the use of existing local resources to address identified health issues (N. Smith et al., 2003; Wallerstein & Duran, 2006). However, few studies have assessed the capacity of volunteers to implement health promotion community nutrition interventions. While the enthusiasm and openness of volunteers was not surprising, the findings that the volunteers understood the health issue of obesity, the dietary causes of people being obese and were leading others in their community to targeting specific at-risk population groups in their communities was unexpected. This highlights the potential to harness a volunteer workforce unskilled in health promotion to work alongside nutritionists to implement community nutrition interventions.

Many researchers acknowledge that capacity as a process is dynamic, conceptualising capacity as complex, multi-dimensional, operating at individual and group levels, and dependent upon context (Greenwood-Lee et al., 2016; Labonte & Laverack, 2001; van Herwerden et al., 2019). Volunteerism as a phenomenon is situated at, and builds bridges between, several levels described by the social-ecological model (Snyder & Omoto, 2008). At the level of the individual, the model considers interventions of individual volunteers and those people who interact with them and receive their services. Hence, volunteers make decisions to get involved, seek out opportunities to be involved in an intervention, engage in volunteer work for some period of time, and eventually cease their efforts (Holmes, 2009). Volunteers in this study were engaged and enthusiastic, not surprising given previous descriptions in the literature (McGregor-Lowndes et al., 2017; Miranti & Evans, 2019). Previous research has revealed a diversity of motivations that bring people to volunteerism and that sustain their involvement, including affirming values, enhancing self-esteem, making friends, acquiring skills, and community concern (Hustinx, Cnaan, & Handy, 2010; Kragt & Holtrop, 2019; Snyder & Omoto, 2008). The volunteers in this study were clearly committed to being involved and directing energy towards implementing targeted community nutrition interventions.

This study clearly described the capacity of the volunteers to develop relationships between themselves, nutritionists and members of their social networks (the interpersonal level of the social-ecological model). Research has previously highlighted the critical role of engaging the community initially to create a sense of ownership, and to use local knowledge, skills and resources to guide an intervention (Miranti & Evans, 2019). Knowledge of the community allows any intervention that is designed to address an identified community issue draw on and develop local resources or capacity (Cargo & Mercer, 2008). Such an approach increases the likelihood of a community to sustain the benefits, and to continue to develop beyond the life of an intervention (Kostadinov et al., 2015). Findings from this study demonstrate that the volunteers identified population groups, stakeholders and networks to engage to implement community nutrition intervention. Our study indicates some volunteers were engaged in the community and able to engage local knowledge, skills and resources. However, findings also indicate the majority of volunteers did not have a clear plan or knowledge on how to implement a local community nutrition intervention. This is not an unusual finding as the majority of volunteers had no health promotion training or skills. This highlights the importance of upskilling volunteers on how to implement a community nutrition intervention, through relevant health promotion training in communities. Community capacity development is explored further in Chapter 6 of this thesis.

Volunteers leading and embracing change was found to be an important capacity element expressed by volunteers in this study. Volunteers described being flexible and open to embracing new opportunities to implement a community nutrition intervention. Adaptive capacity has been described as the ability of a system to prepare for stresses and changes in advance, or to adjust and respond to the effects caused by the stresses (Engle, 2011). If there is an ability to understand what the future might resemble due to learning from past experiences then planned adaptation occurs (Engle, 2011). Our study showed that volunteers frequently described understanding the issue of obesity, targeting at risk population groups and approaching networking and stakeholders to plan community nutrition interventions. This is supported by planned adaptation studies that describe that people who are flexible and can problem solve are more likely to have and build capacity during community nutrition interventions (Adger, 2003). Although there are early indications that the volunteers are embracing change it is not possible to state whether individual adaptive capacity will influence community nutrition interventions. However, adaptive capacity may be an important additional domain influencing capacity development during community nutrition interventions. There is a need for further research describing how interventions adapt to changes in capacity throughout community nutrition interventions over time. Community adaptive capacity is explored further in Chapter 6 of this thesis.

4.3.1.1 Strengths and limitations

This qualitative study used a transparent and comprehensive coding process. Themes were internally coherent, consistent, and distinctive. The sample consisted of highly motivated female volunteers who were distributed geographically across a wide range of locations. The self-selecting sampling may have provided a more motivated sample willing to describe their experiences. The reflexivity process employed by the PhD candidate facilitated thoughtful alternate explanations of their stories and the triangulation of data analysis amongst researchers supported further confirmation of the interpretation (Liamputtong, 2007). A limitation of this study was that volunteers who chose not to complete the Country Kitchens Program training were not interviewed, and the differences in their views on capacity were not captured.

Conclusion

This study explored the capacity of individual volunteers at multiple levels of the social-ecological model, particularly the individual and interpersonal levels. The study indicated that the volunteers had the capacity to understand the health issue of obesity, including the dietary causes of people being overweight or obese, the importance of targeting 'at risk' population groups and involving them in the process of developing community nutrition interventions. Volunteers were open to trying something new and excited about being involved in the Country Kitchens program. The adaptability of volunteers was found to be an important capacity element expressed by volunteers in this study. People who are adaptable are more likely to have and develop capacity during community nutrition interventions. This study highlighted that future interventions that rely on community volunteers should consider the potential to harness an unskilled volunteer workforce to work alongside public health nutritionists to implement community nutrition interventions. Developing adaptable volunteer capacities may need to be explicitly considered by funding bodies when designing public health community nutrition interventions.

Chapter 5 Key Findings Non-profit Organisation Capacity Development

5.1 Study overview

This study aimed to explore and describe the capacity development of a *non-profit organisation* during a three-year community nutrition intervention. This study was important because the non-profit sector has an integral role in health promotion provision, however, whether non-profits have health promotion capacity is less clear. The full methods for this study are outlined in Section 3.5. In brief, *organisational* capacity development was explored using a longitudinal, qualitative exploration. All executive management and nutritionists employed by the organisation (100% response rate) were included in semi-structured interviews (n= 17) at multiple intervention time points over an 18-24-month implementation period. Document analysis of program newsletters (n=21) was also undertaken. Interview transcripts and documents were analysed separately using thematic analysis. Codes between the data sources were then compared and collapsed into categories, which were then developed to build themes. The social-ecological lens was utilised throughout the data analysis by looking at individual and community factors influencing organisational capacity development, as well as considering interpersonal and policy influences on capacity development. The findings will now be described in further detail.

5.2 Findings

5.2.1 Sample size, demographics and volunteer characteristics

A total of nineteen interviews were conducted with 11 respondents and included in the analysis. From the total interviews, three nutritionists completed initial and end intervention interviews (n=3). Three new nutritionists or executive managers completed entry and exit interviews (n=3) throughout the intervention and five nutritionists or executives completed exit interviews only (n=5). This sample represented every individual who was involved in the intervention from its inception to completion. The nutritionists were all females and ranged in age from 23-30 years, while the project nutritionist project manager was a nutritionist in her early fifties. The organisation executive management were all females and ranged in age from mid-fifties to late seventies.

5.2.2 Non-profit organisation capacity development over time

The most frequently coded deductive categories from existing capacity domains from the interviews over time were quality project management (282), organisational development (260) and workforce development (144). The most frequently reported inductive categories were travel (78) and facilitator characteristics (56). The majority of newsletters described elements of food literacy (n=97) (nutrition education, monthly recipes, healthy catering guidelines) and public relations and marketing (n= 43). Capacity elements described in the document analysis most frequently over time were community interventions (79), travel (47), partnerships (40), workforce development (38), quality project management (33) and communication (n=26) (Figure 5.1). The codes from the hybrid capacity framework (Appendix 4) and adaptive capacity framework (Appendix 7) were sorted into categories over time (2016-2018), which involved using the multiple levels of the social ecological model lens and then mapping of these categories and developing them into themes and sub themes (Table 5.1).

The main influences on the non-profit organisation's capacity to implement the Country Kitchens program were developed into two major themes; changing relationships and communication processes. Two other sub-themes that also influenced capacity development over time were limited room for autonomous change in the non-profit organisation and the learning organisational culture (Table 5.1). The non-profit organisational capacity development described over time was not linear and fluctuated depending on the context described by participants. Capacity changes of the non-profit organisation were described as interacting across various levels of the social-ecological model over time (individual and organisational), with several parallel capacity development stories emerging (Table 5.1). At the individual level, capacity development was influenced by the relationships between the non-profit executive management team and nutritionists.

Relationships between the organisational volunteers with the nutritionists also influenced capacity development. At the organisational level, executive management influenced governance structures, policies, operational procedures and the responsiveness to the people involved in the Country Kitchens program. All individuals involved with the non-profit organisation influenced the learning organisational culture. Each of these themes will now be described in detail.

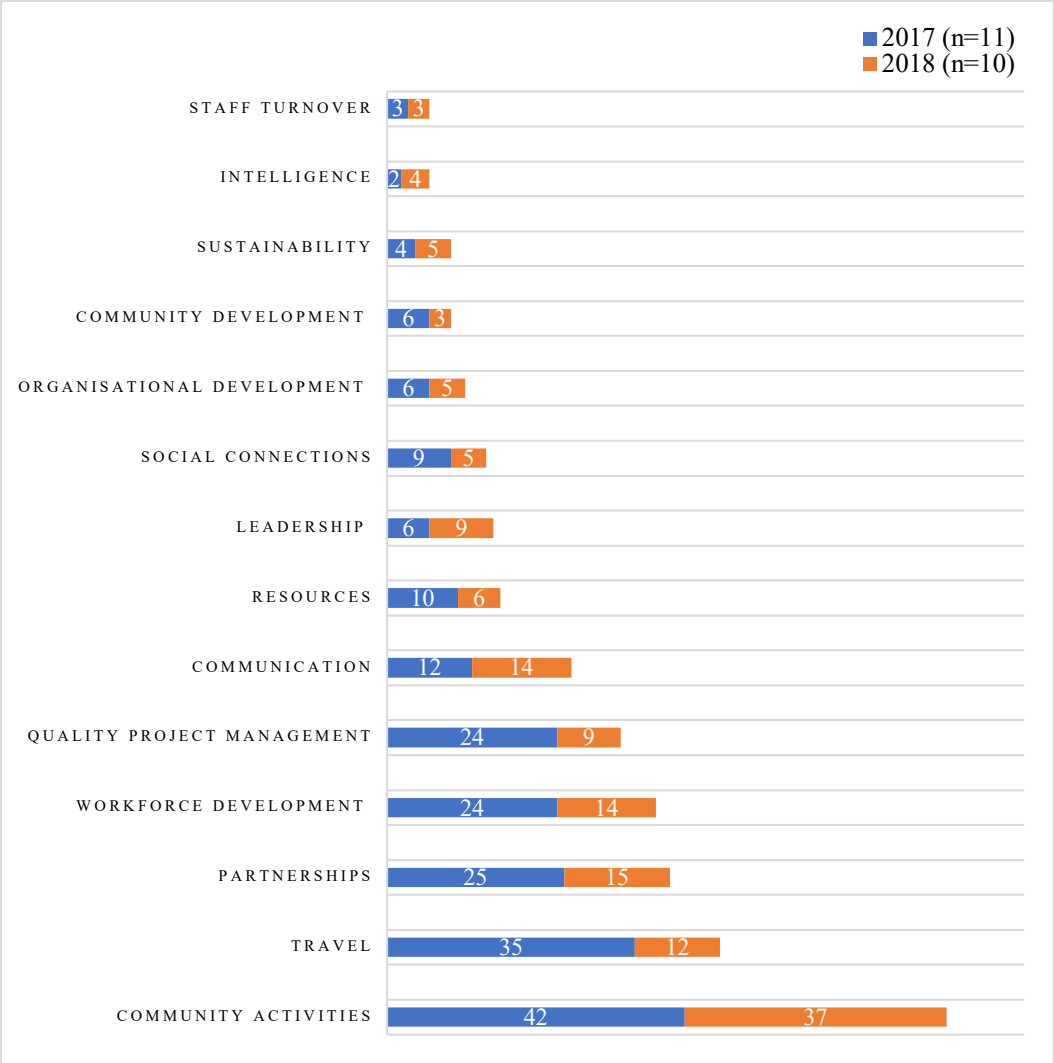


Figure 5.1: Document analysis results describing capacity changes 2017-2018

Table 5.1: Key themes and sub themes describing capacity development of a non-profit organisation to implement community nutrition interventions over time (n=17 interviews)

Social-ecological level lens	Theme definition and description	Categories
Individual	**1. Changing relationships between executive management, nutritionists and volunteers** This theme reflects that changing relationships between executive management, nutritionists and community volunteers were pivotal to capacity development of the non-profit organisation. **2. Communication processes during implementing the Country Kitchens program** This theme reflects the non-profit organisational processes of sharing and sorting of information for the specific purpose of planning and implementing the Country Kitchens program.	Partnerships^ Communication Quality Project Management^ Community Activities Facilitator characteristics Travel
Organisational	**3. Limiting room for autonomous change in the non-profit organisation** This theme reflects the limited non-profit organisations' capacity for flexibility and ability to adapt governance structures, policies, operational procedures and the responsiveness to the people involved (their inputs and costs required) to implement the Country Kitchens program. **4. Learning organisation culture** This theme reflects that the culture created by the non-profit organisation influenced the learning of the people who worked (executive management and nutritionists) and volunteered there.	Organisational development ^ Quality Project Management ^ Workforce development ^ Fair governance* Learning capacity* Variety* Room for autonomous change*
Capacity at multiple levels of social-ecological model.	Relationships and communication processes between executive management, nutritionists and volunteers impacted on the learning organisational culture. These individual and organisational level factors influenced capacity development of the Country Kitchens program.	Social ecological lens mapping

^ Hybrid capacity framework (Appendix 4)

* Adaptive capacity framework (Appendix 7)

5.2.2.1 Changing relationships between executive management, nutritionists and volunteers

Changing relationships between executive management, nutritionists and community volunteers were pivotal to capacity development of the non-profit organisation. All executive managers and nutritionists described the importance of building relationships with volunteers in order to successfully implement the Country Kitchens program. Initially executive management described volunteer members being sceptical of the young nutritionists and the Country Kitchens program, explaining that there was little trust or enthusiasm for the intervention. Executive management themselves also described being sceptical of the nutritionists. The nutritionists described that initially volunteers were dubious, and they felt judged by their age, being categorised as too young and hence too inexperienced to run food literacy programs.

'We did sort of experience a few personality clashes initially and that was really challenging in house, just to try and get that rapport back within the team'." *executive management (2016)*

'.. then you've got those complicated dietitians (nutritionists).' *executive management (2016)*

Over time, relationships were established as the nutritionists visited and guided food literacy programs in many communities in conjunction with volunteers. The Monthly Munch newsletters provided descriptions of these relationships and the social connections developing between volunteers and nutritionists over time. Executive management described hearing positive stories from their volunteers about the nutritionists and this in turn shifted their scepticism as the nutritionists managed to build strong connections with the volunteers. By the end of the intervention, management described the importance of getting young women to join their organisation and that the nutritionists being young and vibrant were more aligned with what the organisation needs.

"They've built the rapport quite quickly because they're approachable, they've just got great personalities, and they've realised that we have got an older generation of people out there" *executive management (2018)*

The nutritionists described that a strong level of trust had developed over time with community volunteers. They described empowering and supporting volunteers to implement food literacy programs and to then implement local community nutrition interventions. Document analysis further supported these relationships as developing over time. It was clear from many nutritionists' descriptions that they persisted in their role due to the strong relationships they had developed and the encouragement they had received from volunteers.

"But they've had to build that initial rapport. I always say rapport because if you don't have that, you don't have trust, well then you're never going to get anywhere, especially in the non-profit." *executive management(2016)*

'Some of our facilitators would not be members of the association without us. They've told us – 'we're only here because of the work that you guys are doing, and we really believe in it. We wouldn't be members of this'. *nutritionist (2018)*

Relationships between executive management and the nutritionists were described as tense and fractious at times, with miss communication, skills and roles not clearly defined and different expectations, creating a difficult work environment over time.

"I'm doing as best as I can, and I don't do it very well, they need to feel supported, that they've got everything that they need to do the job out there, and sometimes that doesn't work because I get shot or I get maimed from the top and I'm angry and wounded, and then it hits them". *nutritionist (2018)*

Several nutritionists described the culture and tension in the head office of the non-profit organisation as affecting relationships and contributing to nutritionist's turnover. They described that they only stayed in their job because they were frequently out on the road and hence relieved not to be in the office. Executive management themselves acknowledged the non-profit organisation as extremely complicated, highlighting the different personality types which made implementing the Country Kitchens program very difficult.

"Like with the organisation, I mean I call it sometimes the Queensland Complicated Women's Association because there's lots of different personalities and some of them are just horrible to deal with." *executive management (2016)*

"I came in July 2016, and I was the fifth team member they'd employed at that point, because travel was getting so hectic. But I think sometimes the program management of the program affected the team a lot. Even the state manager and the culture within state office really affected the team a lot. I think that's why people left." *nutritionist (2018)*

Relationships between executive management and community volunteers were also described as fractious. Nutritionists described the lack of organisational support at the community level, primarily due to a lack of organisational supports with perceived rigidity of policies and procedures, which were not flexible to accommodate the implementation of community nutrition interventions.

'I think we've got so many excellent facilitators that show awesome leadership and have been resourceful and really excelled, but without that organisational support it's almost like you see their wings being clipped a little bit and it makes you worry for the future of their ability.' *nutritionist (2018)*

'Obviously, the success of this program has been quite dependent on the relationship between the facilitator and the branch president. Where you've got a branch president engaged, then the facilitator is more likely to feel supported and to run the program.' *executive management (2016)*

You did see the different relationships with State office and the different organisational structure of each division. For me, the main thing was communication that that had an impact on." *nutritionist (2018)*

5.2.2.2 Communication processes during implementing the Country Kitchens program

This theme reflects the non-profit organisational processes of sharing and sorting of information for the specific purpose of planning and implementing the Country Kitchens program. Communication styles included the imparting and exchange of information by verbal, nonverbal, written and visual means, which impacted on the working relationships between the executive management, nutritionists and community volunteers. Communication and approval systems within existing organisational governance structures were a hindrance to capacity development within the Country Kitchens program.

Overall, verbal and written communication was described as an issue throughout the duration of the food literacy program (phase 1) and community nutrition interventions (phase 2). All non-profit executive management and nutritionists described various issues with communication processes. The more frequent issues described over time were structural, such as poor-quality written and verbal communication processes, differing nutritionists' and non-profit organisational executive management styles (health industry versus non-profit communication style) as well as individual personality differences and verbal communication styles. Both verbal and written miscommunication resulted in fractious relationships between nutritionists and the executive management of the non-profit organisation, which were described as deteriorating over time.

"Just forms and little things like that that you've got to keep putting in and that's fine, but they seem to create a form whenever there's a problem or something like that.." *nutritionist (2016)*

"I think, like communication with the organisation has always been our biggest challenge. Things, miscommunication or incorrect communication has been a barrier or roadblock along the way.' *nutritionist (2018)*

Initially descriptions from nutritionists indicated uncertainty around their roles, with the non-profit organisation processes and operational guidelines continually shifting. At the start of the food literacy program intervention, verbal communication issues were most frequently described. Nutritionists described not feeling heard or supported when challenges were raised verbally with executive management. Nutritionists also described not being involved in verbal communication processes, such as management meetings, where there were program implementation decisions made that impacted on them.

"because you can't talk to her (manager) about what you're doing or why you're doing it, so I don't know what the plan is, but I hope there is one" *nutritionist (2016)*

"The communication channels are in dire straits basically. They don't listen, the CWA exec. I wouldn't say collectively don't listen, but it might be that they're not listening, they don't understand where we're coming from or they don't understand the objectives of the program or the role that staff actually pay. *nutritionist (2017)*

'...when I was state president, it is trying to get the information down to the little people, but it gets stuck along the way sometimes.' *executive management (2017)*

The communication issues by 2018 continued to be frequently described as due to both verbal and written communication issues, resulting in miscommunication with confusion about how, when and to whom to communicate with around project management specifics.

"Not just the logistical breakdown of physical channels of communication, but the language, and people misinterpreting". *nutritionist (2018)*

"... poor communication had more of an effect on us as a project team as well…. having to fight that battle all the time of trying to get support and trying to get good communication and good understanding, it has worn our spirit down a little which is sad …." *nutritionist (2018)*

Communication channels were influenced by large staff turnover throughout the intervention across executive management and nutritionists' roles. It appeared much communication happened verbally in an informal manner and was not followed up with clear concise written communication to document processes. Nutritionists travelling to so many communities throughout the intervention

period added to miscommunication issues for them with the non-profit organisational executive management. Nutritionists highlighted that being constantly out on the road, so not in the office, resulted in hearing information second hand or missing out on verbal information all together, due to it not being sent via email or documented in a transparent way.

'It's like the left hand doesn't know what the right hand is doing. I hear about the conference coming, so I said, 'we want to be at the conference' but they've planned the agenda and so then I have to say, 'we need to be in the agenda!" *nutritionist (2016)*

"I think throughout the program, as staff leave, there has been a lot of feedback and I just don't think any of its been taken on." *nutritionist (2017)*

'There's lots of conversation around the State Exec Board and no action or outcome comes from it and from anyone that's a health professional when you have a meeting you want an outcome and an action item from it.' *nutritionist (2018)*

However, the way the nutritionists managed the communication issues appeared to change over time. The nutritionists described being so busy traveling throughout the state, they no longer had the energy to respond to the constant operational changes, although miscommunication continued. Several community volunteers did appear to communicate about the Country Kitchens program with their organisation by preparing branch reports, attending organisation division meetings and conferences highlighting the intervention. These volunteers used a range of communication strategies (written and verbal). The nutritionists also set up a Country Kitchens Facilitators Facebook Group as a communication tool for volunteer facilitators to connect remotely and support each other, share resources and describe their community nutrition interventions.

"Thanks to all the branches who sent in their branch reports for the month of September." *MM October 2018*

Overall, the non-profit organisation's verbal and written communication channels descriptions had a negative impact on capacity development for the Country Kitchens program over time. There were several descriptions of a shift with some improvements in verbal communication between executive management and nutritionists by mid 2018. However, this was at the end of the funding phase for the Country Kitchens program.

"I'm just grateful that the message is getting out through our division presidents as well, because a lot of them were very sceptical. But from this board meeting we've just had, I would say all of them, all 18 are on side now for Country Kitchens, and really want to work for the future" *executive (2018)*

I think it'd be at least another three years until there was significant organisational support and understanding with better communication having a long way to go.' *nutritionist (2018)*

5.2.2.3 Limiting room for autonomous change in the non-profit organisation

The non-profit organisation's limited flexibility and ability to adapt governance structures, policies, operational procedures and the responsiveness to the people involved impacted the ability to implement the Country Kitchens program. There were descriptions of both too little and too much change in the non-profit organisation. Descriptions of limited flexibility and change at an organisational governance level with regard to governance structures, policies, operational procedures and responsiveness to the people involved was reported as a barrier to organisational capacity development. Descriptions of too many changes in people's roles - either executive management, nutritionists or community volunteer levels- throughout the implementation of the Country Kitchens program impacted non-profit organisational capacity development. Several parallel capacity development stories emerged over time.

Limited non-profit organisational flexibility and change

Firstly, both the people and governance structures (non-profit executive management of the organisation), were described as resistant to change. The non-profit organisational structure was often described as inflexible, hierarchical, and limiting autonomous change. Limited vision and leadership for the organisation to move towards implementing strategic policies and procedures to support all members to act as health promotion agents and implement the Country Kitchens program were described.

"You always have to go through executive division and then branch. You have to always have the division president on board, before you even get to the branches that are signing up" *nutritionist (2016)*

".... there needs to be more flexibility with managed time and general - I think it's stupid that you have six, whatever, how many days on the road, and then you come back in and because you're meant to have a 7.5-hour day, you have to sit in your chair for two hours, even though you can't function because you're exhausted. You should just be able to go home." *nutritionist (2017)*

"So, health-promotion to have an impact on fruit and veggie intake at the same time building the non-for-profit organisation being a facilitator in that change. Too hard." *nutritionist (2018)*

Although there were some accounts of visionary people, the structure of the organisation which dictated a change of president and other roles every two to three years meant that even if there were

strong leaders, people were only able to lead for a limited time. Data indicated that the intervention was not strategically supported, with nutritionists stating no intervention strategies were translated into policies and strategic practices.

"*…. our organisation has to evolve. Our whole administration of our organisation has to evolve with what society requires, and I think the Country Kitchens program aligned with CWA has to work in with what society's requirements of the day are. That changes. The impact on the community I think is a changing thing.*" *(executive management 2017)*

The organisation as a whole was not described as adaptable, not able to be modified for a new purpose of implementing a state-wide Country Kitchens program. There was limited description of flexibility to revise governance structures and embrace new procedures for the organisation to grow and develop into the future and incorporate the Country Kitchens program as its core business.

"And also understanding from the executive and the senior nutritionists above me that technology can be used to make a lot of the processes more efficient and there are other ways but that's not really accepted with open arms and open mind- not at all." *nutritionist (2017)*

'it's quite complex, even though they have a really strong hierarchy and historical governance procedure, everything moves very slowly' *nutritionist (2018)*

The nutritionists reported feeling unsupported by the organisation to translate their work on the intervention into policies to support the program's sustainability, impacting on the healthy changes individuals and branches were trying to make. They were exhausted by the constant battles to obtain approval and support for the interventions. Many nutritionists described the inflexibility of management, resulting in a high turnover of nutritionists, which in turn impacted on the capacity of the non-profit to implement the community nutrition interventions. Individuals in the non-profit organisation, from executive management to community volunteers, were frequently described as being resistant to change.

"If you want to make any physical massive changes within the organisation, which we haven't done yet but we're gearing up to do, you have to go through State Executive. I mean long lasting changes to policy." *nutritionist (2016)*

"It's like navigating the maze to propose that there may actually be a better way. I have come to the attitude that it's not worth it because there are so many barriers." *nutritionist (2017)*

"And then as time went ...., they were all really for it, but being able to then move beyond that superficial support, and actually implement changes in the organisation, or integrate it into the existing thing, structure and decisions didn't happen" *nutritionist (2018)*

The non-profit organisation provided in principle support to the program but did not support the program with financial, structural or staffing resources outside the external funds. Achieving change through the implementation of the Country Kitchens program was challenging within existing communication and approval structures and varying levels of support from those in positions of power within the organisation.

Room for autonomous change by nutritionists and volunteers

Secondly, there were parallel reports of room for autonomous change by the nutritionist, who had flexibility in regard to changing community activity processes and travel schedules. Although the nutritionists had limited autonomy at and organisational level, they did have flexibility at an individual level. As a team, the nutritionists were described as highly resilient and adaptable individually, working hard together to implement the Country Kitchens program and build the health promotion skills of the non-profit organisation. The nutritionists developed a food literacy program that they piloted and adapted for different communities over the intervention period. Nutritionists described rotating and sharing various portfolios during the program implementation including managing social media, catering guidelines and cookbook recipe development.

".... we have been adaptable, that we could relate to different communities as well as across the associations channels from a member all the way up to the state executive." *nutritionist (2018)*

Too much change for the nutritionists was perceived to create instability and on occasions chaos, which particularly related to the travel schedules and staff turnover. Nutritionists were on the road 265 days in 2017, staying in over 20 communities to implement either food literacy programs (phase 1) or support community interventions (phase 2). This not only influenced communication processes as previously described but also impacted on health and mental well-being of nutritionists, who reported being exhausted and stressed with the many changes to travel schedules. Too much change in travel schedules was a consistent theme from 2016 to 2018.

"However, it's quite challenging and I think the turnover in staff shows that being on the road all the time is a huge challenge of the program currently and I think moving forward too." *nutritionist (2017)*

Too much change with respect to staff turnover was also perceived to create instability for the nutritionists and impacted on capacity development for the Country Kitchens program. Staff turnover

impacted on the ability of nutritionists to build relationships and understand communication processes as previously described. The structure of the organisation, which dictated a change of president and other roles in the community branches every two to three years also had an impact on capacity development.

"So, it's the increase in staff turnover is disruptive to the processes of the program, you know, a process is established and then three months later it's changed because of staff turnover or another reason." *nutritionist (2017)*

'... there's been 15 State office staff leave and that's including the Country Kitchens' program…. Whereas core staff of around 10 and 15 have left.' *nutritionist (2018)*

The non-profit organisation recognised the importance of structural change for sustaining the impact of the program but did not make any concrete changes to the organisational structure or governance to address this need. There were no organisational resources and procedures that would assist health promotion approaches to be incorporated into core business of the organisation during the research.

5.2.2.4 Learning organisation culture

The existing culture in the non-profit organisation influenced the learning of the people who worked (executive management and nutritionists) and volunteered there. The non-profit organisation was described as not creating a culture that encouraged and supported members to think critically, take risks with new ideas, allowing for mistakes and valuing people's contributions. The non-profit organisation was described as having limited learning capacity, lacking people with an understanding of health promotion capacity building including skills and processes.

There was evidence that nutritionists tried to shift the organisation towards a "learning organisation" by attempting to improve processes, set up monitoring systems and incorporate health promotion into organisational policy and strategic planning. However, it appeared executive management continued to have a limited understanding about implementing health promotion interventions.

'they (management) thought that we (nutritionists) were spending their money when they were given money by Queensland Health that directly funds the whole Country Kitchens program.' *nutritionist (2018)*

The nutritionists were described as having the ability to learn from past experiences and improve their processes over time. The nutritionists reported reflecting and changing the program, and also developing strategies to build the capacity of their volunteer workforce. Nutritionists themselves also reported learning about capacity and health promotion through professional development workshops.

As nutritionists increased their understanding of health promotion practices, they reported applying their learning to the implementation of the Country Kitchens program to improve local health outcomes.

"The project team developed the content for the Fabulous Facilitator Training and Networking Weekend based on the feedback that facilitators wanted more support for planning and implementing community interventions". MM February 2018

However, they met with resistance from executive management. A lack of organisational culture that promote mutual respect and trust were described. Mechanisms that inhibited organisational learning described by nutritionists included defensive behaviours, protecting current processes and procedures and resistance to updating and refining processes and procedures that would improve the ability of the organisation to implement the Country Kitchens program.

"I'm not sure that they know exactly what we do, and their support of the program, I feel that it's still very much us and them; that we're not completely integrated yet. I'm sure it would only just take more time." nutritionist (2018)

'...we've planned, we've produced, and we've delivered, and in the same time frame, they've done not much. Why wouldn't they use our skills and abilities to actually help them do what they need to do?' nutritionist (2018)

5.3 Discussion

This study explored and described the capacity development of a non-profit organisation to implement a community nutrition intervention over the course of three-years. Considering the social-ecological model, capacity development was primarily related to individual and intrapersonal factors of changing relationships and communication processes. Barriers impeding capacity development included fractious relationships, miscommunication, and resistance to change within the executive management of the organisation. The inability of the organisation to embrace learning was an organisational level factor related to rigid organisational structures and processes. This led to organisational and project management issues, such as inflexible and inefficient procedures and high nutritionist turnover. Despite these barriers the nutritionists did create capacity to support many volunteers to act as health promotion community members. This outcome is attributed to the nutritionists and volunteers forming strong relationships, communicating, being adaptable and open to change. Relationships appeared to be the bedrock of building capacity for health promotion. Capacity development included the nutritionists training and developing a workforce of volunteers, the nutritionists themselves increasing their health promotion skills and the roll out of a food literacy program throughout the state.

Building relationships and strong communication skills and processes are crucial to capacity (Anderson-Lewis et al., 2012; G. Patton et al., 2000; Thiede, 2005). Similar to previous research (W. A. Brown et al., 2016; de Groot et al., 2010; Ebi & Semenza, 2008), findings from this study indicate relationships and communication were important factors impacting on capacity of the non-profit organisation to implement community nutrition interventions. A pivotal point of change was when capacity development occurred mid intervention, due to the relationships formed between nutritionists and community volunteers. This is supported by previous research, that found trust and communication, in turn developing engagement and teamwork, was crucial for capacity development and community nutrition intervention dissemination (Anderson, Christenson, Sinclair, & Lehr, 2004; Gilson, 2006; McGlashan et al., 2018). Research also supports that forming connections and relationships takes time (Jagosh et al., 2015). In this study, the types of relationships developed over time and how individuals communicated had a significant influence on workforce development, quality project management and organisational development. Like earlier studies (de Silva-Sanigorski et al., 2010; Economos et al., 2007), it appears that the strong relationships and engagement of community volunteers by nutritionists were key contributors to the positive volunteer workforce development results.

Our findings were similar to previous research in that non-profit organisations tend to focus on capacity changes via individual training and workforce development, to enhance expertise and

increase performance in community nutrition interventions. (Schuh & Leviton, 2006). Even in the face of a non-learning organisation, with governance misalignment, variable quality project management, influenced primarily by miscommunication and fractious relationships, nutritionists still managed to facilitate workforce development opportunities at a community level, and they themselves also described capacity development during the intervention as workers. This highlights the importance of leadership, management, governance, and communication. However, there was limited description of workforce development at the executive management level to increase health promotion skills and there was no shift in the organisational capacity resources to embrace capacity development within the non-profit organisation. A strategy mix that specifically included the development of infrastructure for health promotion may have been required. Yet, as supported by previous research, organisations may not be able to use the increased expertise without some changes in its own processes and resources (Schuh & Leviton, 2006). As capacity development is a process (Merzel & D'Afflitti, 2003), this may still occur within this organisation, as new funding submissions were submitted by the nutritionists, to secure resources for further work to facilitate community nutrition interventions and enhance sustainability.

Previous research suggests organisations should allow individuals to learn from new insights and experiences in order to flexibly and creatively 'manage' the expected and the unexpected opportunities. Learning allows for changed understanding based on experiences (Gupta et al., 2010). Results from this study indicate limited learning capacity and fair governance impacted on capacity development over time. Specifically, a lack of transparency, inequitable policy processes and rigid unresponsive processes and procedures were described. Other research suggests a more responsive system of governance is required to create a learning organisation that is adaptable and flexible to changing needs (Duit & Galaz, 2008). This includes the establishment of policies, and continuous monitoring of their proper implementation, by the members of the governing body of an organisation. It includes the mechanisms required to balance the powers of the members (with the associated accountability), and their primary duty of enhancing the prosperity and viability of the organisation (W. A. Brown et al., 2016), responsive processes that show a high degree of transparency and are able to respond to different voices in society (Biermann, 2007), and clear accountability procedures that assign responsibilities to different parties (Connolly & Lukas, 2002).

This research highlights the non-linear, transformative nature of capacity changes over time which is congruent with other research (Greenwood-Lee et al., 2016; Lawrenz et al., 2018; van Herwerden et al., 2019). Aspects such as social, technological, economical, legal, political and other global factors in which an organisation operate within are changing all the time, so organisations appear to require the ability to adapt when these changes occur. However as recent research suggests, an organisation

requires both individuals' skills, knowledge, and experience and the organisational resources and procedures that enable organisations to use individual expertise productively (DeCorby-Watson et al., 2018; Lawrenz et al., 2018). Findings from this study showed that many people within the non-profit organisation were resistant to change. Therefore, the organisation may not be willing or able to make some changes in its own processes and resources, even if it appears some volunteers are willing to complete individual training, to enhance expertise and increase task performance.

To the best of the PhD candidate's knowledge an adaptive capacity framework, used in this study, has not been applied to capacity research before in the public health field. Organisational adaptive capacity has been described as having six dimensions: variety, learning capacity, room for autonomous change, leadership, availability of resources and fair governance (Gupta et al., 2010). Adaptive organisations encourage actors to learn and allow individuals to question roles, rules and procedures that are important for problem solving. This was not found to be the case for this organisation during the research. Governing has always implied a degree of social learning and of adaptation to changed circumstances (Biermann, 2007). A lack of the ability to adapt, was found to be a limiting factor for capacity development in this study, with limited descriptions of a range of proactive strategies, measures and instruments to support learning capacity, room for autonomous change and fair governance.

The findings suggest that in future, projects aiming to increase the capacity of an organisation should focus on workforce development across the organisation, particularly with management and decision makers, at the start of the interventions. Training on the need for health promotion capacity and helping the organisation to focus on embedding capacity development processes may enhance community nutrition interventions to create sustainable outcomes beyond funding periods of interventions. Furthermore, nutritionists employed should have experience in capacity development in community nutrition interventions.

5.3.1.1 Strengths and limitations

The findings were limited to the views of key nutritionists and executive staff employed by the organisation. The perceptions of the funding body or the external evaluator outside of the organisation were not captured. Document analysis was limited to the newsletter, and other organisational records may have provided additional insights. This study used data from both executive management and project team members and documents. The consistency of findings across the different data sources provides confidence that the researchers inference is reflective of the capacity story.

5.3.1.2 Conclusion

The findings from this study support that capacity is an ever-changing process that is non-linear and transformative. The process of non-profit organisational capacity development appears to be influenced primarily by individual relationships and communication processes, which in turn impacts on other capacity determinants within the organisation. Adaptive capacity is a useful concept to describe and explore organisational capacity changes over time. Future community nutrition interventions should focus on building positive relationships and communication processes with all members of an organisation, particularly the relationships between executive management of the organisation with those employed to implement health promotion interventions with a capacity development emphasis.

Chapter 6 Key Findings Community Capacity Development

6.1 Study overview

This qualitative, longitudinal, multiple case study aimed to explore and describe factors influencing community capacity development during a three-year community intervention. This study was important because community capacity is a critical mechanism for developing community nutrition interventions that involve intricate social processes and is complex to assess. The full methods for this study are outlined in Section 3.6. In brief, *community capacity* development was explored using a multiple case study approach, across 11 communities (or cases) involved in the intervention, monitored over an 18-24-month implementation period (100% response rate). The Design of Case Study Research in Health Care (DESCARTE) model underpinned the methods selected for data collection, analysis and interpretation. Data collection included semi-structured interviews with fourteen community volunteers at multiple intervention time points (total interviews n=34), nutritionist staff (total interviews n=14) and document analysis of monthly program newsletters and a final management report that described local community nutrition interventions (total documents n=22). Interview transcripts and documents were analysed separately using thematic analysis. Codes between the data sources were then compared and collapsed into categories, which were then developed to build themes. The social-ecological lens was utilised throughout the data analysis by looking at individual and organisational factors influencing community capacity development. The findings will now be described in further detail.

6.2 Findings

6.2.1 Case characteristics

The eleven community cases captured the diversity of communities throughout Queensland, with cases selected to represent the entire range of geographical locations (Australian Government Department of Health, 2018). Two communities were classified as major cities, three were inner regional communities, three were outer regional communities, two were remote communities and one was a very remote community (Figure 6.1). There were no patterns identified regarding geographical location differences (inner city, regional, rural communities) influencing how or why capacity developed. All eleven cases implemented community nutrition interventions over a 18-24-month period. Each community case included a variety of people from various sectors, such as education (early years, primary and high schools), disability services, health services, lay community members, local government, charity agencies, and corporate industry (Table 6.1). Subsequently, the process of capacity development evolved organically, based on each community's preference for what and how to implement a community nutrition intervention. Table 6.1 provides a summary of the type of community nutrition interventions implemented over time, highlighting the interpersonal relationships developed between volunteer and local stakeholders (community and/or organisational level partnerships).

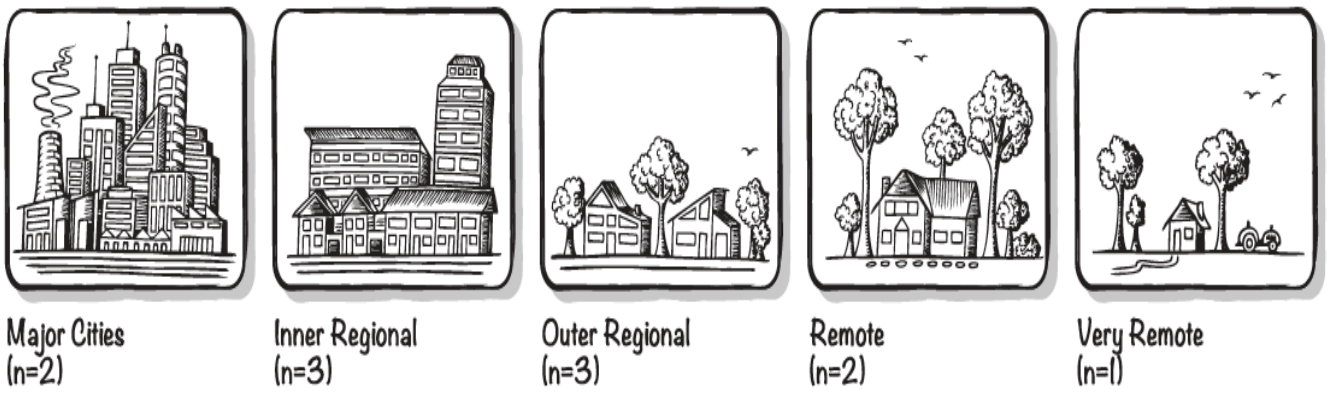


Figure 6.1: Case characteristics

In all eleven cases at least one community nutrition intervention, mostly focussed on individual behaviour change, was implemented over time (2016-2018). There were a variety of active community nutrition interventions described across six cases in 2018. Two cases were planning community nutrition interventions for 2019, while two cases had no community nutrition interventions in 2018 (Table 6.1).

Table 6.1: Case community nutrition interventions developed over time (2017/2018)

Cases (n=11)	Population group	Nutritional issues described by volunteer	Stakeholders engagement	Community interventions		
				2016	2017	2018
1	Indigenous populations	Poor diets for sugar control	Diabetes nurse clinic	p	i	x
1	Homeless populations	Lack of access to food	Soup kitchens	i	i	x
1	Miners and shift workers	Poor eating habits, weight issues and being tired	Human Resources at mining company	p	i	x
1	People with disabilities	Lack of menu planning, cooking and shopping skills	Disability support services, special needs schools	n/d	p	i
4	Primary school children	Support menu planning, cooking and shopping skills	Local schools and Girl Guides association	P (4)	p/i (2)(2)	p/i (3)
2	Adolescents	Support menu planning, cooking and shopping skills	Local schools, youth service	P (2)	P (2)	p/i (1)(1)
1	Women survivors of domestic violence	Lack of access to food and cooking facilities	Local domestic violence crisis shelter	n/d	p	i
1	Young mothers	Food access issues due to limited finances, lack of cooking and shopping skills for themselves and infants	High school program for young mothers with infants	p	p/i	i
2	Older adults	Lack of access to food and cooking facilities	Neighbourhood Centre, Men's Shed	P (2)	p/i (1)(1)	I (2)

(n) = number of cases n/d = not described, p= planning, i = currently implementing, x = not implemented

All volunteer interviewees were female ranging in age from 24 to 83 years of age in 2018. Over half of the interviewees (n=6) had lived in community for 15 or more years, some as long as over 40 years (n=2). The majority were not in paid work (n=8), were running farms full time (n=4) and one interviewee was also caring for young children. Over half of the interviewees (n= 6) lived with their partner and no longer had adult children at home. Three interviewees had a change of circumstances during the three-year intervention (moved to another community, divorce) (Appendix 10). There were no patterns identified regarding interviewee characteristics (age, education and training, employment, household type, family situation) influencing how or why capacity developed. Interviewee characteristics that were consistently described influencing how or why capacity developed were motivation and dedication, described in detail in Section 6.2.2.1.

6.2.2 Community Capacity development over time

Nine out of the eleven cases described similar patterns of community capacity development. These nine cases showed similar development of capacity through **individual** volunteers' and nutritionists' continuing motivation and drive over the period of follow up. Conversely, overwhelming exhaustion and time constraints of volunteers and nutritionists was evident across the nine cases which impacted on community capacity development over time. Forming **community** partnerships across local agencies from various sectors was an enabling influence on community capacity development. All eleven cases were influenced by **organisational** resistance to change and lack of strategic support as a barrier to capacity development over time. Community capacity development was also influenced by the ability of individuals, communities and the non-profit organisation to adjust and be flexible and responsiveness to community needs and interests to implement community nutrition interventions (Table 6.2). These finding add further support that the organisational level findings are consistently described both within the community and the non-profit organisation studies. These themes across individual, organisational and community level will now be described in detail.

Table 6.2: Themes influencing how and why community capacity developed over time

Social-ecological level lens	Theme definition and description	Categories
Individual	**1. Continuing motivation and dedication** This theme reflects that motivated, dedicated volunteers and nutritionists influenced how community capacity developed over time.	Partnerships^ Reflective Practice^ Time Branch support
Community	**2. Developing community connections and partnerships** This theme reflects that the community connections and partnerships created between community volunteers, community groups, agencies and the nutritionists influenced how community capacity developed over time.	Partnerships^ Leadership^* Community Development^ Relationships^
Organisational #	**3. Lack of organisational strategic support and resistance to change** This theme reflects that a lack of organisational strategic support and resistance to change organisational structures, processes as well as individuals' roles and responsibilities, influenced how community capacity developed over time.	Fair governance* Learning capacity* Variety* Room for* autonomous change
Across the multiple levels of social-ecological model.	**4. Adaptability** This overarching theme reflects that community capacity development was influenced by the ability of individuals, communities and the non-profit organisation to adjust and be flexible and responsive to community need/interest required to implement community nutrition interventions.	Relationships^ Learning capacity* Room for* autonomous change

^ Hybrid capacity framework (Appendix 4)

* Adaptive capacity framework (Appendix 7)

Organisational capacity was described in Chapter 5 from the perspective of executive management and nutritionists. Results here relate to the perspective of the community volunteers and nutritionists in relation to community capacity development.

6.2.2.1 Individual level

1. Continuing motivation and dedication

Motivated and dedicated volunteers and nutritionists influenced how community capacity developed over time. Patterns across all nine cases indicated that motivation (defined as a reason for acting or behaving in a particular way) was a key factor that influenced capacity development over time. Motivation was described at the interpersonal level, incorporating the dynamics of relationships between volunteers and members of their community social networks, and also the relationships between volunteers and nutritionists. Three key areas emerged around volunteers and nutritionists' motivation to implement community interventions; *a) developing social connections*, *b) valuing the health issues targeted* and *c) altruism*. Often a combination of these motivational factors was described as reasons that the volunteers continued to develop relationships with community members to implement community nutrition interventions.

"I've loved being involved in it because I'm very interested in food, I like gardening and I like growing food. I grew up on a farm so, you know, that's my background. …. So that's why I put my hand up to be involved in it. I thought it was a great idea." *volunteer (2017)*

"I've been a member for 41 years…… I finally feel as if I am contributing back in a significant way and I've found my voice in helping women and children" *volunteer (2018)*

All nine cases also showed that volunteer motivation was affected by *time constraints* which became more constrained as the program progressed and was particularly evident by 2017-2018. Time constraints for volunteer increased due to full time work, travel involved, having dependent children and other family commitments. The intervention itself was also described as labour intensive by volunteers.

"Well I am investing a lot of time in Country Kitchens, it's almost a full-time job." *volunteer (2017)*

"I need to take a back seat now; it's taken too much time from other areas in my life" *volunteer (2018)*

Volunteers all described feeling *overwhelming exhaustion* by the end of the three-year community intervention. They described feeling pressure to continue as the community's interventions would not function without the individual's involvement.

"you wear yourself down…. I'm a one band man" *volunteer (2018)*

Cases were also influenced by the nutritionists' motivation. A similar pattern of motivational factors (developing social connections, valuing the health issues targeted and altruism) were also described by nutritionists as reasons that they continued to develop community nutrition interventions.

"The whole team, everyone who has ever been involved in it, I think we all give our 110 percent. We're very passionate about community health, I think, and I mean it's only really grown my passion for community health." *nutritionist (2018)*

Motivation of the nutritionists was also affected by *time constraints* and *overwhelming exhaustion* which was particularly evident by 2018. The community cases were dispersed throughout the state of Queensland and this required frequent travel (265 nights away in 2017) by the nutritionists to support community nutrition interventions. There was a high staff turnover over the three-year period, with exit interviews indicating the turnover was primarily due to exhaustion and stress.

"We would love to just sit down with them and go through everything with them, but we've got to keep it to a finite amount of time because we've got so much else that we need to achieve" *nutritionist (2017)*

"I just can't keep this pace going, can't keep these hours going, I can't keep such tight travel schedules. I am totally spent." *nutritionist (2018)*

The strong relationships developed between volunteers and nutritionists also positively influenced the motivation of all parties. Both volunteers and nutritionists described that the supportive relationships were pivotal to feeling connected and driven to continue community capacity development.

"Country Kitchens team members that I've been associated with, they're absolutely fabulous. You know, they're very hard working, very down to earth, really they've been perfect in the roles that they've been in, they keep me going." *volunteer (2018)*

"I don't have enough kind words to say about them (nutritionists), because they're just – especially her (name). She's just been fabulous." *volunteer (2018)*

The relationships between the volunteers also developed over time, motivating and supporting each other, remotely as they all lived in different communities throughout Queensland. Recognising the need to support each other, nutritionists set up a facilitators' Facebook page in 2017 and were having regular videoconference meetings in 2018, where volunteers and nutritionists met to discuss and collaborate on their community interventions and collaborate.

"So, I don't know what the passion is but, what they need to do is cultivate a network of those passionate people that are the (volunteer) facilitators, so we support each other." volunteer (2017)

"Facebook is the way I keep in touch with facilitators and what events are going on for all of us…. and it's really quite empowering when we all see each other on the screen and share what we've been doing" volunteer (2018)

6.2.2.2 Community level

2. Developing community connections and partnerships

Community connections and partnerships were created between community volunteers, community groups, agencies and the nutritionists and these influenced how community capacity developed over time. Across all nine cases volunteer were reported to build the profile of the program by networking, cooperating, coordinating and collaborating with other community stakeholders over time.

Patterns identified in the data highlighted the role of the volunteers existing networks with a range of agencies including local council, schools and neighbourhood houses as fundamental for developing community capacity. Six cases primarily built on these existing networks and relationships to develop community nutrition interventions.

"She's got a lot of stakeholders in the community …. - she's still building it up." nutritionist (2016)

"So, we had [multiple programs] - there were representatives from 12 different agencies, but I just used my contacts and went through a list and somebody from every agency basically came along," (volunteer 2017)

"…all of the women and particularly in the rural areas, they are so influential and a lot of them wear many hats, they are around our community stakeholders, they are the people that we are in session five (planning community interventions) would invite, because they're the council members, they are the family that lived there their entire life" nutritionist (2018)

The nine cases described interpersonal level characteristics of developing relationships through informal networking at events, attending festivals and other events where they completed food demonstrations and/or provided healthy eating resources. Three of these nine cases described developing new partnerships via formal meetings with key stakeholders, such as community leaders, school principals, community health workers, or local council members.

"... my aim is to build partnerships with the community, so I now attend an interagency meeting where all the community leaders come together at the local neighbourhood centre" *volunteer (2016)*

"I'm going to get in contact with the teacher that cooks with the kids ... I wanted to talk to her and see if we can do something with them, with their cooking....." *volunteer (2017)*

Partnerships resulted in diverse food literacy programs being implemented in various community agencies (Table 6.1). Interventions in three cases showed patterns of substantial capacity development, moving from networking to active collaborating with key stakeholders. Interventions shifted from predominantly networking via social marketing awareness raising in 2016, to implementing food literacy program interventions in collaboration with local partners in settings such as primary schools, young parenting programs, disability support services and Girl Guides in 2018.

".... they've taken Country Kitchens to their markets, in that we've had showcases and displays ..... had a Country Kitchen cafe. They've sold Country Kitchen recipe products at their stalls." *volunteer (2016)*

"And I think, also, that at Country Kitchens, all the facilitators, when they go out there with their orange aprons or they're setting up with their tables (at local markets and events), hopefully they'll start to change people's perceptions of what CWA is. So, I strongly believe that this program might be a catalyst for that change." *volunteer (2017)*

"Kids in the Kitchen is our spotlight this month. Many of our facilitators have engaged local schools, community groups ... to explore food literacy programs with children." *MM (April 2018)*

By developing community partnerships three cases incorporated a train-the-trainer food literacy program model into local organisations with support from community volunteers. Disability services workers, primary school teachers and young mums program support workers were trained to run future food literacy programs independently in their services.

"we're doing a back to basics cooking for people with intellectual disabilities and we just did the key stakeholder morning tea last Friday. We had 14 participants; nine of them were key opinion leaders and people have already written back saying it was fabulous, they can't wait to get engaged. They gave us really good ideas so instead of doing cooking for people with disabilities, we're actually doing a carer cooking program now." *nutritionist (2017)*

"…. with the Girl Guides, the actual work - the supervision of the children, the demonstrating, the nutrition talks and that sort of thing. The Girl Guide leaders are actually doing that themselves." *volunteer (2018)*

The descriptions over time indicated that the volunteers in all cases developed some lay health promotion capacity, despite not receiving formal health promotion training. Community volunteer workforce capacity was also evident by 2018, with a proposal from nutritionists to train three community volunteers to become regional convenors, that would support the local community volunteer facilitators to continue implementing community interventions within each region (southern, central and norther regions of Queensland).

"…they're now preparing facilitators to more manage this (Country Kitchens program) when the money runs out and I'm thinking that's brilliant and I learnt a lot there." *volunteer (2018)*

Another case in 2016 described having many partnerships and resources, including the greatest number of trained volunteer facilitators out of all the cases, a surplus budget, nutritionists support and new industrial size kitchen facilities to implement new community nutrition interventions. This indicated a likely high level of capacity could develop over time. However, there were limited capacity development descriptions over time. The volunteer facilitators associated with this case were initially motivated and described existing networks in 2016 and developing partnerships in 2017, with a local soup kitchen and vegetable donation charity, making 125l serves of soup for the homeless in the community in 2017. However, by 2018 the community groups and volunteers appeared less engaged with the intervention. The volunteers stated reasons for reduced individual involvement as due to time constraints, lack of motivation and other priorities in life (e.g. partners, grandchildren, holiday plans). There were no reported ongoing community nutrition interventions in this case by late 2017. This case reinforced the patterns identified in the other eight cases where individual understanding of the health issues of overweight and obesity, motivation, exhaustion and hence the ability to develop community partnerships were key influences on community capacity development.

6.2.2.3 Organisational level

3. Lack of organisational strategic support and resistance to change

A lack of organisational strategic support and resistance to change organisational structures, processes as well as individuals' roles and responsibilities, influenced how community capacity developed over time. A ***lack of organisational strategic support*** influenced community capacity development, due to a lack of clear vision, procedures and processes impacting on resource allocation to roll out

initiatives locally. Unanimously all nine cases described organisational politics and hierarchy, resulting in a lack of organisational endorsement and support for the Country Kitchens program, as impacting on the ability of communities to implement their local community interventions. All nine cases described a need to be better supported strategically by the non-profit organisation. There was no policy or strategic planning evidence to demonstrate the organisations commitment to the Country Kitchen program beyond the life of the funding cycle. Policies and procedures were highlighted by volunteer interviewees and nutritionists as important, such as getting the program written into the bi laws of the organisation's constitution. The lack of ongoing funding for paid nutritionists was also described as an organisational factor that impacted on the community's capacity to continue to implement community nutrition interventions.

"I guess this last six months the pressure's been on, if we don't get funding, we've kind of seen cracks in it. All the things are in the right places, but it feels like it's a very superficial level; and whether that's intentional or a lack of understanding I'm still, in some circumstances, I think they (executive management) just don't understand how to improve it" *nutritionist (2018)*

"There should have been more support from the top, it should have been written up into policy. If they cut the funding now all the good things ready to go will be lost……. I'm hoping it's embedded enough but I don't know if it is yet" *volunteer (2018)*

Nutritionists described that they had expected that the organisational management structure was well respected and understood and followed, however that was not necessarily the case. Organisational support for the Country Kitchens program appeared influenced by individuals in management who were in decision-making roles.

" And then there's a lot of politics in the Association, at every level, every single level, and so working in between that, and seeing how that influenced them." *nutritionist (2018)*

"I'm tired. Tired of putting myself on their agenda, tired of making meetings to discuss stuff. Tired of the push. I think they should be pulling." *nutritionist (2018)*

Volunteers from eight cases described a lack of future funding and advocacy support from executives and decision makers in the organisation as impacting the community's capacity to sustain community nutrition interventions.

Resistance to change in relation to organisational structures, processes as well as individuals' roles and responsibilities, influenced how community capacity developed over time. Patterns of organisational resistance to change, from executive management to branch volunteers (those not

involved with the Country Kitchens program), were consistent across all nine cases, from 2016 to 2018. The non-profit organisational structure was often described as inflexible and hierarchical, limiting autonomous change in the communities to adopt the Country Kitchens program.

"Someone new comes in and tries to inject a new idea, it can come back as a bit defensive and resistant, stop trying to come in here and trying to change the way we do things. We've been doing it this way for 95 years…." *nutritionist (2016)*

"I think because sometimes when you have a group, and they've been there that long, they get a little bit complacent in the things that they're doing. 'Oh, we've always done in this way.' And the mentality is, 'It's going to stay this way.' And even though they're fighting for change ..... nobody actually wants to get up and go and do it." *volunteer (2017)*

"the organisation has the potential. It's got a number of barriers that we still need to work through. Going forward, the program needs to change as a whole. It's not sustainable, the way it was this last three years, and the management of the nutritionists could definitely do with some improvements." *nutritionist (2018)*

Although the organisation's volunteers and staff as a whole, particularly executive team in head office, were not described as adaptable, there were patterns identified in four cases that highlighted that the organisational members in those communities had some volunteers who were visionary and flexible. There were also descriptions of hope for improved organisational flexibility and change in these same four cases. The structure of the organisation, which dictated a change of president and other roles in the community branches every two to three years, meant that there was potential for strong adaptable leaders to be employed, even if only for a limited time. Management changes in 2018 provided hope for executive and management leadership support.

"With the change of management, I can see a future. I was rather clouded before; it's got to come from the top down, and it wasn't… but it still will need paid nutritionists, as dedicated as we are, it will never survive with just volunteers." *volunteer (2018)*

4. Adaptability of individuals, communities and the non-profit organisation

Community capacity development was influenced by the ability of individuals, communities and the non-profit organisation to adjust and be flexible, and responsiveness to community needs and interest required to implement community nutrition interventions. Adaptability across these multiple levels was found to be central as to how and why capacity developed during the community nutrition interventions. In this study adaptability was described as the ability to adjust, take advantage of

opportunities, whether by individuals, communities and/or the non-profit organisation. *Individual volunteers and nutritionists* were able to adjust to change, were flexible and motivated others to follow and contribute to community capacity development.

"Because when you start with nothing and have to make something work - then when I think you do that - well I suppose they've (communities) got the freedom of "Well that didn't work. Let's try this," then that evolves for the next step. I think it's a growing program." volunteer (2017)

"I think the adaptability of the nutritionists is absolutely amazing" volunteer (2017)

"Over time we learnt how to do that better and better, and I think you would continue to keep learning, because it's just change all the time." nutritionist (2018)

Community partnerships involved people and local agencies being adaptable and changing during the process of developing partnerships from networking, coordinating, cooperation to collaborating. The cases where change processes and flexibility of the community volunteers and nutritionists was described, influenced the development of community nutrition interventions.

"We get them (volunteers) to think about 'Okay, well who are these people in your community; and how do you think you can engage with them; and what are you (the community) going to look like… so it ended up being not something that we followed from start to finish. We used it and picked up, let the community, I guess, lead what we would use, which probably is part of why we have such a variability of outcomes." nutritionist (2018)

Community volunteers described adaptability when coping with undesirable consequences, for example by disengaging with resistant community stakeholders and approaching and inviting new key stakeholders to become involved in community nutrition intervention.

"the acting principal makes everything difficult so this year we are just on hold, she's destroyed a lot of programs in the school…. we will wait till the old principal returns" volunteer (2018)

The non- profit organisation structure, procedures and processes did not appear adaptable or flexible and there was organisational resistance to change as described previously (Chapter 5). This discouraged some volunteers from implementing community nutrition interventions and restricted nutritionists from reshaping organisational structure, procedures and processes themselves.

"As professionals if we have a meeting, we just do what we said we were going to do most of the time. Whereas you're really having fluff conversations around a topic rather than getting any action and outcomes." nutritionist (2018)

The flexibility of nutritionists to work across and between multiple levels influenced how and why capacity developed in community nutrition interventions. Nutritionists described adjusting in response to opportunities primarily in communities, while having to cope with a rigid, unsupportive work environment in the head office of the non-profit organisation.

"then we sit in this in between zone. That's why it's always so hard, because you think, 'Why am I still here working in an environment like that (head office)?' But then you give, the communities are so good, and there's so much positive outcomes happening out there, that you kind of know why you're doing it. But then you come back in the office and I'm like, "Oh, this again." nutritionist (2018)

"And so to be able to have something that was standardised enough that we could actually implement it and do that in budget and resources, and team; as well as be just enough adaptable that we could relate to different communities as well as across the associations channels from a member all the way up to try work with the state executive. I mean that's one of the strengths." nutritionist (2018)

At a community level, individuals were creating opportunities, forming partnerships and initiating community nutrition interventions, but at an organisational level there was limited adaptability to generate organisational strategic support for these interventions to become sustainable.

6.2.2.4 Divergent cases

Two cases had an alternative pattern of influences on community capacity development. Both these cases involved individual capacity factors (changes of circumstances for community volunteers) which impacted on their ability to continue to be involved with the community nutrition interventions. One case involved a volunteer moving away from the community around 12 months after completing the food literacy program. Prior to moving, the volunteer attended local markets to provide nutrition education resources and promote the food literacy program. The volunteer demonstrated understanding of the health issues of overweight and obesity as she described plans to engage and partner with 1) the local health service diabetes educator to visit a local indigenous community and 2) the mining industry to provide short cooking demonstrations to mining nutritionists. These community interventions were initially implemented, however did not become imbedded or sustainable due to the volunteer moving away from the community.

Another case involved a volunteers' declining health impacting on her ability to be mobile in her community, which impacted on her capacity to facilitate local nutrition interventions. This volunteer adapted from facilitating community interventions in her community, to shifting her focus to training and supporting volunteers to run community nutrition interventions. The volunteer supported a new

facilitator not only in her community, but also supported volunteers in other communities throughout Queensland. The volunteer demonstrated understanding of the health issues of overweight and obesity, continued to be motivated and dedicated, built on her existing community networks and developed new partnerships by supporting other volunteers. By 2018 this volunteer was an active member of the Facilitator Facebook group, guiding other volunteers to implement community nutrition interventions. This case demonstrated individual motivation and leadership qualities supported other community volunteers to implement community nutrition interventions.

6.3 Discussion

This multiple case study explored and described individual, organisational and community influences on community capacity development, during a three-year community nutrition intervention. The findings demonstrate that motivated, dedicated volunteers and nutritionists influenced how community capacity developed over time. This was independent of individual volunteer characteristics (age, education, employment, family type or relationship status), or geographical location (cities, regional or remote communities) (Australian Government Department of Health, 2018). This is an unusual finding, with previous research stating geographical location influences integration, programming, governance, and partnerships (N. Smith et al., 2003). The case study findings further support that individuals' motivation and dedication (also described in Chapter 4) sustained their involvement in the community intervention. Motivation endows a person with the drive and direction needed to engage with the environment in an adaptive, open-ended, and problem-solving way (Linnenbrink-Garcia, Patall, & Pekrun, 2016; Reeve, 2014). This aligns with previous research that has identified motivation as a key factor influencing why people devote substantial amounts of time and energy helping to a cause they believe in (Reeve, 2014; Snyder & Omoto, 2008). Findings of this case study also add support to the social-ecological model assumptions that the support of individuals in a population is essential for implementing community changes (Finegood et al., 2010; McLeroy et al., 1988). This study highlights that motivation of individuals may be central for community nutrition interventions to be sustainable.

Findings support previous research that engaging community members throughout the intervention process provides opportunities for researchers to identify social relationships within and among subgroups in the community (Robinson et al., 2005; Trickett et al., 2011). Relationships between the individuals within communities and organisations influence capacity development (Dodge, 2011; Hawe, 2015). Individual relationships within communities refer to community relationships. Individual relationships between the executive management and nutritionists within the non-profit organisation refers to organisational relationships. Community connections and partnerships, both

existing or created, between community volunteers, community groups, agencies and the nutritionists supported community capacity development over time in this multiple case study analysis. These findings were similar to the other two study findings in this thesis, which highlighted the importance of individual relationships within communities (Chapter 4) and individual relationships between the executive management and nutritionists within the non-profit organisation (Chapter 5), influencing community capacity development.

The lack of organisational strategic support and resistance to change as previously described in Chapter 5, was further supported in this study. These findings illuminate that for community interventions to develop capacity over time, the focus should not only be on building relationships between individuals working in communities, but also with executive management staff involved in managing the intervention. In particular, the case study identified that capacity development during community nutrition interventions can depend vastly on moderators acting at different levels. This demonstrates that the application of the social-ecological model may effectively support capacity development and also maximise acceptability, adoption and maintenance within community interventions. Policy makers and health promotion practitioners are encouraged to identify complementary or, ideally, synergistic capacity development components at multiple levels, rather than adopting an exclusive focus on intervening at any one of the levels of influence to develop capacity in community interventions.

Describing community capacity development over time is complex (Lempa et al., 2008; Saldaña, 2003; Thomson & Holland, 2003). In an environment characterised by flux and uncertainty, a capacity for innovative, divergent strategic thinking rather than conservative, convergent strategic planning appears central to creating and sustaining community nutrition interventions. This study showed that adaptable and flexible volunteers and nutritionists described building strong relationships, partnerships and embedded interventions into local agencies, which are concepts supported by previous research (Cohen et al., 2016; Mortreux & Barnett, 2017; Robinson et al., 2005; Trickett et al., 2011). Indeed community-based adaptation may depend on the potential embedded in social relationships, enabling people to coordinate community action to achieve shared goals (Adger, 2003; Dumaru, 2010; Ebi & Semenza, 2008; Engle, 2011).

Community capacity development in this study was found to be influenced by the ability of individuals, communities and the non-profit organisation to adjust, be flexible and responsive to community need and interest as required to implement community nutrition interventions. These findings support that collaborative adaptable interventions appear essential, with the relationships between project teams and communities affecting community capacity development of intervention

processes and outcomes (Ebi & Semenza, 2008; N. Smith et al., 2003; Trickett et al., 2011). While mobilising all community towards achieving sustainable health promotion action is a goal, individuals in community and organisations that are more adaptable may be where greatest community capacity is developed.

This case study supports the suggestion that there may be value in assessing adaptability across multiple levels of the social-ecological model to improve capacity development in community nutrition interventions (Cohen et al., 2016). Viewing capacity development across multiple levels may enable researchers to find the 'capacity gaps' and support strengthening those levels more intensively. As described in previous Chapter 2 (van Herwerden et al., 2019) and Chapter 5 (Gupta et al., 2010), adaptive capacity has been identified in other literature as the ability to adjust, take advantage of opportunities, or cope with consequences (Engle, 2011; Field, 2014) and is a concept used primarily in the field of climate change (Siders, 2019). Previously research has not captured this dynamic creative process as part of capacity development in community nutrition interventions and this study is potentially the first to acknowledge and explore adaptive capacity factors and social-ecological multiple level influences on community capacity development. Adaptive capacity may be a useful concept to apply to capacity development assessment in community nutrition interventions. Assessing the adaptive capacity of the intervention itself, may be an important indicator of capacity development in public health community nutrition interventions.

6.3.1 Strengths and limitations

Multiple different methods of data collection across three data sets reduced the impact of potential biases and corroborated findings. Documents provided a means of tracking change and development, and verification of findings from the other data sources (Bowen, 2009). A strength of this study was the 100% participant response rate to multiple requests for interviews over a two-year period. Sample selection was representative in terms of geographical location and engagement with the program. The limiting of community interviewees to one volunteer per case may have resulted in a narrower view of the case, however this was mitigated by cross analysis of other data sources (nutritionists' interviews and documents.) Interviewing community stakeholders involved in community nutrition interventions was attempted, but there was no response from emails or direct requests from the nutritionists who worked with the community stakeholders to participate in phone interviews with the PhD candidate. Therefore, no community stakeholder interviews were completed and is the study limitation. The study did not seek to specifically quantify the extent of capacity development across cases and this is a limitation and potential area for further research.

6.3.2 Conclusion

This study sought to explore and describe factors influencing capacity development during the implementation of community nutrition interventions over three years. Community capacity appears to be dynamic, regularly transforming and adapting to external changes. The importance of the multiple level relationships between individuals, communities and organisations appear important to capacity development. Community capacity interventions may need to remain context specific, as a standardised 'one size fits all' approach is unlikely to achieve capacity development in community nutrition interventions. Providing a multilevel suite of interventions across the social-ecological levels, may improve community capacity development in community nutrition interventions used in future research and practice. Assessing adaptive capacity may improve how to assess community interventions in the future and be better suited to complex processes and systems that interact and develop over time to create sustainable healthy communities. Future research should explore how to assess flexible and adaptable relationships and partnerships and how these impact on community capacity development.

Chapter 7 Discussion

7.1 Preamble

This research aimed to 1) explore how capacity is assessed in public health community interventions in the literature and 2) explore and describe capacity and capacity development over time at individual, organisational and community levels during the implementation of a community nutrition intervention. The research findings have been presented in the previous Results Chapters of this thesis (Chapters 4-6) as illustrated in Figure 7.1. This chapter will examine all studies and discuss the overall findings of the research, in particular highlighting the new contributions to knowledge this thesis makes. Recommendations for research and practice will be described in the end of this chapter.

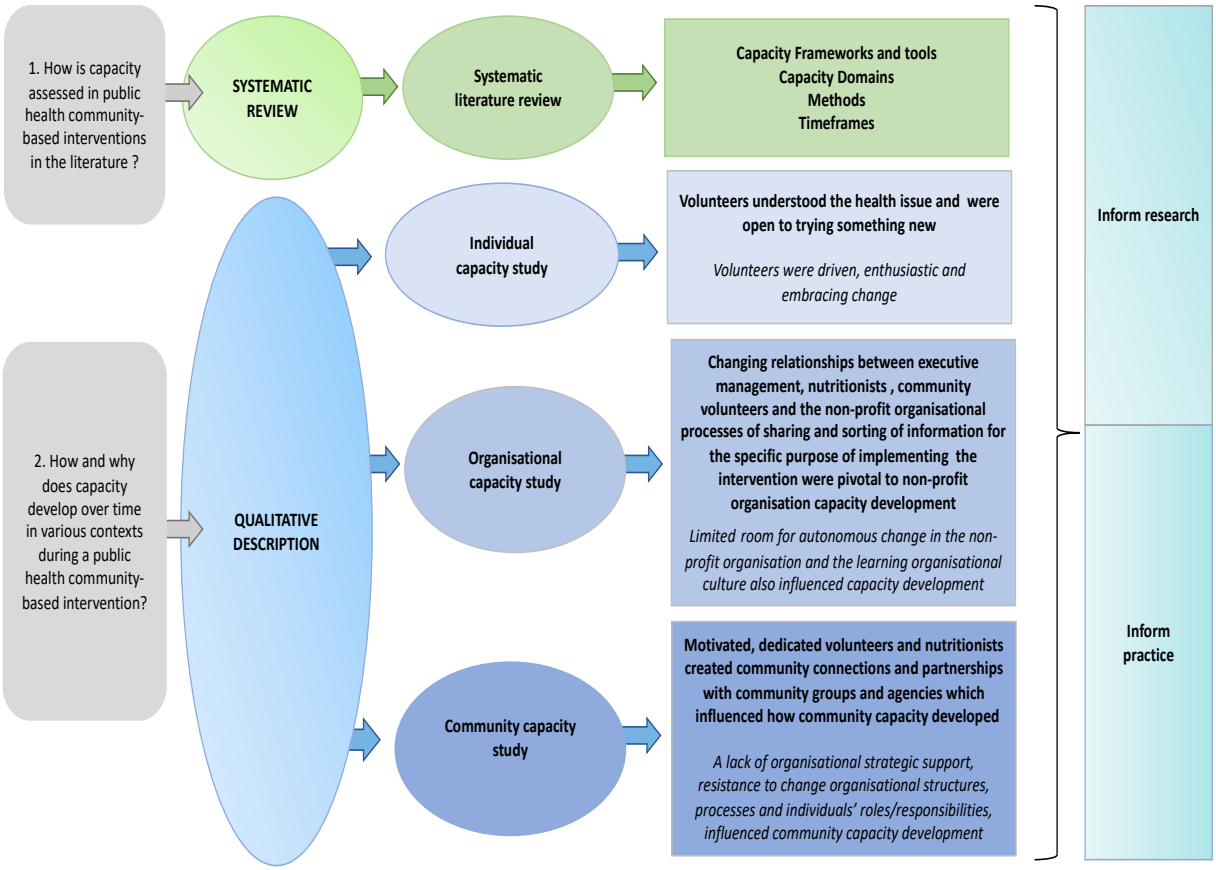


Figure 7.1: Summary of research and key findings

7.2 Summary of findings

A brief summary of the findings for each of the four studies, in relation to answering each research question is described below (Table 7.1).

7.2.1 How is capacity assessed in public health community interventions?

To answer this research question, a systematic literature review *"Capacity assessment in public health community interventions"* (van Herwerden et al., 2019) was completed.

7.2.1.1 Systematic literature review

The systematic review (van Herwerden et al., 2019) sought to describe the evidence of how capacity is assessed in public health community interventions in the literature. The systematic literature review found capacity is assessed heterogeneously in community interventions. Although studies frequently stated the aim was to assess capacity, capacity was not uniformly defined, measured or evaluated. A myriad of capacity frameworks, tools and assessment methods were identified. The findings suggest that capacity assessment is complex and may need to remain context specific and flexible in order to capture the ever-changing nature of capacity development over time. Future research should explore the utility of more standardised methodology guidelines that direct researchers and practitioners to better describe capacity assessment in community interventions.

7.2.2 How and why does capacity develop over time, in various contexts, during a community nutrition intervention?

To answer this research question, how and why capacity developed was explored qualitatively across individual volunteer, organisational and community levels during a community nutrition intervention, as described in the Methodology Chapter Section 3.3. The findings of each study are described in Chapter 5 and 6. A synthesis of key findings from across all four studies is summarised in Table 7.1

Table 7.1: Summary of overall research findings

How and why capacity developed across multiple levels of the social-ecological model, in a community nutrition intervention case

Social-ecological level lens	Theme definition and description
Individual level	**Volunteers had an initial understanding of the health issue of overweight and obesity** Volunteers understood a) about dietary causes of people being obese, b) targeting an 'at risk' population group and c) involving that population in the process of developing community nutrition interventions. **Individuals were initially amenable to trying something new** Volunteers and nutritionists were leading the development and implementation of community interventions. They were enthusiastic, determined, flexible and adapted to new opportunities to implement activities and they described individual behaviours that were directed towards achieving community nutrition interventions. **Continuing individual motivation and dedication** The continuing motivation of dedicated volunteers and nutritionists was an important factor influencing how and why community capacity developed over time.
Interpersonal level	**Changing relationships between executive management, nutritionists and volunteers** Changing relationships between executive management, nutritionists and community volunteers were pivotal to how and why capacity developed over time. **Communication processes during implementing the Country Kitchens program** The non-profit organisational processes of sharing and sorting of information between executive management, nutritionist and community volunteers, for the specific purpose of planning and implementing the Country Kitchens program, influencing how and why capacity developed over time.
Community level	**Developing community connections and partnerships** The community connections and partnerships created between community volunteers, community groups, agencies and the nutritionists influenced how and why capacity developed over time.

Social-ecological level lens	Theme definition and description
Organisational level	**Limiting room for autonomous change in the non-profit organisation** The non-profit organisations flexibility and ability to adapt governance structures, policies, operational procedures and the responsiveness to the people involved (their inputs and costs required) to implement the Country Kitchens program influencing how and why capacity developed over time. **Learning organisation culture** The culture created by the non-profit organisation influenced the learning of the people who worked (executive management and nutritionists) and volunteered there, influencing how and why capacity developed over time. **Lack of organisational strategic support and resistance to change** This theme reflects that a lack of organisational strategic support and resistance to change organisational structures, processes as well as individuals' roles and responsibilities, influenced how and why capacity developed over time.
Across the multiple levels of social-ecological model.	**Adaptive capacity** Community capacity development was influenced by whether individuals, communities and the non-profit organisation had the ability to be flexible and responsive to community need/interest required to implement community nutrition interventions. Volunteers and nutritionists had autonomy at the community level to be flexible with implementing community nutrition interventions. Organisational capacity development was influenced by the relationships and communication processes between executive management, nutritionists and volunteers, which also impacted on the learning organisational culture. The relationships between individual, interpersonal, community and organisational factors influenced capacity development during the Country kitchens program.

7.2.2.1 Individual volunteer capacity

This study aimed to explore and describe the initial capacity of volunteers of a non-profit organisation to implement the three-year state-wide community nutrition intervention. The study showed that the volunteers had the capacity to understand the health issue of obesity, including the dietary causes of people being overweight or obese, the importance of targeting 'at risk' population groups and involving them in the process of developing community nutrition interventions. Volunteers were open to trying something new, enthusiastic, determined, flexible and adapted to new opportunities to implement a community nutrition intervention. Volunteers described behaviours that were directed towards achieving a broad range of community nutrition interventions. The adaptability of volunteers was found to be an important capacity element expressed by volunteers in this study. This study described the capacity of volunteers was particularly influenced by individual and interpersonal factors. This study highlighted that future interventions that rely on community volunteers should consider the potential to harness an unskilled volunteer workforce to work alongside public health nutritionists to implement community nutrition interventions.

7.2.2.2 Non-profit organisation capacity

This study aimed to explore and describe how and why capacity developed within a non-profit organisation during a three-year state-wide community nutrition intervention. The study found that organisational capacity development was influenced by the relationships and communication processes between executive management, nutritionists and volunteers, which also impacted on the learning organisational culture. This study highlighted that developing non-profit organisational health promotion capacity may require a strong focus on building positive relationships and fostering clear and transparent communication processes over time. Capacity development of the non-profit organisation was not linear, fluctuating across multiple levels of the social-ecological model, including intrapersonal, interpersonal, and institutional levels over time. This study to the best of the PhD candidate's knowledge, may be the first in the public health field to use an organisational adaptive capacity framework to describe capacity development changes over time. A lack of the ability of the organisation to adapt, limited capacity development over time. Applying the concept of adaptive capacity to assess non-profit organisational capacity to implement community nutrition interventions may help researchers focus on the multiple level relationship changes that influence capacity development.

7.2.2.3 Community capacity

This study aimed to explore and describe the individual and organisational influences on community capacity development, during a three-year state-wide community nutrition intervention. This study used a multiple case study approach to describe community capacity development changes over time. The study found community connections and partnerships created between the volunteers, community groups, agencies and the nutritionists influenced how and why capacity developed over time. Community capacity development was influenced by whether individuals, communities and the non-profit organisation had the ability to be flexible and responsive to community needs and interest to implement community nutrition interventions. A lack of organisational strategic support and resistance to change organisational structures, processes as well as individuals' roles and responsibilities, influenced how community capacity developed over time. The continuing motivation of dedicated volunteers and nutritionists was an important factor influencing how and why community capacity developed over time. Capacity development during the Country Kitchens program was not linear, fluctuating across multiple levels of the social-ecological model, including individual, interpersonal, community and institutional levels over time. These findings provide evidence for practitioners working to develop community capacity to focus on identifying motivated community members, supporting them to develop relationships and to form partnerships with key stakeholders in their communities. Applying a social-ecological model lens provided a more holistic understanding of factors influencing capacity development across individual, organisational and community levels during a community nutrition intervention case.

7.3 Analysis of findings

As described earlier, a discussion of the findings from each study is provided in each chapter. This section aims to further develop these individual discussions, highlighting the key findings of the research overall, its contribution to new knowledge and how the findings support or challenge existing evidence. The discussion that follows will be presented under the two research questions in two subheadings 7.3.1 and 7.3.2. This research explicitly explored the overlap of individual, organisational and community factors when assessing capacity in community nutrition interventions, the multiple lenses utilised in each qualitative study during this research acknowledges the relationships between individual, organisational and community capacity together influence community capacity development.

7.3.1 Capacity assessment in community interventions

The systematic literature review presented in this thesis described common capacity frameworks, models, tools and capacity domains used to assess capacity and highlighted there is fragmentation in capacity assessment. This research provides further evidence that without standard or agreed theories, frameworks, tools or capacity assessment methods, it is difficult to translate capacity research into guidance for practitioners implementing community capacity development interventions. To strengthen the reporting of capacity methods, it is clear that a more standardised reporting checklist approach, similar to PRISMA, CONSORT and STROBE (Moher, Liberati, Tetzlaff, & Altman, 2009; Moher, Schulz, Altman, & Group, 2001; Von Elm et al., 2007), may improve capacity assessment by researchers. For conceptual purposes, a *Capacity Assessment Process (CAP)* checklist could be developed through a Delphi consensus study, as has been used in previous studies to develop, prioritise and validate checklists (Baillie, 2010; Vernon, 2009). The findings from this research also suggest that capacity assessment can be improved with a more standardised approach by incorporating: 1) longitudinal design, 2) community-based participatory research, 3) interdisciplinary and multidisciplinary. These key elements will now be described in further detail.

7.3.1.1 Standardised approach to capacity assessment methodology

In addition to the systematic review produced during this thesis, existing literature supports longitudinal design for capacity assessment in community interventions (Griffiths et al., 2009; Mathews et al., 2010; Nargiso et al., 2013). Although there is no agreement about how long it takes to develop capacity, research consistently highlights that capacity development takes time (Rutter et al., 2017; Whelan et al., 2018; Wing, 2004). The timeframes (how long capacity is assessed) varies considerably across interventions. Some studies report timeframes of 3-4 years (Griffiths et al., 2009; Jackson et al., 2003; Mathews et al., 2010; Nargiso et al., 2013) to 5-6 years (Garza et al., 2009; Underwood et al., 2012; Van den Broucke et al., 2010). In establishing timeframes, it must be recognised that capacity can fluctuate and may not progress in a linear fashion (Saldaña, 2003). Considering capacity changes are iterative and transform throughout community interventions (Hawe, 2015; Kendall et al., 2012) it makes sense that capacity assessment should occur periodically throughout the lifespan of an intervention (Kendall et al., 2012). The longer capacity is assessed the better researchers are able to understand the complexity of how and why capacity develops and fluctuates. Adopting longitudinal capacity assessment as standard and accepted good practice should ultimately lead to improved capacity assessment in public health community interventions.

Community-based participatory research approaches (Cargo & Mercer, 2008) are recommended for capacity assessment in community interventions. Community-based participatory research builds on strengths and resources within a community, promotes co-learning, shared decision making and is therefore described as promoting capacity development among all partners (Israel et al., 2019; Jagosh et al., 2015; Minkler & Wallerstein, 2011). Some studies explicitly state using a participatory research approach in their study design (Anderson-Lewis et al., 2012; Downey et al., 2010; Dressendorfer et al., 2005). Other studies describe using elements of action research, such as a strength based approach (Jackson et al., 2003; N. Smith, Littlejohns, Hawe, & Sutherland, 2008) or a research-community stakeholder partnership approach (Garza et al., 2009; Israel, Schulz, Parker, & Becker, 1998). All of these approaches describe a common theme- the importance of community ownership and participation in capacity assessment, which were highlighted as key findings in this thesis. Although not a new approach or finding, utilising a more standardised, consistent community-based participatory research approach would improve how capacity is assessed in community interventions.

Many studies highlight the importance of taking an interdisciplinary and multidisciplinary partnerships approach to capacity assessment in community nutrition interventions both in research and in practice (Anderson-Lewis et al., 2012; de Groot et al., 2010; Freudenberg, 2004; Kendall et al., 2012; Mathews et al., 2010; N. Smith et al., 2003). Findings from this thesis support this as imperative for capacity assessment in public health community interventions, to improve on assessing the complexity of capacity as a concept, process and outcome. The findings from this thesis show that using the social-ecological model lens may assist researchers and practitioners to focus more explicitly on individual relationships that influence capacity across the multiple level during community interventions. The field of climate change science has incorporated adaptive capacity frameworks and tools into mixed methods approaches to assess complex capacity changes both at social and ecological levels (Whitney et al., 2017). New opportunities for interdisciplinary researcher collaborations to assess complex capacity changes using adaptive capacity methods may also improve capacity assessment in community interventions. Adaptive capacity is described further in Section 7.3.2.4. and the application of the social-ecological model described further in Section 7.3.2.3.

7.3.2 Capacity development in community nutrition interventions

This thesis found relationships and communication processes, features of a learning organisation and adaptability across multiple levels of the social-ecological model (individuals, communities and organisations) influenced how and why capacity developed in community nutrition interventions. There is agreement about a set of common domains that influence capacity development in community nutrition interventions (Liberato et al., 2011; van Herwerden et al., 2019). Findings from this thesis and previous research (Leeman et al., 2015) indicate building relationships and communication processes may be crucial domains influencing why and how capacity develops during community nutrition interventions. Elements of a learning organisation are also consistently described in the literature as influencing capacity development in community nutrition interventions (Espuny & Bertran, 2013; Santa, 2015). Findings indicated that limited organisational learning and organisational resistance to change were pivotal constraints on how and why capacity developed in community nutrition interventions. What is not consistently acknowledged or well described in the literature is how and why capacity changes across multiple levels (individual, interpersonal, community, organisation) during community nutrition interventions. A key finding of this thesis is the importance of exploring and describing the capacity development that occurs within and across these multiple levels. Lastly, findings from this thesis described the ability of individuals, communities and organisations to be adaptable and responsive to community interests, which influenced how and why capacity developed during community nutrition interventions. 161-Adaptive capacity is not well described in capacity assessment research or practice in the public health field (Siders, 2019). The importance of exploring and describing adaptive capacity across various contexts provides a contribution to new knowledge from this thesis. These key findings will now be described further in light of the existing literature.

7.3.2.1 Building relationships and communication processes for capacity development

Many researchers define how and why capacity develops in community nutrition interventions by the existence of a common set of capacity domains, particularly project management, leadership, resources, partnerships, intelligence, project management, community, organisational and workforce development (Liberato et al., 2011; van Herwerden et al., 2019). In addition to existing established capacity domains, the findings from this thesis highlighted that relationships and communication may be key reasons why and how capacity developed over time in community nutrition interventions. Relationships and communication are frequently acknowledged as important for community capacity processes (Baillie et al., 2009; de Groot et al., 2010; Griffiths et al., 2009; Liberato et al., 2011; Waddell, 2017). Communication is stated as an important domain in the assessment of community

capacity development (Liberato et al., 2011), and while one previous study proposed a theoretical framework that defined individual relationships as the basis for capacity building (Girgis, 2007), neither have been explicitly incorporated as foundational domains in existing commonly utilised capacity frameworks and tools (van Herwerden et al., 2019).

Findings from this research highlight communication processes both contributed to and discouraged community capacity development. Clear, open communication processes appear to have enabled capacity development of other capacity domains. There was confusion about how messages were created, transmitted, received and assimilated, particularly between the non-profit executive management team members and nutritionists. Previous studies have also highlighted the negative impact that unclear communication strategies have on capacity development (Baillie et al., 2009; de Groot et al., 2010; Garza et al., 2009). This highlights the potential importance of explicitly focusing on the underlying processes of communication, for improving capacity development in community nutrition interventions. Despite lack of organisational leadership, volunteer capacity developed because of strong relationships and communication between volunteers and nutritionists and volunteers and their local community members. The interpersonal level of the social-ecological model appears to be an important level to consider when assessing capacity in community nutrition interventions.

Findings from this thesis support previous research that describes healthy and dynamic relationships as critical to capacity development (Anderson-Lewis et al., 2012; Girgis, 2007; Jagosh et al., 2015; Waddell, 2017). Developing relationships are critical in initial stages, before embarking on planning and require continued nurturing to create the conditions for community participation and capacity development (Clavier, Sénéchal, Vibert, & Potvin, 2012; Merzel & D'Afflitti, 2003). Researchers also highlight that engaging in relationships, enables the development of capacity opportunities, which in turn develops local interventions (Crisp et al., 2000; Girgis, 2007; Griffiths et al., 2009; J. E. Horton & MacLeod, 2008). Even when interventions are uncertain and lack direction, research indicates the established relationships between workers and participants have the potential to continue participants' motivation and hence collective capacity development (Clavier et al., 2012). Strong relationships are difficult to initiate and replicate (Jagosh et al., 2015) and therefore identifying individuals in communities who have existing healthy relationships with key community stakeholders seems beneficial for capacity development (Bisset, Potvin, & Daniel, 2013; J. E. Horton & MacLeod, 2008). Research from this thesis highlights the importance of the established relationships that already existed between many volunteers and community stakeholders and this appears to have contributed to the capacity to implement local community nutrition interventions. Relationships are described as stronger when workers stay in their roles over time, deepening their understanding of individuals

(Clavier et al., 2012). Research from this thesis revealed a high staff turnover may have negatively impacted the development of healthy relationships between nutritionists and the non-profit organisation executive management team. Hence, frequent staff turnover may be a barrier to capacity development, potentially because of its role in negatively affecting communication and disrupting relationships. Turnover of paid staff could be considered as a capacity indicator with high staff turnover suggesting a risk to capacity development that could be important for policy and funding decisions.

7.3.2.2 Learning organisational culture influences on capacity development

A learning organisation is a workplace that facilitates the learning of its employees or volunteers and continuously transforms itself. Learning organisations create a culture that encourages and supports members to think critically, take risks with new ideas, allows for mistakes and values employee contributions (Santa, 2015). A learning organisation is important because it creates a culture for critical thinking and reflecting, bringing about openness to innovation and reform, which are critical for capacity development (Batras, Duff, & Smith, 2016; Gupta et al., 2010). These important 'learning organisation' qualities were not described by the non-profit organisation in this research, and the lack of adaptability of the organisation appears to have inhibited capacity development. Non-profit organisations rely heavily on volunteers and are focused on a mission, not money, therefore it is critical to create a culture in which learning is a motivator for change (Gill, 2009). Findings from this research indicate organisational capacity development was influenced by limited organisational learning and organisational resistance to change. These findings support previous studies that have indicated workforce development alone is insufficient for organisational change or learning (Heward, Hutchins, & Keleher, 2007; Joffres et al., 2004; McFarlane, Judd, Devine, & Watt, 2016).

Although a learning organisation is consistently described as important in influencing capacity (Backer, 2001) how to assess whether an organisation is a learning organisation has not been well described (Despard, 2017; Sowa, Selden, & Sandfort, 2004). This process involves identifying and measuring enablers and barriers to learning, especially organisational culture, leadership and teamwork (Bach-Mortensen & Montgomery, 2018; Espuny & Bertran, 2013; McFarlane et al., 2016). Organisational change is included in capacity building frameworks, but is insufficiently explored (Health, 2001; Heward et al., 2007). It is clear that relationships between individuals as well as organisational structures and processes influence a learning organisation (Batras et al., 2016; Heward et al., 2007). The findings from this thesis highlight that the non-learning organisational culture may have been an inhibitor to capacity development. Similar to previous research (Lomas, 2000; McFarlane et al., 2016; N. Smith et al., 2003), this thesis found enhanced exchange between the

nutritionists and the decision-making executives was required for new knowledge to be applied in practice. Findings from this research add further support to the importance of ensuring a learning organisation is included as a foundational imperative in capacity frameworks.

7.3.2.3 Multiple level factors influencing capacity development

How and why capacity develops in community nutrition interventions is situational, depending on the place, time and people involved with an intervention (Hawe, 2015). Interactions, among many component parts, are a property of both the intervention and the context(s) into which it is placed (Hawe, 2015; Waddell, 2017). This thesis found multiple level factors influenced capacity development in community nutrition interventions. Individuals were situated at and build bridges between several levels of the social-ecological model. At the level of the individual, the model called attention to the skills, knowledge, interventions and psychological processes of individuals. Therefore, individuals made their own decisions, with their own motivational factors, to get involved with the Country Kitchens program. At the interpersonal level, the model expands this focus, incorporating the dynamics of relationships among volunteers, between volunteers and members of their social networks, and of the relationships between volunteers, nutritionists and the executive management of the non-profit organisation. Individuals sought out opportunities to connect and engage with others in their communities or in their non-profit organisation, building relationships and partnerships to develop capacity of the community nutrition interventions. At an organisational level, the model focused on the goals associated with managing the Country Kitchens program, including the related operational procedures and strategic supports. At a community level the model focused on the connections and partnerships created between community volunteers, community groups, agencies and the nutritionists.

Previous research acknowledges multiple level factors between individual, community and organisations influence capacity development (Crisp et al., 2000; Health, 2001; Shan, Muhajarine, Loptson, & Jeffery, 2012; Shrimpton et al., 2014). Some studies describe individual behaviours (J. E. Horton & MacLeod, 2008), or community level influences on capacity development, for example partnerships between local stakeholders (Chaskin, 2001; Jagosh et al., 2015; Kendall et al., 2012). Other studies mention that community based capacity development initiatives work with and through organisational structures, processes and management systems within these organisations and hence these may have an impact on community capacity development (Baillie, 2010; Crisp et al., 2000; Heward et al., 2007). The Community Capacity Index (Bush, Dower, & Mutch, 2002) has been used in many community capacity studies to assess the relationships between the organisations within the community network (de Groot et al., 2010; Van den Broucke et al., 2010). However, few explicitly

describe or assess the widely accepted social-ecological model multiple levels when assessing capacity in community interventions. By exploring and describing capacity development across multiple levels, rather than focusing on one level only, this research identified capacity development of individuals matters and influences community and organisational capacity development. This social-ecological lens to assess capacity over time was a useful way to improve descriptions and understanding of how and why capacity develops during community nutrition interventions.

As outlined in Section 7.3.2.2 above, a learning organisation is characterised across multiple levels of the social-ecological model, including between individuals, structures and processes, These interactions were found to be an important factor influencing capacity development in this research. Organisational learning occurred at an individual level with both volunteers and nutritionists through training and reflective practice processes. Interactions occurred by sharing of ideas, creating, retaining and transferring knowledge to new volunteers, local community members and new nutritionists. This confirms the important relationships between capacity domains (workforce development, problem solving ability) and across multiple levels of the social-ecological model (individual, community, institutional) for organisational learning and capacity development to occur (Gupta et al., 2010; Shan et al., 2012). A recent review stated that the lack of detailed information provided about capacity development strategies by researchers, makes it difficult to transfer successful strategies to new contexts or to develop guidance for how to best structure capacity development interventions (Leeman et al., 2015). Findings from this thesis support that reporting of capacity development strategies were variable (van Herwerden et al., 2019) and influenced across multiple levels of the social-ecological model. There is a need for future capacity development efforts to acknowledge these multiple level relationships.

7.3.2.4 Adaptability influences capacity development

There is a propensity to approach capacity as a static concept in health (Hawe, 2015). Existing literature, and the findings of this thesis, indicates the need to expand capacity assessment frameworks and models to include dynamic change processes affecting capacity development in community nutrition interventions in practice (Bisset et al., 2013; Cohen et al., 2016; Hawe, 2015; Whitney et al., 2017). This thesis builds on existing understanding of capacity development over time, by exploring the iterative, fluid nature of capacity change across multiple levels of the social-ecological model. Researchers have described that capacity development is a cyclical concept, that requires flexibility to translate, modify or adjust interventions as appropriate (Greenwood-Lee et al., 2016). Yet, few studies have explicitly aimed to describe adaptation processes across multiple levels (Robinson et al., 2005; Shan et al., 2012). Generally, the term adaptability, when applied in the public

health field, refers to adapting interventions to new contexts (Evans et al., 2019), with accounts of change occurring at individual, community, and organisational levels in order to achieve capacity development (Garza et al., 2009; J. E. Horton & MacLeod, 2008). Assessing the adaptive capacity of the intervention itself, may be an important indicator of capacity development in public health community nutrition interventions (Chambers & Norton, 2016; Gupta et al., 2010).

The research undertaken in this thesis highlights the importance of individual, organisational and community adaptability to support capacity development within a given context, rather than focusing on adapting the intervention to a new context. It appeared some volunteers had an innate ability to be adaptable to develop community nutrition interventions, despite limited health promotion skills or training and regardless of their education level, employment, age or family circumstances. The non-profit organisational management demonstrated limited adaptive capacity over time, hindering organisational capacity development. Despite the lack of adaptive capacity of the non-profit organisation, the volunteers and nutritionists in the community continued to be adaptable and develop community nutrition interventions. Future research could investigate how to identify these innate adaptability characteristics in individual community members and workers and invest in further harnessing and developing these attributes.

Although the systematic review from this thesis did not identify adaptive capacity, there were descriptions in the literature about interventions adapting to new contexts and descriptions of change processes (Dressendorfer et al., 2005; Greenwood-Lee et al., 2016; Power et al., 2019; Robinson et al., 2005). There are qualitative community-based adaptive capacity studies from the ecology field (Siders, 2019; Whitney et al., 2017), that describe in-depth understandings of adaptive capacity of individuals and communities (Armitage & Plummer, 2010; Bennett, Blythe, Tyler, & Ban, 2016; Cohen et al., 2016). Precisely because capacity is flexible and ever-changing, approaches to capacity assessment that do not take these dynamics into account, risk describing an inaccurate or falsely simplified sense of capacity development in community nutrition interventions. Findings from this thesis suggest acknowledging and exploring how to assess adaptive capacity of individuals, communities and organisations, may improve capacity assessment in community nutrition interventions. Researchers and practitioners should approach capacity assessment acknowledging that capacity is always adapting in and between individuals, communities and organisations. This is an area for future research which will be described further in the recommendations section of this thesis.

7.4 Recommendations for future research and practice

The following section will describe three key recommendations incorporating both implications for practice and research. More specific actions for the research setting include the strengthening of reporting of capacity assessment methods and the adaptive capacity framework as an assessment tool. More specific actions for the practice setting include 1) putting strategies in place to facilitate capacity development across the social-ecological model to support the sustained implementation of community nutrition interventions and 2) focusing on developing relationships, communication policies and procedures for developing capacity in practice.

7.4.1 Strengthening the reporting of capacity assessment: a methods guideline approach

There is no standardised approach to assess capacity. Evidence from the systematic review (Chapter 2) suggests that capacity assessment may need to remain context specific and flexible in order to capture the ever-changing nature of capacity development over time. To improve capacity assessment in community interventions it appears it is important that all three of the following are considered: (i) the research approach aligns with how capacity is being defined, (ii) the methods suit the specific contexts and (iii) understanding of dynamics between individual, community and organisations is incorporated into study design. This means all three contexts and their relationships should be considered regardless of whether an intervention is in the community or an organisation.

How capacity is defined and understood in the literature is critical. Being clear about what exactly is being measured, how and any limitations, must be made more explicit by researchers in the literature. To strengthen the reporting of capacity methods, a more standardised approach, as has been used for PRISMA, CONSORT and STROBE (Moher et al., 2009; Moher et al., 2001; Von Elm et al., 2007), may improve capacity assessment by researchers. For conceptual purposes, a *Capacity Assessment Process (CAP)* checklist could be developed. This would provide the basis for future progression of capacity assessment. This may also be useful for critical appraisal of published community capacity intervention studies to assess the quality of capacity assessment methods.

7.4.2 Relationships and communication as key elements for developing capacity in practice

Establishing healthy relationships and effective communication processes appears to be a critical component of capacity development for community nutrition interventions. This entails key stakeholders developing agreed structures and protocols, clear roles and responsibilities, documented agreements and continued maintenance of relations with other key stakeholders. Although not a new finding, the importance of relationships and communication processes is not well defined or described in the context of capacity, hence not consistently assessed in capacity frameworks, models and tools. Researchers and practitioners could explore incorporating relationships and communication processes as key domain foundations in capacity frameworks and apply strategies to support relationship and communication development in community capacity interventions. Applying a community-based participatory research approach may support relationship and communication development in the planning phases of community capacity interventions.

7.4.3 Assessing individual, organisational and community capacity across the multiple levels of the social-ecological model in research and practice

This research focused on exploring and describing individual, organisational and community capacity across multiple levels of the social-ecological model. This involved identifying many points of view for the same reality, rather than focusing on one view, and in the process disregarding others, to improve understanding of how and why capacity changes during community nutrition interventions. Interventions that create strong relationships and communication processes between individuals, communities and organisations increase opportunities for interaction and exchange. This in itself is capacity development. Therefore, there is a need for researchers and practitioners to assess and describe individual, organisational and community levels, as these appear to influence and support capacity development in community nutrition interventions. Clearly stating that multiple levels of the social-ecological model are being assessed may enable improved descriptions about how and why capacity develops over time. Future researchers should provide detailed information about capacity development strategies, acknowledging multiple levels of the social-ecological model influence capacity development. Future researchers should also explore the inclusion of policy-level interviewees to explore political funding. Support of non-profit organisations is an important factor that may influence recurrent funding and sustained capacity development of community intervention programs.

7.4.4 Assessing capacity changes: adaptability and adaptive capacity in research and practice

Public health needs to embrace interdisciplinary and multidisciplinary partnerships in research and practice. Researchers and practitioners should design capacity assessment approaches that acknowledge uncertainty and plan for learning, reviewing and adjusting. Findings from this research indicate the need to expand capacity assessment frameworks and models to include dynamic change processes affecting capacity development (Bisset et al., 2013; Cohen et al., 2016; Hawe, 2015). Using the social-ecological model lens may encourage researchers and practitioners to consider assessing adaptive capacity of people at multiple levels explicitly. Assessing individual, organisational and community adaptability using adaptive capacity methods from social-ecological research fields (Siders, 2019; Whitney et al., 2017) may improve capacity assessment. Incorporating adaptive capacity frameworks when assessing capacity appears a promising avenue to explore a new transdisciplinary approach, possibly by working with climate change scientists to explore the social adaptive capacity of people. Until we acknowledge the fluidity of assessing adaptability for capacity development, we are constrained in policy and practice. Further research should explore utilising adaptive capacity methods to assess adaptation processes and complex capacity changes.

7.5 Strengths and limitations

7.5.1 Strengths

Researcher Credibility

The researcher had over twenty years' experience in the field of health promotion and public health and a good knowledge base and understanding of capacity empirical research, theory and practice. In the beginning of this thesis (see Section 3.2) the researcher critically examined her own influence and disclosed her personal position and assumptions. The researcher was also involved with workforce development training of participants and attended numerous conferences, food literacy programs and local community nutrition interventions throughout the research period. The researcher also maintained regular email contact with participants, who would send photos of local interventions. This reduced the likelihood of participants providing inaccurate information (Padgett, 2016). The more I experienced the various participants' community and organisation environments, the more I had the opportunity to understand these various contexts.

Research Design, Sample, Data Collection and Interpretive approach

The research drew on previously published frameworks and tools to explore capacity changes (Baillie et al., 2009; Gupta et al., 2010; Labonte & Laverack, 2001). The constructivist approach suited understanding the challenges of capacity development, especially as they played out across multiple levels of analysis. The longitudinal aspect of this research enabled exploration of capacity change processes over time in multiple contexts (individual, community, organisational). Interviewing the same individuals (volunteers, nutritionists and executive management) across the time points was an important strength in the study design. Prolonged engagement and fieldwork helped to reduce bias in this research, by enabling a trusting relationship to develop between the researcher and participants over a four-year period (Liamputtong, 2007). The diverse sample of non-profit executive and nutritionists as well as volunteers from diverse communities ensured a diversity of views. The high retention rate of the sample during the research, adds credibility to the findings. The multiple methods and data collection sources increase confidence in the research findings (Stake, 2013). The use of multiple sources also ensured credibility and dependability (Bazeley, 2013).

This research explicitly explored the overlap between individual, organisational and community factors when assessing capacity in community nutrition interventions. It used multiple lenses in each qualitative study, acknowledging the relationships between individual, organisational and community capacity together influence capacity development in community interventions. This data triangulation using different methods, time points and data sources found areas where there was overlap across different contexts. These findings add weight to the benefit of assessing capacity across multiple levels of the social-ecological model for capacity assessment in community nutrition interventions.

7.5.2 Limitations

Assumptions

Perhaps the most important limitation of the research in this thesis was the theoretical assumption that capacity would translate into action within the three-year timeframe. Research is inconclusive on how long it takes to develop capacity in community nutrition interventions, however broadly speaking there is evidence that states it takes five to ten years (Wing, 2004). Organisational change in a hierarchical, structured and ridged organisations requires a cultural shift that takes much longer (Batras et al., 2016). The funding body also assumed that a) the nutritionists understood capacity and b) the non-profit organisation and volunteers in communities had health promotion capacity skills. It may have been unrealistic to assume lay-people are willing and able to take initiative and lead community nutrition interventions (Goodman et al., 1998). However, the finding that greater capacity developed in individual volunteers and communities is not surprising, considering there was more flexibility and ability to adapt in those contexts compared to the non-profit organisation.

Timeframes

Another possible limitation of this research was the real-life timeframes and the pressure for the research design to be completed within four months due to funder mandates. Ideally the systematic literature review of existing evidence about capacity assessment in public health community interventions would have been completed prior to commencing interviews with volunteers, executive management and nutritionists. However, the research commenced in August 2016 and initial capacity interviews had to be completed by December 2016. This limitation appears mitigated by the PhD candidates'' experience and understanding of capacity empirical research, theory and practice.

Fragmentation

This research comprised of a myriad of theories, frameworks and methods from a range of disciplines outside of the public health field (Siders, 2019; Whitney et al., 2017), that may cause fragmentation in the translation of the findings for researchers and practitioners. Fragmentation in other fields has been shown to hamper scientific progress (Balietti, Mäs, & Helbing, 2015). The consequence of this fragmentation may be a growing disconnect, between siloed disciplines, repetition of research without comparison, and stagnation rather than advancement. However, the recognition outlined in Section 7.3.2.3 explicitly acknowledges the importance of looking across disciplines for answers which somewhat mitigates this limitation. Further, the need for a more trans-disciplinary approach to leverage work that has occurred in other disciplines has been highlighted by this approach.

Possible other research methods

Systems and political context aspects as described in the social-ecological model (McLeroy et al., 1988) and the influence these may also have on capacity changes were not captured in this research. The research did not investigate organisational strategic directions and policy documents, these may have provided further insights about potential organisational capacity development. A critical approach may provide a useful philosophical framework to examine community capacity development. In addition, there is evidence that mixed methods are most appropriate approach to assess capacity (Anderson-Lewis et al., 2012; Creswell, Klassen, Plano Clark, & Smith, 2011; N. Smith et al., 2003). Complementing the qualitative data from research in this thesis with quantitative data may also have added further clarity to the capacity exploration and findings in this research.

7.6 Conclusions

The people making decisions to fund and implement public health community nutrition interventions require the necessary knowledge and skills to design and run programs with the best possible chance of effectiveness. That includes designing interventions that assess capacity development, as an integral part to the successful implementation and sustainability of community nutrition interventions. Findings from this thesis recommend a more standardised approach to capacity assessment for researchers, particularly designing longitudinal, community-based participatory research with an interdisciplinary research team. Studies assessing capacity in community nutrition interventions should include detailed descriptions of what type of capacity, which domains and what multiple levels are being assessed to enable replication, evidence synthesis and wider implementation of successful and sustainable community capacity interventions.

Planning for capacity development during community nutrition interventions using a social-ecological model lens may assist in addressing capacity development across multiple levels. Research findings from this thesis support that applying a social-ecological model lens provided a more holistic understanding of factors influencing capacity development across individual, organisational and community levels during a community nutrition intervention case. People matter in social systems. The research highlighted people building relationships and communication processes were essential for capacity development of individuals, which in turn influenced capacity development of communities and the non-profit organisation. Capacity development in community nutrition interventions requires a focus on the capacity of individuals and how they can influence capacity development within their communities and/or organisations. Building relationships and communication processes should be prioritised by researchers and practitioners when planning, implementing and assessing capacity during community nutrition interventions.

This research was the first in the public health field to use an organisational adaptive capacity framework to describe capacity development changes over time. Assessing adaptation processes and complex capacity changes is a developed concept in the field of climate change science, where adaptive capacity method approaches have been incorporated at both social and ecological levels. However, adaptive capacity methods have not been applied to the public health field to date. Public health community nutrition interventions require multiple disciplines to combine concepts and methods to create new transdisciplinary approaches. Incorporating adaptive capacity frameworks when assessing capacity in community nutrition interventions appears a promising avenue to explore a new transdisciplinary approach, possibly by working with climate change scientists to explore the social adaptive capacity of people. Using the social-ecological model framework lens may encourage researchers and practitioners to consider assessing adaptive capacity of people at multiple levels explicitly. Researchers and practitioners should approach capacity assessment acknowledging that capacity is always adapting in and between individuals, communities and organisations.

Capacity development across multiple levels of the social-ecological model, creating a learning organisational culture and assessing adaptive capacity are potentially important but underexplored areas of capacity assessment in public health community nutrition interventions. Future researchers and practitioners should focus on exploring these areas further to improve capacity assessment and capacity development in practice.

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Appendix 1 Facilitator Hands on Nutrition Workshops

Nutrition education sessions with a hands-on cooking skills development component for community members. Run by nutritionist and trained volunteer. Sessions were run either three or five times, once a month. The HONWs specifically and practically reinforced five key health messages:

1. Get more fruit and veg into your meals
2. Check your portion size
3. Be aware of sugar in your drinks
4. Cook at home
5. Sit less, move more.

Table 1. Overview of Nutritional Information framework of the 5 sessions

	Session 1 Intro	Session 2 Stroke/Hyper tension	Session 3 Diabetes	Session 4 Cardiovascular Disease	Session 5 Celebration
Nutrition	ADG; AGTHE	Salt – nutritional info	Sugar – nutritional info	Fat – nutritional info	General recap + party time
Diet-disease	General chronic disease links	Link to hypertension and stroke	Link to diabetes	Link to CVD (and diabetes)	
Food literacy	Planning, Sourcing, Preparation, Securing				
Food safety	Basics (e.g. contamination, preservation)	Preservation with salt	Preservation with sugar	Storage life; best buy; use by; contamination	Food safety at parties
5 key messages	All messages & icon recognition				
Recipe adaptation	Simple, cheap and easy	Herbs, spices	Sugar substitutes	Stir fry, fat, flavour (which oil to use)	Sizing up/sizing down; choosing wisely
Portion check	Serve size (veg – weight; discretionary food –kJ)	Serve of salty foods	Serves of discretionary foods	Fat in foods	Sugar, salt, fat
Food labels	General pack info	Sodium	Added vs native	Fat, sat fat, trans fat, light, fat free, reduced fat	Health star
Skills (tips and tricks)	Whisking, baking	Marinate, chopping finely	Snack food preparation	Frying; roasting	Organising a party meal

Appendix 2 Sample Consent forms and Explanatory Statement

MONASH University

CONSENT FORM

Executive Nutritionists and Project team/program employees

Project: Evaluation of the Queensland Country Women's Association Country Kitchen Program Project

Chief Investigator: Dr Claire Palermo

I have been asked to take part in the Monash University research project specified above. I have read and understood the Explanatory Statement and I hereby consent to participate in this project.

I consent to the following:	Yes	No
Complete questionnaire	☐	☐
Participate in an in-depth interview(s) that will be audio-recorded and transcribed by a professional transcription service	☐	☐

Name of Participant _____

Email (or phone): _____

Participant Signature _____ Date _____

MONASH University

CONSENT FORM

Facilitators/Volunteers

Project: Evaluation of the Queensland Country Women's Association Country Kitchen Program Project

Chief Investigator: Dr Claire Palermo

I have been asked to take part in the Monash University research project specified above. I have read and understood the Explanatory Statement and I hereby consent to participate in this project.

I consent to the following:	Yes	No
Participate in a group discussion during training days and have the discussion audio-recorded	☐	☐
Participate in an in-depth interview(s) that will be audio-recorded and transcribed by a professional transcription service	☐	☐

Name of Participant _____

Email (or phone): _____

Participant Signature _____ Date _____

MONASH University

EXPLANATORY STATEMENT

Facilitators

Project Title: Evaluation of the Queensland Country Women's Association Country Kitchen Program

Number: CF16/213 - 2016000096

Dr Claire Palermo
Department of Nutrition and Dietetics
Phone: 03 9902 4270
email: Claire.palermo@monash.edu

You are invited to take part in this study being led by Dr Claire Palermo with Associate Professor Cate Lombard and Louise vanHerwerden from Monash University, Professor Roger Hughes from Massey University and Fiona McKenzie, Program Coordinator Country Kitchens from Queensland Country Women's Association. The Queensland Country Women's Association has been funded by Queensland Health to implement and evaluate the Country Kitchens program.

Please read this Explanatory Statement in full before deciding whether or not to participate in this research. If you would like further information regarding any aspect of this project, you are encouraged to contact the researcher via the phone number or email addresses listed above.

The study aims to evaluate the Country Kitchens program. More specifically it aims to:

(i) Determine the extent to which the Country Kitchens program has built capacity of the Queensland Country Women's Association and its members to promote health, improve cooking skills and knowledge and increased the total fruit and vegetable intake, reduced sugary drinks and changed portion size of the Queensland Country Women's Association membership.

(ii) Measure the programs reach and quality of the program components including participant satisfaction.

This evaluation will contribute to the evidence on what community based strategies are effective in improving cooking skills and therefore nutritional intake of rural populations.

As a leader identified to implement the Country Kitchen program you were chosen for this work.
The study initially involves your participation in a group discussion for approximately 20 minutes which will be conducted as part of your training day, however there will be further data collection during your involvement in the Country Kitchens Program. The group discussion will seek your feelings about being involved in the Country Kitchens program. The group discussion will be audio-recorded and transcribed by an independent transcription service. Only first names will be used to protect the privacy and anonymity of participants.

In addition, after you have completed the program you will be invited to participate in an interview to discuss your experiences of being involved in the program. The interview will take approximately 1 hour of your time and be conducted over the phone at a time and date convenient to you. The interview will be recorded and transcribed by an independent transcription service. Only the investigators will have access to this information to protect your privacy and anonymity.

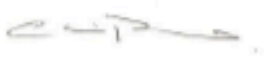
It is not anticipated that participation in this study will cause any discomfort to you as a participant apart from the inconvenience to your schedule. Being in this study is voluntary and you are under no obligation to consent to participate. You will be required to sign a consent form and return to the chief investigator. Once you consent to participate you may only withdraw data prior to the transcription of the data from the group discussions without any implications. If you do not consent to participate you can still fulfil your obligations and role in the Country Kitchens program.

The anonymity of participant data will be protected as only the investigators will have access to the identified information. Any personal information obtained by the participants during the group discussion is confidential and will not be disclosed or recorded. Findings from the study will be reported in such a way to protect the

anonymity, privacy and confidentiality of participants. Data collected will be stored in accordance with Monash University regulations, kept on University premises, in a locked filing cabinet for 5 years. A report of the study will be submitted for publication, but individual participants will not be identifiable in such a report. Once the data is analysed and compiled into a report a copy of this report will be sent to all participants.

Should you have any concerns or complaints about the conduct of the project, you are welcome to contact the Executive Officer, Monash University Human Research Ethics (MUHREC):
Executive Officer
Monash University Human Research Ethics Committee (MUHREC)
Room 111, Building 3e
Research Office
Monash University VIC 3800

Tel: +61 3 9905 2052 Email: muhrec@monash.edu Fax: +61 3 9905 3831
Thank you,



Claire Palermo

Appendix 3 Interview Questions Volunteers 2016

Interview Question	Capacity prompts.	Question Logic
1. In your words, how would you describe the program?	Quality project management Intelligence, reflective practice Organisational development Communication skills	Explore intelligence and community and organisational capacity development elements.
2. What has happened in your community as a result of the program?	Community development- participation, sense of community Partnerships Resources (human, physical, financial) Leadership Quality project management	Explore community development and how leadership, partnerships, resources have developed in the community.
3. What has been your experience of being involved with the program?	Relationships Partnerships Skill development Organisational development Intelligence, reflective practice	Explore volunteer skill development, relationships developed and level of intelligence about the program.
4. How effective has the program been in your community and why?	Community development- participation, sense of ownership, role of external supports Quality project management	Explore the effect of program in the community with regards to participation, ownership, behaviour change and observe level of intelligence about how the program was planned, implemented, monitored and evaluated.
5. What might need to be done better?	Intelligence, reflective practice Community ownership Visioning for the future (leadership)	Explore the level of intelligence and reflective practice about community capacity and vision for the future of the program.
6. Do you have any other comments you would like to make about the program?	Intelligence, reflective practice	Explore any other capacity elements not previously described.

(Health, 2001; Liberato et al., 2011)

Appendix 4 Hybrid Coding Framework Qualitative Studies

Deductive categories

Categories	Codes
Community development [1,4]	Community participation
	Community support
	Community Activity
	Community readiness to mobilise around a health issue
	Community Awareness raising
	Community engagement/ communication with community members
	Social Inclusion*
	Role of external supports
	Community Stakeholders*
	Equity (acknowledge health inequalities and prioritising interventions with those who's needs are greatest)
	Participatory decision-making
Leadership [1,2,9]	Personal Growth and learning
	Visioning the future
	Systems and strategic thinking
	Creative collaboration*
	Communication skills/dissemination
	Political and social change thinking
	Team learning
	Teamwork
	Team Culture
Reflective practice[7,8]	Reflective cycle processes (i.e. description of what happened, what were you thinking or feeling, what was good and bad about the experience, what sense can you make of a situation, what else could have been done? if it arose again what would you do?)
Partnerships [1,2, 6]	Shared goals
	Relationships
	Planning and implementing
	Evaluation
	Sustained outcomes
	Networking
	Coordinating
	Cooperating
	Collaborating

Categories	Codes
Relationships [1,2, 3, 6]	Organisational
	Community
	Individual
Quality Project Management[1,4]	Careful planning, monitoring, evaluation, adjustment as required
	Monitoring
	Evaluation
	Supervision and support for nutritionists and volunteers
	Teamwork and the empowerment of all in organisation
	Encouraging and rewarding new ideas
	Developing an organisational wide culture of quality
Workforce Development [1,2,7]	Learning opportunities and skills development
	Course development
	PD opportunities
	Educational under/post grad studies
	Professional support and supervision systems
	Performance management systems
Intelligence [8]	Addressing root causes of the issue(s) targeted by project
	Involving the target population in process of 'asking why'
	Involving the target population in problem solving
	Understanding before acting- asking why?
Resources [1,2,6]	Financial
	Human
	Information, administrative
	Decision making tools
Organisational Development [1, 7]	Policies and strategic planning
	Organisational management Structure
	Management support and commitment
	Quality Improvement Systems
	Informal Organisational culture
	Fair governance

1.(Health, 2001; Liberato et al., 2011), 2. (Health, 2001), 3. (MacLellan-Wright et al., 2007), 4. (University of Kansas, 2018) , 5. (Kostadinov et al., 2015), 6.(VicHealth, 2011) 7. (Mann, Gordon, & MacLeod, 2009) 8.(Hughes & Margetts, 2012) 9. (Gupta et al., 2010)

Adaptive capacity coding further described in Appendix 7

Inductive Categories

Inductive codes were grouped into categories and varied for each study. The following is a *non-exhaustive example* of inductive codes from the *volunteer capacity* study.

Inductive capacity categories	Coding Description(s)
Behaviour Change	Describing specific behaviour changes Embracing diversity and change Responding creatively to change Willingness to try new things
Branch Support/non-support	Common vision and motivation Friendships Teamwork
Community Interventions	Type of activity, timelines Planning, implementation, evaluation processes Resources (human, physical, financial) available
Facilitator characteristics	Age, family structure, education level, employment, length of time lived in community, involvement in community, length of membership on committee and role
Mental Health	Coping skills Expressing concerns about ability to perform tasks and impact of facilitating on family/friend and personal life or vice versa Feeling overwhelmed Social connection/social isolation Emotions: Anger, Excitement, Fear, Frustration, Happiness, Sadness
Problem solving	Describing a problem exists. Describing proactive action and decision-making processes (goal setting, brainstorming possible solutions). Describing finding solutions to difficult or complex issues (rule out any obvious poor options, examine the consequences). Recognising complexity.
Time	Descriptions of volunteers or community stakeholders being time poor, busy, snowed under, too much to do. Describing timelines, planning, implementing interventions. Describing time to start, finish or change something.

Appendix 5 Interview Questions Executive Management 2016 and 2018*

Interview Question	Capacity prompts and logic[#]
1. In your words, how would you describe the Country Kitchens program?	Leadership potential of executive
2. Tell me about your experience of Country Kitchens program?	Organisational development occurred (support from division, branches, governance structures, membership engagement) Resources, Quality, satisfaction.
3. In your opinion, how effective has Country Kitchens program? What, or how has the program, been effective?	Program impacts, Partnerships Organisational development. What do they describe as effective: Running food literacy programs or organisational change?
4. Can you describe any barriers or difficulties you encountered with the Country Kitchens program?	Organisational, community, individual barriers described? reflect on social-ecological model
5. Thinking back to when the program first commenced, has your attitudes or expectations of the program changed in any way? Can you describe?	Reflective practice, learnings, descriptions of capacity changes (individual, community, organisational)
6. What role or impact do you believe the Country Kitchens program has had on the non-profit organisation?	Capacity for organisation to host Confidence capacity can be built Workforce development, Resources
7. When thinking about the Country Kitchen programs, can you think of a maximum of 5 people that come to mind? *	Networks/cooperating/coordinating/collaborating (Partnerships), Workforce development, thinking strategically- big picture or small picture? who do they name- managers, nutritionists, volunteers? Leaders?
8. Do you think the Country Kitchens program enhancing the capacity of the organisation, and if so, in what ways? *	Knowledge, intelligence, reflective practice policies and procedures or systems thinking capacity
9. Do you have any other comments?	Opportunity to cover points important to interviewee not covered by interview questions

(Gupta et al., 2010; Minzner, Klerman, Markovitz, & Fink, 2014) *2018 questions only

Appendix 6 Interview Questions Nutritionists 2016 and 2018*

Interview Question	Capacity prompts.	Question Logic[#]
1. In your words, how would you describe the program?	Quality project management, Intelligence, Organisational development processes, Communication skills, Fair Governance	Explore intelligence Explore community and organisational adaptive capacity elements*. Explore ability to adapt over time*.
2. What has been your experience of being involved with the Country Kitchens program?	Variety, Learning capacity*# Room for autonomous change*#	Explore the relationship between the non-profit organisation and the nutritionists and community members. Explore adaptive capacity*.
3. In your opinion has the Country Kitchens program^ changed the organisation in any way? *^ 2016 Food literacy* *^ 2018 Community interventions*	Adaptability Changes over time	Explore the changing relationship between the non-profit organisation* volunteers and nutritionists*. Explore Organisational systems, structures, processes. Explore adaptive capacity of the non-profit organisation and the nutritionists*.
4. Has your perspective of the program changed during your time involved?	Adaptability Changes over time	Explore individual reflective practices. Explore adaptive capacity of the non-profit organisation and the nutritionists*.
5. What has been you experience working with the branch members (2016) / as an organisation? (2018*)	Community readiness and participation, organisational processes Leadership Resources Fair governance	Explore the relationship between the non-profit organisation volunteers and nutritionists. Explore the relationship between the non-profit organisation executive management, volunteers and the nutritionists.
6. What do you see as the strengths of this program? (2018) *	Intelligence, strategic thinking, leadership	Explore ability to think and asking why? Explore individual, community, organisational capacity strengths
7. Were there any difficulties you experienced during your time working as a team member? (2018) *	Reflective practice Relationships Fair Governance	Explore understanding of policy and processes, strategic planning. Explore individual, community, organisational capacity barriers.
8. How do you feel now that the program has come to a close? *	Relationships	Explore individual experiences and reflections, motivations
9. Do you have any other comments you would like to make about the Country Kitchens program?	Leadership Relationships All capacity domains not described	Explore visioning and future directions Explore individual, community, organisational capacity

(Gupta et al., 2010; Minzner et al., 2014) * 2018 questions only

Appendix 7 Adaptive Capacity Framework, Coding and Analysis

In order to explore and describe capacity development over time an existing adaptive capacity framework (Gupta et al., 2010) was utilised for deductive coding of organisational and community capacity studies. Adaptive capacity coding in the context of the larger deductive capacity framework has been described in Appendix 4.

Adaptive Capacity #	'Change' in capacity	Organisational capacity study	Community capacity study
Fair Governance	*Legitimacy, Equity, Responsiveness, Accountability*	Focus on dynamics in head office and executive management level	Focus on local branch dynamics and key stakeholder governance levels
Leadership	*Communication skills, Creative collaboration* *Personal growth and development, Political and social change strategies, Systems and strategic thinking, Team learning, Visioning for the future*	Focus on leadership qualities executive management level and nutritionists	Focus on leadership qualities community volunteers, key stakeholder and nutritionists' levels
Learning Capacity	*Trust, Single and double loop learning* *Discuss doubts, Organisational memory*	Focus on learning capacity qualities at executive management and nutritionists' levels	Focus on learning capacity qualities of community volunteers and nutritionists' levels
Room for autonomous change	*Continuous access to information- informed* *Act according to plan* *Capacity to improvise*	Focus on room for autonomous change descriptions at executive management and nutritionists' levels	Focus on room for autonomous change descriptions at community volunteers and nutritionists' levels
Variety	*Variety of problem frames, Diversity of solutions* *Multi-actor, multi-level, multi-sector*	Focus on multi actor, level and multi sector descriptions at executive management and nutritionists' levels	Focus on multi actor, level and multi sector descriptions at community volunteers, key stakeholder and nutritionists' levels

(Gupta et al., 2010)

Appendix 8 Sample Monthly Munch Newsletter

QLD COUNTRY WOMEN'S ASSOCIATION

COUNTRY Kitchens

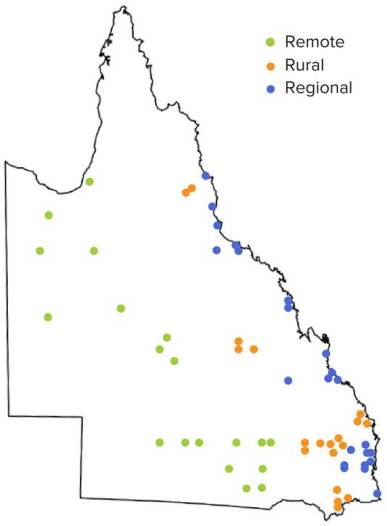
MONTHLY munch

The heart of your health

March 2018

What we've been up to at Country Kitchens

Welcome to our March edition of the Monthly Munch!



The program with only 4 months remaining is proving to be both busy and reflective. The team have just a couple more branches to visit to complete the most impressive 80 communities across regional, rural and remote Queensland. We are busy preparing the final program reports, condensing three years of amazing work into one document!

We still eagerly await Queensland Health's decision to support a further three years funding. This funding will support all our Country Kitchens Facilitators we have trained over the past three years to implement community activities in their communities and to encourage new branches to run the Hands on Nutrition Workshops. If you can support us with local advocacy activities amongst your community, to write letters of support for the continuation of the Country Kitchens program, we would really appreciate your help. Please contact us countrykitchens@qcwa.org.au for a Funding Submission Support Pack.

Meanwhile we are working with the State Executive Board to build capacity within QCWA to create 3 Regional Convenors that will support the CK Facilitators in branches and divisions. We recognise the many volunteer hours that our Fabulous CK Facilitators put in to bring Country Kitchens to their communities, but we also know how important this activity is to improving the health of Queenslanders. Did you know that over 15,000 people have been reached by the Country Kitchens program, over one third engaged in activities led by our Country Kitchens Facilitators? We need to keep supporting this excellent work by our QCWA Branch members. Well Done!!

Should we be successful in receiving government funding, we plan to target families with children. Evidence from scientific research tells us that childhood obesity is a symptom of problems occurring not just at home but in the communities. It is my belief that the QCWA is one of the best placed organisations to provide solutions to the problems that lead to childhood obesity and I look forward to working with like-minded Branches to make a dent in the current 25% of children who are overweight/obese in Queensland.

Queensland Country Women's Association

Healthier. Happier.

Queensland Government

qcwa.org.au/countrykitchens

Country Kitchens Facilitators

Country Kitchens Facilitators in the Spotlight!

2018 has kicked off with a bang! Facilitators from all over Queensland have started the year with a range of community activitiesand there are no signs of slowing down.

Our Border Division Showcase Champions, Allora Branch have enjoyed the day at their local show again. With a wide variety of Country Kitchens and QCWA information on display the ladies were treated to a slightly cooler day than last year. Sharon Hannah led cooking demonstrations with Country Kitchens approved veggie fritters, meat and veggie patties and carrot cake. Sharon did have some sage advice for fellow facilitators - try and avoid being set up next to the animal display - it can be hard to compete with live snakes and wombats.

The Country Kitchens Team would like to thank our Country Kitchens Facilitators who supported the International Weekend Showcase. Our facilitators received excellent feedback form attendees for their sauerkraut demonstration and static stall. The Country Kitchens team has been working on a recipe resource for Germany and it is in the final stages of approval from Queensland Health. This resource will be available to all facilitators and branches and includes CK approved recipes suitable for morning and afternoon teas, showcases or lunches. Keep your eye on our Facebook Page where we will announce the resources release.

Ridgelands and Wandal Branches hosted a Country Kitchens lunch for their wider community. The participants of the Ridgelands and Wandal Hands on Nutrition Workshops made some of their favourite workshop recipes for people to try. Guests were treated to soup, frittata, salad and more. With over 50 guests, the day was very well received! Excellent work Capricornia!

Blackbutt-Yarraman Branch completed their first community activity in February. The team took over the tuck-shop at Benarkin State School offering all kids and teachers a CK Approved lunch. There was plenty on offer including hidden veg sloppy joes, pumpkin pasties, fruit salad, bean brownie and mini apple and oat muffins. The kids loved the menu and there wasn't a leftover sloppy joe in sight! Congratulations on excellent teamwork Blackbutt-Yarraman Branch.

qcwa.org.au/countrykitchens

The Country Kitchens team have collated over 200 recipes sent in by members across the state into a beautiful full colour hard back cookbook (that will also be available on our website to download to your ipads). The cookbook will have a chapter for each Division and beautiful photographs contributed by members (judged at the State Conference 2017).

If you would like to pre-order a hard copy, please email countrykitchens@qcwa. org.au or your Country Kitchens team buddy. All pre-orders will be invited to complete an order form with payment before the books are sent.

Member Price	
Hardcopy	$30 + $3 GST + postage and handling
E-Book	$25 + $2.50 GST
Retail Price	
Hardcopy	$40 + $4 GST + p&h
E-Book	$30 + $3 GST

Cut-off date for hardcopy orders May 1st 2018.

Recipe of the Month

Fruity Quinoa & Fig Porridge

Serves 1 Prep time 5 minutes Cook time 30 minutes

INGREDIENTS
50g quinoa
125mL orange juice
30g dried figs, chopped
Pinch of cinnamon
low fat natural yoghurt, to serve

METHOD
PLACE quinoa, orange juice, figs and cinnamon in a pan.
BRING to the boil, then reduce the heat.
COVER and simmer for 20 minutes until the liquid is absorbed.
REMOVE the pan from the heat and leave to stand, covered, for approx. 10 minutes.
STIR, tip into a bowl and serve immediately with yoghurt.

Courtesy of Eliza Caston, Maryborough Branch

This recipe is a sneak peak from the new In My Country Kitchen Cookbook!

Where are we going next?

WORKSHOPS

Chloe and Alice will be making their way west for workshop 2 in Condamine, Miles and Dalby. This action packed workshop will cover sugar, type 2 diabetes, fats and cardiovascular disease. To help with information overload the Team will whip up some delicious sweet and savoury muffins and our famous tomato chutney before everyone jumps into the pop up kitchen to prepare 6 veggie side dishes and chicken stir fry.

Connie and Alice are jet setting to the north west to kick off the Hands on Nutrition Workshop program in Mount Isa. The first workshop will focus on the Australian Dietary Guidelines, salt and hypertension. There will be plenty of opportunity to sample some tasty health-i-fied recipes with the Team preparing frittata 2 ways and crunchy slaw for morning tea and the participants preparing a Pesto Pasta Salad and Moroccan Cous Cous Salad for lunch.

There are still spots left at most workshops – check out the Country Kitchens website Calendar of Events at www.qcwa.org.au/countrykitchens/events/ for more details on how to register.

COMMUNITY ACTIVITIES LED BY OUR FACILITATORS

First stop on the road this month is to the Burnett Division with Connie and Chloe. The Team is heading to Gin Gin to work with CK Facilitators to help deliver the first of 7 Back to Basics workshops at the Wallaville State School. On their travels Connie and Chloe will also be stopping in at Maryborough to work with the QCWA Young Leaders on how to prepare a healthy lunchbox. There will be plenty of lunchbox inspiration with the group set to prepare savoury muffins, rice paper rolls, bean brownie and sweet potato bliss balls.

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Queensland Country Women's Association

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P 3026 1220 M 0408 806 200 A RFH on Gregory, 89-95 Gregory Tce, Brisbane Q 4000 E countrykitchens@qcwa.org.au

Appendix 9 Interview Questions Community Volunteers 2018

Interview Question	Capacity change element prompts.	Question Logic
1. What has happened in your branch since the completion of the program and HONW?	*Community interventions?* *What ways have you been involved in community interventions?* *Strategic planning? Organisational changes?*	Explore community development and how leadership, partnerships, resources have changed and developed in the community. Explore organisational development.
2. What has been your experience of being involved in the CKP *community interventions*?	*Has your role changed since last year as a facilitator?* *Thinking back to your first days on the CKP how do you feel about the program now compared to what you felt in the beginning?* *To what extent have others in the community been involved in community interventions? Give examples of how? Name new partnerships formed in community.*	Explore sound knowledge base of issues in community? Explore resilience- ability to deal with change, reflective practice about experiences. Explore community engagement, participation and support.
3. What enables you to participate in the CKP and what motivates you to continue with community interventions?	*Training opportunities? Organisational or branch support, structures, culture? Community need? Friendships?*	Explore workforce development, organisation structures and support systems. Explore personal motivation and community connections
4. In your opinion, how effective has the community activity been in your community and why?	*What worked well with the community activity?* *What benefits did you experience from being involved?*	Explore shared goals, planning together, stage of partnership (network, coordination, cooperation, collaboration)
5. Were there any barriers/difficulties with undertaking a community activity? (describe)	*What might need to be done better? And how?* *organisational role and community role differences?* *Room for autonomous change?* *Leadership support? Visioning?*	Explore fair governance- the influence of policies, plans, management support, recognition and rewards system, informal organisational culture. Explore community resource and support structures. Describe a diversity of solutions to problems.
6. Where do you see things going over the next 12-24 months with community interventions?	*Sustainability of interventions?* *Own involvement continues? If not, why not?*	Explore leadership attributes and visioning for the future. Describe a diversity of solutions to problems. Describe an understanding of multi-actor, multiple level, multi-sector interactions.
7. Do you have any other comments you would like to make about Country Kitchens program and community interventions?	*Reflective practice?*	Explore learning capacity i.e.: ability to reflect and describe learning elements of health promotion capacity in community nutrition interventions.

Appendix 10 Volunteer characteristics from selected case studies sample

CASE	*number of interviews*	*Geographical classification (Nonprofit Region classification)*	*Age*	*Household Type*	*Family commitments*	*Employment Type*	*Occupation/skills*	*Length of time lived in community*
1.	**2**	RA 1 Major Cities *(Southern)*	30-49 years	Single parent	Full time carer for adult son with disability	No paid work- full time carer for adult son with disability	Nurse/ respite worker, cares for child with special needs volunteers at his school	10-15 yrs
2.	**2**	RA 1 Major Cities (*Southern)*	66-80 years	Adults only. Adult children >18 yrs	Husband retired, cares for grandchildren	No paid work- part time volunteer work	Retired teacher	10-15 yrs
3.	**3**	RA 2 Inner Regional (*Central)*	30-49 years	Parents children<18yrs	Full time carer for 2 young children	No paid work- runs farm with husband full time	Secondary Teacher (hasn't worked for 10 years as teacher)	15+ yrs (38yrs)
4.	**2**	RA 2 Inner Regional (*Central)*	66-80 years	Adults only. Adult children >18 yrs	Husband retired, cares for grandchildren	No paid work- full time volunteer work	TAFE sewing, arts and craft teacher, sold kitchen appliances.	15+ yrs
5.	**2**	RA 2 Inner Regional *(Southern)*	50-65 years	Adults only. Adult children >18yrs	Full time carer for adult son with disability	Full time marketing	House duties, raising children	15+ yrs
6.	**3**	RA3 Outer Regional *(Central)*	30-49 years	Adults only no children	Husband currently unemployed farmer. No kids or other family.	Full time	Youth worker	0-5 years
7.	**3**	RA3 Outer Regional *(Southern)*	66-80 years	Adult on own, recent separation Adult children >18yrs	Recently separated from husband. Adult children not living at home.	No paid work- full time volunteer work	Home economics teacher	15+ yrs (40 yrs)
8.	**2**	RA3 Outer Regional (Central)	30-49 years	Adults only no children	Husband, retired. Living on small farm	No paid work- full time volunteer work	Corporate Management	0-5 yrs
9.	**3**	RA4 Remote *(Central)*	66-80 years	Adults only. no children at home	Husband, retired. Adult kids not living at home	No paid work	Unknown	15+ yrs
10.	**2**	RA4 Remote (*Southern)*	50-65 years	Adults only. Adult children >18yrs	Husbands. Adult children not at home. Farming and bookwork	No paid work- runs farm with husband full time	teachers aid, volunteer work at schools and red cross	15+ yrs (42 yrs)
11.	**2**	RA5 Very Remote *(Northern)*	50-65 years	Adult on own	On own Adult children not at home.	No paid work- runs farm on own full time	Health education officer in 1980s (Department of Health)	5-10 yrs

Appendix 11 COREQ criteria

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity		Described in Chapter 3 methodology chapter	
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	LvH
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	MND, PhD Can
Occupation	3	What was their occupation at the time of the study?	PHN
Gender	4	Was the researcher male or female?	F
Experience and training	5	What experience or training did the researcher have?	QM course
Relationship with participants		Described in Chapter 3 Methodology chapter	
Relationship established	6	Was a relationship established prior to study commencement?	some cases yes
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	not much o pa
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	dietitian, resea
Domain 2: Study design			
Theoretical framework		Described in Chapter 3 Methodology chapter	
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	social constru
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	purposive
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	email, phone
Sample size	12	How many participants were in the study?	11 v 8 d
Non-participation	13	How many people refused to participate or dropped out? Reasons?	2 change of lif
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	phone
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	no
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	all female inte
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	no, yes
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	yes 1 or 2 follo
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	audio
Field notes	20	Were field notes made during and/or after the inter view or focus group?	yes during and
Duration	21	What was the duration of the inter views or focus group?	30-90 minutes
Data saturation	22	Was data saturation discussed?	yes
Transcripts returned	23	Were transcripts returned to participants for comment and/or	no

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings	Chapter 3 Methodology chapter (analysis) chapter 4,5,6 (findings)		
Data analysis			
Number of data coders	24	How many data coders coded the data?	3 researchers s
Description of the coding tree	25	Did authors provide a description of the coding tree?	inductive first
Derivation of themes	26	Were themes identified in advance or derived from the data?	no derived fro
Software	27	What software, if applicable, was used to manage the data?	NVivo
Participant checking	28	Did participants provide feedback on the findings?	no
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	yes
Data and findings consistent	30	Was there consistency between the data presented and the findings?	yes
Clarity of major themes	31	Were major themes clearly presented in the findings?	yes
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	yes

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

Once you have completed this checklist, please save a copy and upload it as part of your submission. DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.