Community Engagement for Leisure Time Physical Activity to Address the Mental Health of Adults Residing in Australian Rural and Remote Communities

Submitted by

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'But first seek the Kingdom of God and His Righteousness, and all these things will be added to you. Therefore do not worry about tomorrow, for tomorrow will worry about its own things. Sufficient for the day is its own trouble' Matthew 6, 33–34.

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Abstract

The mental and physical health of those residing in Australian rural and remote communities is poorer compared with those in major cities. Physical health comorbidities contribute to almost 80% of premature mortality in people living with mental illness. Leisure time physical activity (LTPA) is a well-established intervention used to improve physical and mental health. Effective LTPA interventions for mental health can be determined based on the level of community engagement and readiness of rural communities. The aim of this research is to understand community engagement for physical activity to address the mental health of adults residing in rural and remote Australian communities. This project will meet the following objectives:

Objective 1: To examine how community engagement, participation and empowerment address the mental health of adults living in rural communities.

Objective 2: To explore the community's level of readiness to engage in a physical activity intervention to address community mental health of Australian adults living in remote communities.

To achieve Objective 1, a systematic literature review was undertaken to examine how community engagement, participation and empowerment have been used in the development and implementation of interventions aimed at improving the mental health of adults residing in rural communities. Databases including MEDLINE, CINAHL, PsychInfo, EmCare, Scopus, PubMed and Google Scholar were searched from database inception to August 2023. Eligible studies included those examining adults living in a rural cohort, where community engagement was used to develop and implement a mental health intervention.

Eight studies met the inclusion criteria, with all having similarities in community engagement when developing and implementing interventions for community mental health. Community engagement should involve adults residing in rural communities when

developing interventions with both a diverse gender representation and a background in health if possible. Community participation included upskilling adults living in rural communities and providing appropriate training materials for this purpose. Community empowerment was achieved when the initial contact with rural communities was through local authorities and there was support from community management. The findings showed that more research into using pre-existing evidence-based models is recommended to determine whether the models are transferable into rural and remote communities to address social issues such as mental health.

To achieve Objective 2, the community readiness model (CRM) was used as the evidence-based model to determine a remote Australian community's level of readiness to address the social issue of mental health through LTPA. The CRM is based on the transtheoretical model stages of change used to assess the community's level of readiness to address social issues. Once the community has been assessed, the CRM aims to recognise and build on the community's capacity and strengths to address the social issue. The CRM addresses six dimensions, covering community efforts, community knowledge of efforts, leadership, community attitude, community knowledge regarding physical activity for mental health, and resources available. In this study, the semi-structured interviews consisted of participants using a numerical value to determine a quantitative score for their level of readiness, along with open-ended questions to elicit more detailed information. Thematic analysis of the qualitative data derived from the open-ended questions was undertaken using the methods of Braun and Clark.

Seven local members of a remote Australian community were interviewed. The dimensions of the interview were scored based on the level of readiness, ranging from 1 (no awareness) to 9 (high level of community ownership). Community knowledge regarding physical activity for mental health scored 3/9. Community attitude and resources scored 4/9.

Community efforts and community knowledge of efforts scored 6/9, with leadership scoring 7/9. According to the community's scores for each dimension, recommendations supported by the CRM can be implemented to achieve community empowerment.

To date, this is the first study aimed at understanding how community engagement for physical activity can help address the mental health of adults residing in rural and remote Australian communities. Evidence-based strategies were determined for use by health professionals to achieve community engagement, participation and empowerment when addressing mental health in rural regions. The CRM was confirmed as a feasible model to determine the community's level of readiness for change in using physical activity to address mental health in Australian remote communities.

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1 Overview

This chapter provides an overview of healthcare access and the epidemiology of mental and physical health in rural and remote regions compared with major cities in Australia. Additionally, the chapter explores the bidirectional relationship between physical and mental health, as well as the barriers to participating in physical activity and the role of an Accredited Exercise Physiologist. Behaviour change is discussed, along with the models used to address social issues, which, in this case, involves physical activity for rural mental health.

1.1 Introduction

The Australian Statistical Geography Standard (ASGS) classifies remoteness into five categories: major cities, inner regional, outer regional, remote, and very remote (Australian Bureau of Statistics, 2018a). The remoteness areas are founded on the Accessibility/Remoteness Index of Australia (ARIA+), a continuous index ranging from 0 (high accessibility) to 15 (high remoteness) (The University of Adelaide, 2023). The categories were developed from calculations based on road distances to towns with a basic level of services (e.g. health, retail, education) (The University of Adelaide, 2023).

Of the 25 million people living in Australia, 28% of the population live outside the major cities (Australian Institute of Health and Welfare, 2022b). When referring to Australian statistics in this thesis, these refer to ASGS classifications with a focus on remote and very remote areas in Australia, encompassing 85.7% of Australia's geographical area, 6.52 million square kilometres, as shown in Figure 1.1 (The Department of Health and Aged Care, 2016). For the purpose of this thesis, the term 'rural and remote', defined as 'all areas outside major cities' (Barclay et al., 2018), is used as a principle term, since it is translatable to international research.
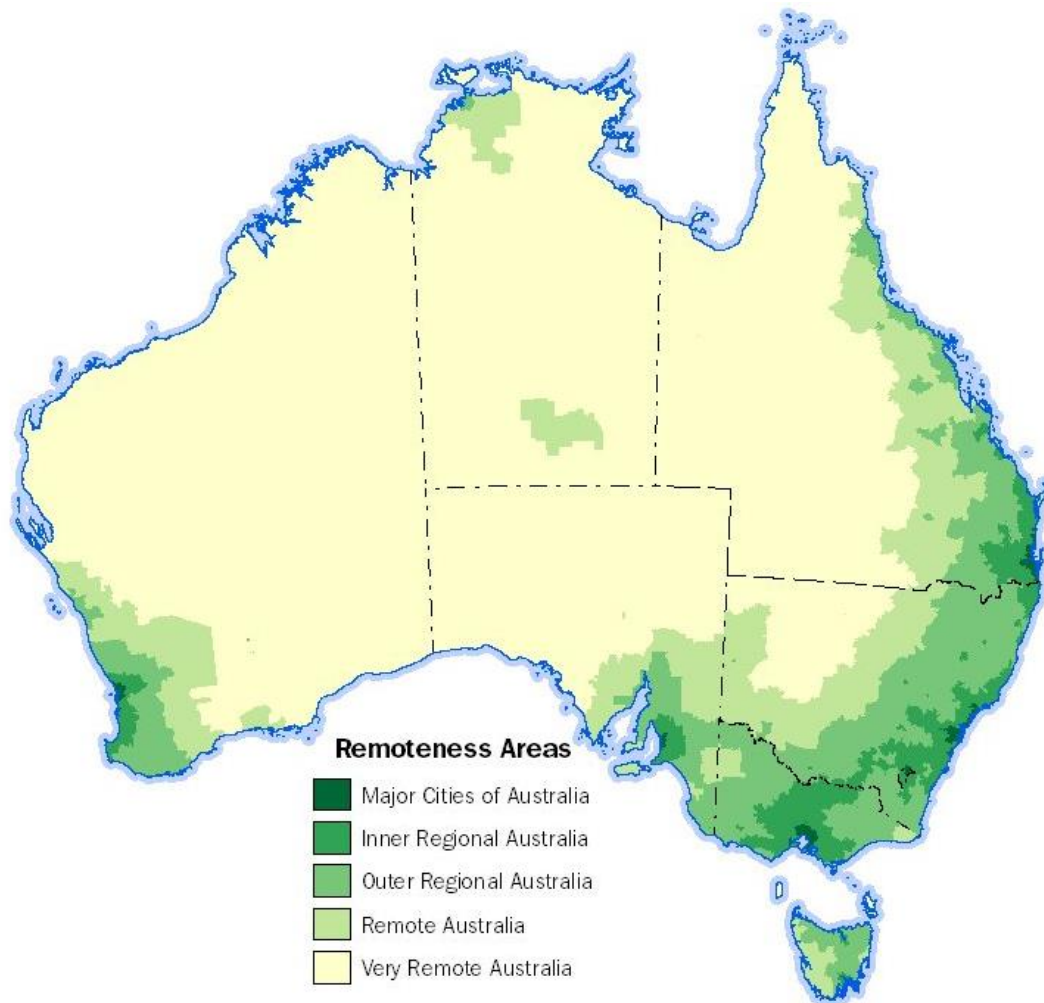
Figure 1.1. Map of the 2016 Remoteness Areas for Australia (Australian Bureau of Statistics, 2018a)

1.2   Healthcare Access for Rural and Remote Regions

Although Australians living in rural and remote regions report higher levels of life satisfaction (Wilkins, 2015), they also experience a variety of stressors that are specific to living outside major cities. For example, rural and remote residents experience fewer employment opportunities, and when combined with natural disasters, results in less financial security (National Rural Health Alliance, 2017). Not only do people in rural and remote regions have a 30% lower mean household net worth, there are also higher cost of living pressures compared with capital cities (Australian Institute of Health and Welfare, 2022b).

The higher cost of living also affects healthcare access, resulting in extra strain on service providers and residents. The geographical spread of rural and remote Australia results in higher costs of delivering health care to regions with a low population density and limited infrastructure (Australian Institute of Health and Welfare, 2022b). Health care in rural and remote areas relies heavily on general practitioners (GPs) (The Department of Health and Aged Care, 2016). Critically, psychological care is the most common reason for residents from rural and remote regions to visit their GP (Brown, 2017). While just over half of GPs work in rural and remote areas (Deloitte, 2022), 90% of psychiatrists and approximately two-thirds of mental health nurses work in major cities (Brown, 2017). The few mental health professionals that do work in remote and very remote Australia provide services to 28% of the Australian population (Australian Institute of Health and Welfare, 2022b).

Even with access to the appropriate health professionals, for the general population living in rural and remote locations, seeking support for physical and mental health can be associated with negative stigma (Fennell et al., 2018). This negative stigma associated with a possible mental illness diagnosis in rural and remote communities (Brown, 2017) may explain the limited use of Medicare-subsidised mental health-specific services in the 2020–2021 financial year. The Australian Institute of Health and Welfare found that 11% of the population living in major cities accessed mental health services, compared with 5.7% and 2.9% of the remote and very remote population, respectively (Australian Institute of Health and Welfare, 2021b). Because of the lack of information across different healthcare settings in Australia, only assumptions can be made regarding the lack of healthcare integration in rural and remote regions.

People living in rural and remote regions have traditionally been portrayed as physically and emotionally strong, with the media promoting the concept of the 'Aussie battler' (Kaukiainen & Kõlves, 2020). Concerns around confidentiality, and an increased self-

reliance on solving their own problems, has resulted in an unwillingness to seek help in general, especially from professionals who may have recently relocated to the community (Fennell et al., 2018). This self-reliant attitude shown in rural and remote Australia reduces the likelihood of residents acknowledging difficulties and distress (Kaukiainen & Kõlves, 2020). Attitudinal barriers such as stoicism (the endurance of pain and hardship, without a display of feelings and without complaint) can cloud an understanding of mental illnesses (Fuller et al., 2000; Kaukiainen & Kõlves, 2020). Even if someone is diagnosed with a mental illness in a rural and remote region, there are additional barriers assumed for them, regardless of geographical location. These may include socioeconomic status, a lack of integrated mental and physical health services, and medication side effects (Australian Institute of Health and Welfare, 2020b; Rosenbaum et al., 2016). This highlights the complexity of healthcare access for people who are diagnosed with a mental illness in rural and remote regions.

In rural and remote regions, it is commonly misunderstood that, even if an individual's mental health is negatively impacted, a diagnosis of a mental illness may not occur (Australian Institute of Health and Welfare, 2020a). To clarify the difference, a mental illness is defined as a 'clinical diagnosable disorder that significantly interferes with a person's cognitive, emotional, and social abilities' (Council of Australian Governments Health Council, 2017). Mental illness differs from mental health, which the World Health Organization (2018) defines as 'a state of wellbeing in which every individual realises his or her potential, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community'. Many rural and remote residents believe that all mental health problems are severe, and all require in-patient hospital care (Fuller et al., 2000).

The lack of insight into mental health difficulties is cyclical, since an acknowledgement of personal difficulties and distress is required to seek psychological help (Kaukiainen & Kõlves, 2020). Despite the many barriers to healthcare access, the higher mortality in developed countries, such as Australia, is strongly linked to modifiable risk factors (Aljassim & Ostini, 2020). Modifying certain risks factors such as tobacco use, dietary risks, overweight and obesity, and high blood pressure and blood plasma glucose levels can prevent 38% of the overall burden of disease (Australian Institute of Health and Welfare, 2019), along with preventable hospital admissions and deaths.

1.3   Health Epidemiology in Rural and Remote Areas

'Preventable hospitalisations' is a term that describes instances when primary health care could have prevented hospital admission (Australian Institute of Health and Welfare, 2022b). Compared with major cities, preventable hospitalisations occur 2.6 and 1.8 times more often in very remote and remote areas, respectively (Australian Institute of Health and Welfare, 2022b). Domestic violence is the cause of one of the highest disparities in preventable hospitalisations between living locations. Domestic violence leads to poorer health outcomes for victims (Stubbs & Szoeke, 2022) and is 24 times more likely to occur in remote and very remote areas compared with metropolitan cities (Australian Institute of Health and Welfare, 2022b). Other adverse health behaviours that contribute to preventable hospitalisations in rural and remote locations, again exceeding those in major cities, include excessive smoking and alcohol consumption (Australian Institute of Health and Welfare, 2022b). Similar behaviours are seen in people living with mental illness, such as excessive smoking, poor diet, lower levels of physical activity and high levels of sedentary behaviour (Australian Institute of Health and Welfare, 2020b; Northey & Barnett, 2012; Rosenbaum et al., 2016). Consequently, for people living in rural and remote regions with either a diagnosed

or undiagnosed mental illness, the behaviours are reinforced, resulting in preventable hospitalisation and death.

People living in rural and remote regions experience earlier mortality, many of which are preventable deaths, compared with those living in major cities (Australian Institute of Health and Welfare, 2022b). The number of preventable deaths is three times higher for women and over twice as high for men living in very remote communities compared with their metropolitan counterparts (Australian Institute of Health and Welfare, 2022b). These preventable deaths could be avoided through primary and acute health care (Australian Institute of Health and Welfare, 2022b). The leading causes of death in very remote Australia are coronary heart disease, diabetes, coronary obstructive disease, lung cancer and suicide (Australian Institute of Health and Welfare, 2022a).

For Australians living in remote and very remote communities, the risk of cardiovascular conditions, diabetes, respiratory disease and cancer are amplified when compared with those living in major cities (Australian Institute of Health and Welfare, 2019). Cardiovascular conditions and diabetes are twice as common in remote and very remote locations compared with major cities (Australian Institute of Health and Welfare, 2021a, 2023a). The occurrence of respiratory conditions and some cancers is 1.5 and 1.2 times higher, respectively, in very remote areas (Australian Institute of Health and Welfare, 2021a). While the rates of mental illness diagnosis are similar for major cities and remote areas (Australian Institute of Health and Welfare, 2021a), the rates of suicide for very remote Australians are 2.4 higher than for those who live in major cities (Australian Institute of Health and Welfare, 2022c), indicating poor mental health in very remote communities.

Mental health and physical health have been found to have a bidirectional relationship, whereby people with poor physical health have a higher risk of poor mental health. Similarly, being diagnosed with a mental illness elevates the risk for chronic physical

health conditions, even more so than the risk factors of age, marital status and participation in physical activity (Stanton et al., 2019). More than half of Australians living with mental illness experience comorbid physical health conditions—a rate that increases with the severity of the mental illness (Stanton et al., 2019) and strengthens the bidirectional relationship.

For example, an Australian study with 13,000 men found that those who were obese (body mass index [BMI] over 30 kg/m^2) had a 62% increased risk of depression compared with those with a healthy BMI (Haregu et al., 2020). Further, 75% of people living with severe mental illness have at least one physical health condition, compared with those living without mental illness, where only 50% are diagnosed with at least one physical condition (Australian Institute of Health and Welfare, 2020b). These physical health comorbidities account for almost 80% of premature mortality for people living with mental illness (Australian Institute of Health and Welfare, 2020b). The rates of cardiovascular conditions, respiratory disease and cancer are at least twice as high in people diagnosed with a mental illness, and can shortens one's life expectancy by between 10 and 25 years (Australian Institute of Health and Welfare, 2020b). This again emphasises the poor health outcomes for people who are diagnosed (or undiagnosed) with a mental illness living in rural and remote communities. Treatment options to address the bidirectional relationship between poor physical and mental health vary, and this research focuses on physical activity.

1.4   Treatments for Mental Health Conditions

Treatments for mental illness have come a long way since the middle ages, when mental illness was seen as being caused by evil spirits, often in the form of a witch (Dvoskin et al., 2020). Treatment progressed to isolation in institutions; however, during the 1940s, research was funded to explore the causes and treatment of mental illness (Dvoskin et al., 2020). In the 1950s, antipsychotic medications allowed people living with mental illness to

integrate into the community (Dvoskin et al., 2020). Since then, pharmacological

interventions have evolved to consist of antidepressants, anti-anxiety medication, stimulants,

and mood stabilisers (National Institute of Mental Health, 2022). In Australia, between 2021

and 2022, 44.4 million mental health–related medications were dispensed, of which 74%

were antidepressants (Australian Institute of Health and Welfare, 2023b). The percentage of

dispensed medication for mental illness in Australian cities is twice that of very remote

regions (Australian Institute of Health and Welfare, 2023b). This lack of dispensed

medication highlights the limited use of medication for mental illness in very remote regions.

While medications can relieve symptoms, psychotherapy can support a person to address

specific issues (National Institute of Mental Health, 2023).

Psychotherapy is a treatment that is commonly used to treat people with mental health

conditions, to intervene on a person's psychological properties by supporting them to change

their thinking patterns and improve their coping mechanisms (Pawlak & Kacprzyk-Straszak,

2020). Psychotherapy focuses on symptom reduction for those living with mental illness, and

is most effective for depression, anxiety disorders, post-traumatic stress disorder and

obsessive-compulsive disorder (Cuijpers, 2019). Cognitive behaviour therapy (CBT) is the

most common psychotherapy intervention (Cuijpers, 2019). Mental health professionals use

CBT to change the automatic thoughts that cause psychopathology, and if successful, the

symptoms are controlled (Cuijpers, 2019).

Other allied health professionals are trained to work with the symptoms of poor

mental health. However, these professionals, such as occupational therapists and counsellors,

are being underutilised, especially in rural and remote locations (57th Parliament Mental

Health Select Committee, 2022). Additional allied health workers who have been recognised

to assist with behaviour therapies include speech pathologists, physiotherapists and exercise

physiologists (57th Parliament Mental Health Select Committee, 2022). Exercise

physiologists in collaboration with dietitians have been endorsed to provide holistic health care along with behaviour therapies, more effectively integrating physical and mental health services (57th Parliament Mental Health Select Committee, 2022). Increasing an individual's physical activity not only minimises the burden of disease, but also improves their mental health (Almeida et al., 2022; Deenik et al., 2022; Pearce et al., 2022; Peddie et al., 2020; Wheeler et al., 2018; Yang & D'Arcy, 2022). The correlation between moving one's body and improved physical and mental health dates back to the late 1800s (Francis, 1887), with an ongoing interest in the relationship between physical and mental health demonstrated in the past decade (Stubbs & Rosenbaum, 2018).

1.4.1 *Physical Activity*

Meeting physical activity guidelines is associated with improved physical and mental health and reduced burden of disease. This is particularly relevant for cardiovascular conditions, diabetes, and cancer (Holtermann et al., 2018; Rosenbaum et al., 2016). Physical activity is defined as 'any bodily movement produced by skeletal muscles that requires energy expenditure' and refers to all movement including during leisure time, for transport to and from places, or as part of a person's work (World Health Organization, 2022b). However, the difference between leisure time physical activity (LTPA) and occupational physical activity (OPA) must be acknowledged. OPA refers to physical activity performed for work over long periods of time and does not allow the body time to recover (Holtermann et al., 2018). Tasks for OPA may include static loading, heavy lifting or repetitive movements that can be detrimental to one's health, often increasing the risk of cardiovascular disease (Holtermann et al., 2018). The most commonly documented physical activity that improves health is LTPA.

It is recommended that healthy adults participate in a minimum of 2.5 to 5 hours of moderate intensity aerobic exercise per week, or vigorous intensity aerobic exercise for 1.25

to 2.5 hours per week (Australian Government, Department of Health and Aged Care, 2021). Strength training is recommended to be undertaken twice a week (Australian Government, Department of Health and Aged Care, 2021). In contrast with OPA, LTPA consists of dynamic movements, attempted at a conditioning intensity for the individual and willingly participated in over a short period time, allowing the body to rest between sessions (Holtermann et al., 2018). Activities may include walking, swimming, cycling, sports, or other active recreation (World Health Organization, 2022b).

There is evidence of the effectiveness of a variety of physical activity interventions for conditions including depression, schizophrenia, anxiety, bipolar affective disorder and substance abuse/dependence (Rosenbaum et al., 2016). The physical activity interventions that have been shown to improve mental illnesses include aerobic, resistance and aquatic exercise, group-based exercise, tai chi, dance and yoga (Rosenbaum et al., 2016). Physical activity positively affects neuroplasticity, with exercise-induced stimuli minimising the symptoms of depression and allowing for improvements in general mental health (Matta Mello Portugal et al., 2013). People who undertake regular physical activity improve their self-concept and self-esteem, which are characteristics that improve their global functioning for daily living (Herring et al., 2014). Improving cardiovascular fitness can also adapt brain connectivity and enhance cardiovascular health, minimising early mortality (Douw et al., 2014; Giesen et al., 2015; Vancampfort, Rosenbaum et al., 2017; Vancampfort, Rosenbaum et al., 2015).

Despite the strong evidence in support of the benefits of physical activity for those with mental illness, higher rates of sedentary behaviour in people living with mental illness exist compared with the general population (Vancampfort, Firth et al., 2017). This may be due to medication side effects, symptoms of mental illnesses or social behaviour (Chapman et al., 2016). Increased sedentary activities, such as time spent using a device, can arouse the

central nervous system and disrupt sleep patterns (Dworak et al., 2007). This causes

heightened levels of stress and depression (Harwood et al., 2014). Consequently, sedentary

activities increase the risk of morbidity and negatively affect an individual's mental health

(Smith et al., 2018).

It is evident that for either those diagnosed with a mental illness or the general

population, decreasing sedentary behaviours will improve mental health (Smith et al., 2018).

However, this apparently simple action can be extremely challenging, especially for those

diagnosed with a mental illness. Education on the benefits of physical activity and the

expected outcomes is recommended to encourage people living with mental illness to partake

in physical activity (Firth et al., 2016). People living with mental illness have expressed a

desire for physical activity sessions to be designed by exercise professionals (Chapman et al.,

2016; Firth et al., 2016) in a supportive environment (Northey & Barnett, 2012). Accredited

Exercise Physiologists (AEPs) are qualified exercise professionals who can support people

living with mental illness in addressing their physical health.

1.5 The Role of an Accredited Exercise Physiologist

In Australia, AEPs are university-trained health professionals skilled in providing

evidence-based physical activity interventions for people who are at a high risk of, or who

have already developed, complex chronic conditions and injuries, including mental illness

(Lederman et al., 2016; Raymond et al., 2020). Through their training, AEPs provide

expertise to assess, analyse and develop exercise interventions through individual lifestyle

modification (Furness et al., 2018; Lederman et al., 2016). Accredited Exercise Physiologists

understand mental illness symptoms and medication side effects, along with exercise

contraindications, ensuring a safe and adaptable environment for the person (Lederman et al.,

2016). When AEPs are supporting people living with mental illness, they use evidence-based

behaviour change strategies and work in collaboration with the multi-disciplinary team (Furness et al., 2018; Lederman et al., 2016).

Along with behaviour change strategies, AEPs provide evidence-based physical activity interventions to prevent and/or manage people developing metabolic and cardiovascular disease (Lederman et al., 2016; Raymond et al., 2020). Over time, AEPs monitor people's physical health and provide education to prevent and/or manage psychotropic-induced weight gain, while considering clinical outcomes that may change through the intervention and adapt as required (Lederman et al., 2016). All interventions are designed to be appropriate for the person based on their mental and physical health. Unfortunately, the use of AEP services is limited in remote and very remote Australia.

When comparing the number of claims filed through Medicare-funded schemes for AEP services, there are significantly lower patient numbers, fees, and benefits paid in very remote Australia compared with major cities (Stanton & Rosenbaum, 2019). The lack of Medicare-funded schemes could be due to the lack of AEPs living and working in remote and very remote Australia. According to the national workforce report published by Exercise and Sports Science Australia, 0.5% of AEPs live and work in remote and very remote Australia (Exercise and Sports Science Australia, 2023). Of those AEPs working in remote and very remote locations, just under half work in private practice (Exercise and Sports Science Australia, 2023). In rural and remote communities, is it common for increased costs to be a deterrent to for people engaging in health services (Russell et al., 2023).

Although the increased cost of services may deter those living in rural and remote regions, the use of an AEP is recommended for those living with mental illness, providing economic benefits on an individual and national scale (Deloitte Access Economics, 2016; Lederman et al., 2016). Employing exercise professionals to work with people who live with mental illness allows for greater financial value with improved adherence and greater

improvements in their physical health (Firth et al., 2016). However, for people with poor mental health, addressing their level of physical activity may not be a priority. Fortunately, AEPs have the expertise to address complex and chronic health conditions through health behaviour changes and lifestyle interventions such as physical activity (Stanton & Rosenbaum, 2019).

1.6   Behaviour Changes for Physical Activity

Health behaviour change is complex, with individual, social, and environmental factors varying for each person. These factors are significantly different depending on whether someone lives in an urban or a rural area (Dziano et al., 2021). Physical activity is a challenging behaviour to modify, with several characteristics to consider. Physical activity is an additional behaviour that needs to be performed above rest levels and requires a repeated time commitment; the body's response to physical activity changes and may align with negative emotions such as stress (Rhodes & Nigg, 2011). Physical activity has many determinants, including demographic, social, physiological, psychological, and motivational factors (Romain & Bernard, 2018).

Evidence suggests that the most common barriers to physical activity participation for people with mental illness are physical (poor physical health, medication side effects), psychological (psychological stress, lack of confidence, motivation) and socio-ecological (lack of money, access to facilities, poor social support) (Chapman et al., 2016; Firth et al., 2016; Northey & Barnett, 2012). People with mental illness recognise the benefits of physical activity and express a desire to engage in physical activity (Bezyak et al., 2011; Chapman et al., 2016). Motivating factors can be physical (improved sleep, weight loss), psychological (improved self-esteem and confidence, lower stress levels, improved mood) or socio-ecological (daily structure, socialising) (Chapman et al., 2016; Firth et al., 2016).

The positive perception of physical activity is similar for people living in rural and remote areas (Fennell et al., 2018); however, less than 50% of adults living in rural and remote areas are meeting the physical activity guidelines (Australian Institute of Health and Welfare, 2023c). Barriers to physical activity for people living in rural and remote communities may include lack of infrastructure, lack of opportunities to be active (Cleland et al., 2015), lack of motivation, poor health, or fatigue (Boehm et al., 2013).

To encourage successful health behaviour change for people living in rural and remote areas, individualised approaches (Dziano et al., 2021) guided by appropriate evidence-based models (Deniz et al., 2021) are recommended. Evidence-based models are also applicable for people living with mental illness (Chapman et al., 2016) and are shown to be more effective for health behaviour change when compared with methods that are not supported by research (Deniz et al., 2021; Farholm et al., 2017). Behaviour change models can provide insights to an individual's motivational factors and consequently guide the development of individualised strategies. The behaviour change models that are regularly used to address physical activity for mental health are the self-determination theory and the transtheoretical model.

1.6.1 *Self-Determination Theory*

Self-determination theory (SDT) is a theoretical model based on the concept of people being able to fulfil their basic psychological needs to achieve their goals (Deci & Ryan, 2000). In SDT, an individual's motivation is supported by three psychological needs: competence, autonomy, and relatedness as seen in Figure 1.2 (Deci & Ryan, 2000). According to this theory, the psychological needs of autonomy (control over their life and behaviours), competence (mastery and control over their environment) and relatedness (a sense of belonging and connection with others) (S. A. Jones et al., 2020) can be used to increase the intrinsic motivation for physical activity.

Competence   Autonomy   Relatedness
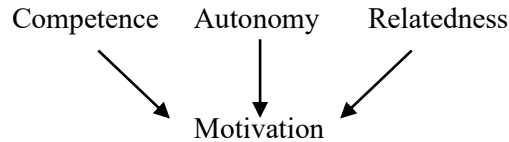
Motivation

Figure 1.2. Psychological Needs for Motivation

      Understanding an individual's motivation provides insight into the psychological

mechanisms for physical activity uptake, maintenance, and relapse (Romain & Bernard,

2018). Because the SDT supports the concept that motivation is multidimensional

(Vancampfort, Stubbs et al., 2015), it is regularly used to determine motivation for physical

activity (Farholm et al., 2017; Vancampfort, Stubbs et al., 2015). The SDT incorporates a

continuum (Figure 1.3) of increasing self-determination, ranging from amotivation to internal

motivation (Deci & Ryan, 2000).

Amotivation   External motivation   Internal motivation

$\longleftrightarrow$
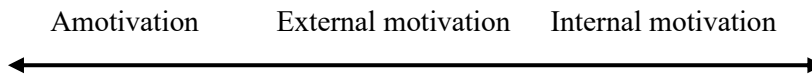
Figure 1.3. Self-Determination Continuum

      The lowest end of the motivation continuum is amotivation (Vancampfort et al.,

2013). Amotivation is where people have no intention of behaviour change (Deci & Ryan,

2000), usually because they do not see the value of being active or they do not feel they can

achieve the recommended guidelines (Vancampfort et al., 2013). The next stage of

motivation is based on external motivation, where adherence may be compromised (Deci &

Ryan, 2000). When externally motivated, people are engaged to achieve outcomes that are

independent of the behaviour itself (Vancampfort et al., 2013). When referring to physical

activity, this may include a desire to change physical appearance, increasing the individual's

pressure on themselves by associating the action with feelings of guilt, self-criticism or

lowered self-worth (Vancampfort et al., 2013). Although the person may be participating in

physical activity, it is not enjoyable for them. Finally, there is internal motivation, where

people partake in physical activity because of personal joy and interest (Vancampfort et al., 2013). Internal motivation enhances people's psychological needs (Deci & Ryan, 2000) and increases the sustainability of regular exercise (S. A. Jones et al., 2020).

To ensure sustainable exercise and to encourage motivation for physical activity in people living with mental illness and in rural and remote regions, it is essential to address the psychological needs of competence, autonomy, and relatedness. Increasing physical activity for people living with mental illness can be achieved through higher self-determination, internal motivation, and perceived competence in physical activity (Farholm et al., 2017; Vancampfort, Stubbs et al., 2015). For adults living in rural and remote regions, SDT relatedness can give a strong indication of involvement in physical activity (D. L. Jones et al., 2012). Specifically, this includes motivation based on fitness, social engagement, and enjoyment (S. A. Jones et al., 2020). However, it must be acknowledged that people, specifically those living with mental illness, move on the continuum between external and internal motivation (Figure 1.3) with regard to their relationship with exercise (Vancampfort, Stubbs et al., 2015).

1.6.2 *Transtheoretical Model*

This ever-changing motivation in people's relationship with exercise can be assessed through other models, such as the transtheoretical model (TTM). The TTM is a model commonly used in health care that identifies predictive behaviours and has been used to structure physical activity interventions (Bezyak et al., 2011). The TTM is based on the concept that individuals move through stages of change (Table 1.1) that correlate with motivation levels, when working towards a desired behaviour change (Friman et al., 2017). The stages of change are based on the person's current intentions and engagement regarding the desired behaviour change, and range from precontemplation (no intention to start the

behaviour) to maintenance (being involved in the behaviour for more than six months)

(Romain & Abdel-Baki, 2017).

Table 1.1

Stages, Process, and Cognitive and Behavioural Processes of TTM

Stage	Process	Cognitive process of change	Behavioural process of change
Precontemplation	No interest in changing behaviour	Consciousness raising—efforts to look for information about a problem	Self-liberation—committing to change
Contemplation	Starting to think about changing behaviour	Dramatic relief—emotional aspect of behaviour change	Helping relationships—using social support for behaviour change
Preparation	Planning to make a change within a month	Self-re-evaluation—appraisal of the impact of the behaviour	Counter-conditioning—replacing unhealthy behaviour with healthy behaviour
Action	Recently changed their behaviour	Environmental re-evaluation—perception of behaviour on individual's social and physical environment	Reinforcement management—using reinforcement and reward for healthy behaviour
Maintenance	Maintained behaviour for more than six months	Social liberation—recognising social norms that support behaviour	Stimulus control—adapting the environment to support health behaviour

When someone is working through a behaviour change, the TTM focuses on both the stage and process of the change for the individual (Bezyak et al., 2011; Romain & Abdel-Baki, 2017; Table 1.1), which are determined from decisional balance, self-efficacy, and experiential theoretical constructs (Romain & Abdel-Baki, 2017). The decisional balance is

based on the perceived benefits of the behaviour change and self-efficacy, being one's view

of their own capabilities (Romain & Abdel-Baki, 2017). One's stage of change will

determine the cognitive and behavioural processes required (Friman et al., 2017), and these

can be influenced by the strategies implemented, referred to as experiential (Romain &

Abdel-Baki, 2017). Throughout the process, individuals may relapse (Friman et al., 2017),

where they will then recycle through the stages and processes.

For the TTM to successfully address physical activity, it is essential for the individual

to recognise the benefits of physical activity, have high self-efficacy and implement the

processes of change (Romain & Abdel-Baki, 2017). According to the TTM, individuals

living with mental illness need to see the benefits of physical activity, be confident in their

ability to change, and focus on the methods and strategies of change to engage and continue

with physical activity (Bezyak et al., 2011; Romain & Abdel-Baki, 2017). The TTM has been

used to investigate the relationship between individuals living in rural communities and

physical activity (Kocoglu-Tanyer et al., 2021). When adults living in rural areas address

physical activity, the TTM has shown that the perceived benefit of exercise has a positive

correlation with perceived self-efficacy, whereas the perceived cost of exercise has a negative

correlation with self-efficacy (Kocoglu-Tanyer et al., 2021). However, implementing

physical activity interventions in rural areas is challenging, because cultural and individual

characteristics need to be considered (Kocoglu-Tanyer et al., 2021). While the TTM focuses

on the interest and motivation of individuals (Kocoglu-Tanyer et al., 2021), the importance of

the community as a whole cannot be disregarded.

1.6.3 *Co-design Models*

'Community' can have many definitions (e.g. people of the same interest group or

social context; K. J. Kelly et al., 2003). The term has also been falsely used to suggest the

inclusiveness of the community in development programs, often used as a quick-fix solution

for a variety of social concerns (Head, 2007). Regardless of which definition of 'community' is used, there are many challenges to addressing social and economic issues. Cultural norms, resources and political climates vary between communities (Edwards et al., 2000), highlighting the importance for researchers to understand the community they are working with.

Connection to community is a main facilitator of physical activity for those living in rural and remote regions (Pelletier et al., 2020). Contribution to community significantly impacts the wellbeing of people living in rural and remote regions, with personal factors, life events and social support being the highest predictors of one's wellbeing (B. J. Kelly et al., 2011). Of those, social support has repeatedly been found to have a strong correlation with the wellbeing of locals in rural and remote regions (Kutek et al., 2011). This reinforces the importance of using pre-existing local groups, rather than individual approaches, when promoting mental health in rural and remote regions (Kutek et al., 2011). This is particularly relevant for those who are less likely to engage in formal health services (Kutek et al., 2011).

However, even when physical activity programs are implemented in rural and remote regions, there is often no program follow-up implemented (Pelletier et al., 2020). There is also limited use of evidence-based models to guide the use of strategies to implement programs (Pelletier et al., 2020). Consequently, the documented success of outcomes for physical activity interventions in rural areas has been varied (Deniz et al., 2021). For community members to gain the long-term benefits of health behaviour change, programs must be sustainable (Seymour et al., 2022). This emphasises the need for programs to be individually developed, based on the community (Pelletier et al., 2020) through engaging the community.

The lack of understanding between researchers and communities can result in research waste (Slattery et al., 2020). To ensure research efficiency, collaborative approaches

such as co-design should be used within smaller, disadvantaged communities (Liamputtong, 2020). The term 'co-design' is commonly used in healthcare settings to support a collaborative approach between service providers and the lived experience of the local residents (Binder et al., 2022). By using co-design, interventions are more likely to be culturally appropriate for individual communities, encouraging community ownership and the increased longevity of the intervention (Edwards et al., 2000).

Co-design studies have been used internationally for rural mental health research through community-built approaches (Barnard et al., 2004; Barry et al., 1999), and for participatory action research (Bryant et al., 2015; Chomat et al., 2019; Stacciarini et al., 2011; Thirlwall & Whitelaw, 2019). Community-built approaches are based around a needs assessment and collaboration with the community to determine the outcome (Schultz-Krohn & Tyminski, 2018). This ensures combined expertise from both the researchers and the community, similar to a client-centred approach (Schultz-Krohn & Tyminski, 2018). A community-built environment has been successful in promoting social equity with a holistic approach to improving the health of various social groups (Zheng et al., 2022).

Participatory action research (PAR) has also been conducted by social groups in conjunction with researchers using a cycle of planning, action and examining the results of the action (Jacobson, 2008). As part of this cycle, participants in PAR become co-researchers, with the researchers using their expertise to guide the participants in self-research (Liamputtong, 2017). Throughout the process, participants are not only involved in the research and enquiry, but also in the action to address the issue, along with the continuous evaluation and modification of the action (Liamputtong, 2017). In doing so, there is a focus on collaboration with a commitment to social justice (Liamputtong, 2020).

To ensure this commitment, PAR has three main foci:

1. ensuring the ownership and production of knowledge among the people being researched
2. producing knowledge and action that directly impacts a group of people resulting in empowerment to use their own knowledge
3. researchers must genuinely be committed to the people being researched.

Through the use of PAR, the community can be empowered and assisted to change their lived situation. To achieve community empowerment, community engagement and participation is essential (Russell et al., 2023). Community engagement includes the individuals, their support structures and social networks, organisations providing relevant services to individuals, and relevant community stakeholder relationships (Wilson & Sanyal, 2013). This encourages the use of community researchers; lay persons assisting with research in their local communities (True et al., 2017). Local researchers provide an insider's point of view by sharing their own personal experiences with the research team and the sample population, to assist in developing trust between the research team and the community (True et al., 2017). Community engagement consists of community participation, during which the community develops an enhanced awareness of social concerns and is encouraged to take on responsibility for the intervention (Wilson & Sanyal, 2013). This process can develop community empowerment whereby individuals and groups within the community can influence one another (Wilson & Sanyal, 2013) to address social concerns. However, communities vary in their level of engagement and readiness to even acknowledge social concerns. This level of readiness can significantly influence the success of implementing an effective intervention that is supported by the local community (Edwards et al., 2000).

1.6.4 *Community Readiness Model*

The community readiness model (CRM) is an evidence-based model that was developed in 1994 at Colorado State University based on the TTM. It aims to build on and recognise the capacity and strengths of communities to make health behaviour changes

(Plested et al., 2009). The CRM can be applied to any type of community (e.g. geographical, organisational), and can address a wide range of social issues (Plested et al., 2009). The model assesses the community readiness to address social issues, acknowledging the stages of change regarding the health behaviour (K. J. Kelly et al., 2003). There are seven steps in the CRM:

1. identify your issues
2. define your target community
3. conduct a community readiness assessment
4. analyse the results using a quantitative score and qualitative information from interviews
5. develop strategies that align with the community's readiness score
6. evaluate the effectiveness of the strategies
7. use the model to address other issues.

The CRM was founded on three pre-existing models, with the two research concepts of individual psychology for readiness and community development (Slater et al., 2005). The individual psychology was based on the TTM developed by Prochaska and DiClemente (1983), along with the personal stages of readiness: precontemplation, contemplation, preparation, action and maintenance. The community development was built on theories by Rogers (1995) and Warren (1971).

Rogers's (1995) five-stage process was created to examine how individuals or groups adapt to interventions. The stages include knowledge, persuasion, decision, implementation and confirmation. The social action process advanced by Warren (1971) was developed for group change, and established the stages required to ensure a collaborative approach at a community level. The stages consist of stimulation of interest, initiation of problem definition, legitimisation of the problem from group leaders, decision to act and action (Warren, 1971). However, these models do not recognise the multidimensional process

required for groups to make decisions and to consequently make changes. The researchers at the Tri-Ethnic Centre at Colorado State University used these concepts to develop the CRM.

The CRM is based on four main assumptions:

1. Communities vary in their stage of readiness.
2. The stage of readiness can be assessed.
3. Communities move between stages of readiness.
4. Stage of readiness must be identified, to apply appropriate interventions.

The CRM is structured on the premise that unless a community is ready, any intervention started would likely fail (Edwards et al., 2000). Psychological readiness is based on one's perceived discrepancy regarding expectations of what it should be, and the reality of what it is (Oetting et al., 1995). There are nine stages of readiness, as shown in Table 1.2 (Plested et al., 2009).

Table 1.2

Stages of readiness

Stage	Description
1. No awareness	The social issue is not acknowledged by the community as a problem (despite statistical data).
2. Denial/resistance	Some community members realise the social issue is a concern, but don't realise it's happening locally.
3. Vague awareness	Most community members feel there is a concern, but are not motivated to action.
4. Preplanning	The community realises that the social issue needs to be addressed, however efforts are not detailed.
5. Preparation	Leaders are active in planning to address the social issue. The community is slightly interested.
6. Initiation	Information gathered supporting the efforts, and activities have commenced.
7. Stabilisation	Activities for the social issue are supported by community leaders. Staff are upskilled and efforts are stable.
8. Confirmation/expansion	Efforts to address the social issue are established with the potential to expand. Community members use the services and local data is regularly evaluated.
9. High level of community ownership	High level of understanding about the social issue. Evaluation guides the next steps. The model is applied to other issues.

Using the CRM, one can assess the level of community readiness for various prevention and social programs (Edwards et al., 2000). The CRM process (Figure 1.4) aligns with co-design in guiding the community towards engagement, participation and empowerment (Figure 1.5). To implement community engagement, the CRM encourages

locals to define the community and partake in the interviews (Plested et al., 2009). This

progresses to community participation, with the CRM encouraging locals to assist in

developing strategies and conducting workshops (Plested et al., 2009). During this time, it is

assumed that the community will develop an awareness of the social issue and take

responsibility for the interventions (Plested et al., 2009). The final component is community

change, resulting in community empowerment where individuals and groups in the

community can address concerns independently (Wilson & Sanyal, 2013). Community

empowerment increases the longevity of an intervention, resulting in community change.
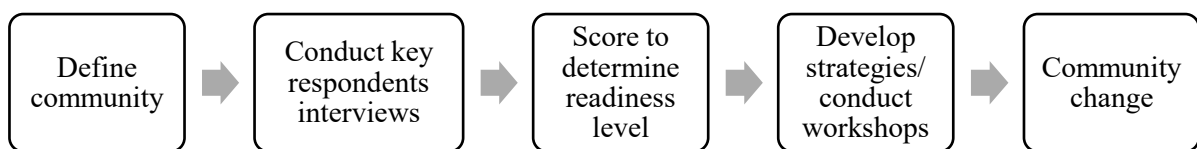
Figure 1.4. Process for Using the CRM

Figure 1.5. Stages of Co-design that Align with the CRM

To achieve community engagement, participation and empowerment, the CRM uses

semi-structured interview questions categorised into open-ended questions and closed

questions that can be measured using a Likert scale. The scoring of the interview answers

determines the community's level of readiness. The different dimensions examined in the

semi-structured interview are community efforts (programs, activities, policies), community

knowledge of efforts, leaders (how much of a concern is mental health to community

leaders), community attitude to the social issue and resources for prevention (time, money,

people, space; Plested et al., 2009).

Strategies created using the information obtained from the semi-structured interviews can guide the development, implementation and evaluation of interventions that are culturally appropriate for each community and their relevant social issue (K. J. Kelly et al., 2003). Strategies for the first four stages (from no awareness to preplanning) focus on raising awareness of the issue in the community, preparation and initiation refer to collecting information regarding the issue in a local context, and the final stages (from initiation to community ownership) include staff training, self-evaluation and revision of programs (Donnermeyer et al., 1997). This research project will explore community engagement through the use of the CRM to address mental health through physical activity for a remote Australian community.

1.7   Statement of the Research Problem and Significance of the Research

The Australian Government has a history of significant financial investment in addressing the poor physical and mental health of people living in rural and remote areas (Australian Institute of Health and Welfare, 2018a). Because of the bidirectional relationship between physical and mental health, and the known mental health benefits associated with regular physical activity, this research project focuses on physical activity to address community mental health. The rural communities of Australian do not need more innovative services to address mental health through physical activity. A structured evidence-based approach to improve outcomes with a health system that responds to rural health needs (Wakerman & Humphreys, 2019) is recommended. However, these needs can only be determined by engaging the local community, ensuring that interventions are culturally appropriate. It is well known that for primary health care to be effective, a significant amount of input from the community is required (Wakerman & Humphreys, 2019).

In 1994, the first National Rural Health Strategy realised the need for models that were individualised for rural communities (National Rural Health Alliance, 1994). However,

nearly 30 years later, there is still no evidence-based theory that involves the community in the development and design of interventions to addresses the physical and mental health of rural Australians. Even on a global scale, and only looking at mental health, there are limited studies that involve rural communities in the development and design of interventions (Russell et al., 2023). Of those studies, none have been conducted in Australia or have followed a structured model (Russell et al., 2023), despite funding for the development of programs for Australian rural communities. There is extensive literature supporting models that can be adapted, however no models have been implemented in national strategies to support local success and to guide the development of national healthcare systems (Wakerman & Humphreys, 2019).

The success of an intervention depends on whether the community is ready to address a social issue (Oetting et al., 2001). Unsuccessful programs may not be due to the design, but may simply be attributable to them being implemented before the community was ready to accept that the issue was prevalent (Donnermeyer et al., 1997). Community readiness is highly applicable to health service delivery, and has previously been used to strategically address substance abuse, health and nutritional issues, and social and environmental issues (Oetting et al., 2001). Considering the stigma surrounding the possible diagnosis of a mental illness in rural communities, Brown (2017) highlighted the importance of determining the readiness of rural communities to address community mental health.

The readiness of a community to address an issue can be determined through the use of the CRM, and by engaging the community to ensure that interventions are strategic and appropriate. Strategic interventions are essential to successfully address the physical and mental health of rural Australian communities, ensuring intervention longevity. This process of community engagement supports the progression to community participation and

empowerment. However, currently, there is no research that employs the CRM to address the physical and mental health of rural Australians.

This research project will implement community engagement using the CRM for the physical and mental health of adult Australians living in a remote community. In this research project, steps one to three of the CRM will be conducted (Figure 1.4), and the CRM assessment will be analysed. This process of community engagement will provide insights into the rural and remote community's level of readiness. These insights will be gained through quantitative scoring and the themes developed from the qualitative data. Recommendations will be made to address community mental health through physical activity, encouraging the community to take on the responsibility for the intervention. This aligns with community participation, furthering the community's awareness of the benefits of physical activity for community mental health.

1.8 Aim

The aim of this thesis is to understand community engagement for physical activity to address mental health. Specifically, this thesis has the following objectives:

Objective 1: To examine how community engagement, participation and empowerment addresses the mental health of adults living in rural communities.

Objective 2: To explore the community's level of readiness to engage in a physical activity intervention to address community mental health of Australian adults living in remote communities.

Identifying and defining 'mental health' and 'physical activity' is subjective for each person. Because of the stigma surrounding mental health in remote communities (National Rural Health Alliance, 2017), and the scope of practice of the researcher as an Exercise Physiologist, the focus of this study is physical activity, with community mental health as a by-product.

2 Methodological Approach

2.1   Chapter Overview

This chapter discusses the methodological approach to this research. This is addressed by situating the researcher within the thesis and by providing the research methods for each objective of the project. The literature review is discussed in Objective 1, and Objective 2 explores the methods undertaken to determine a community's level of readiness to engage in physical activity to address community mental health.

2.2   Situating the Researcher

I am an Accredited Exercise Physiologist (AEP) currently working for Murtupuni Centre for Rural and Remote Health in the remote region of Mount Isa in North West Queensland. Clinical Exercise Physiology goes beyond working with people to improve their physical health. Our scope of practice extends to evidence-based exercise interventions with high-risk clients who have many medical complexities, and chronic conditions. Accredited Exercise Physiologists explore both the client's physical health and mental health to deliver holistic care and to assist with behaviour change.

Working in a remote location as an allied health professional and having grown up in a remote region myself gives me a unique perspective on this research. I am neither an insider nor an outsider, both a service user and service provider. Being in this position was a strength for the research. When talking with local residents, I was familiar with the situation from a service user perspective, and I could also understand issues from a service provider standpoint. My background of living and working in remote communities for the majority of my life helped to reduce the power imbalance between participant and researcher.

From my professional knowledge, I understand that physical activity improves mental health. From my personal knowledge, I am aware that people living in rural communities do

not usually talk about mental health or seek help. I have also experienced the health inequity associated with living in rural and remote regions, as have many of my clients, friends, and family. There are constant daily reminders of the impact of poor physical and mental health in rural and remote regions.

Government bodies also acknowledge this, with programs encouraging a 'community-based' approach in rural communities. However, programs only provide short-term solutions to meeting organisational requirements, and the lack of consultation is insulting to these communities. My personal values gained from living in rural communities strongly support community engagement, as does the literature. However, the literature is limited in terms of evidence-based models that support community engagement to address mental and physical health in rural Australia.

In 2019, I began the journey to undertake research. This pushed my professional and personal boundaries. After learning that research can address concerns at a policy level, I began my Master's in Philosophy part time. Alongside working as an AEP in Mount Isa, I have explored community engagement in rural Australian communities with regard to the use of physical activity to address the mental health of adults.

Upon completion of my master degree, I plan to enrol in a doctorate to develop a model for evidence-based practice to support the funding of programs that engage and empower communities. The model will be culturally appropriate and promote the longevity of programs to address mental health through physical activity.

2.3   Research Methods

In the health sciences, research is defined as 'a planned activity that results in the construction of new knowledge which can be used to provide answers to some health problems or as evidence for health care' (Liamputtong, 2017, p. 30). The research process is cyclical and consists of several stages, as seen in Figure 2.1. The process begins by

developing a research question through identifying a gap in knowledge about health. A literature review is conducted to confirm the gap in knowledge. A suitable research design and strategies for participation recruitment is determined. Once all ethical issues are addressed, data collection and analysis may occur, with the results being disseminated to the appropriate audience. The findings can then be implemented into evidence-based practice.
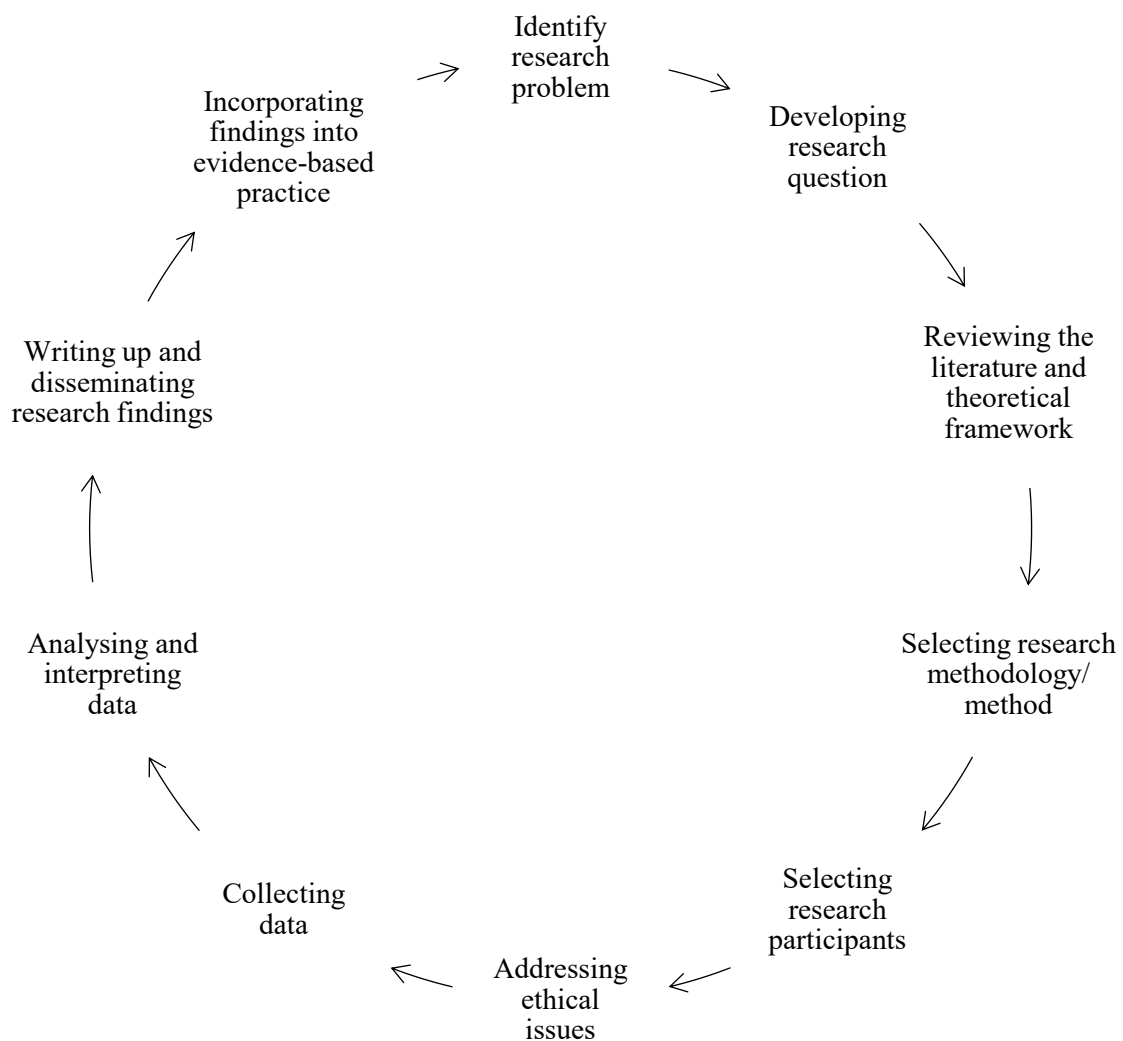
Figure 2.1. Cyclical Stages of a Research Project (Liamputtong, 2017)

2.3.1   *Identifying the Research Problem*

Research problems are commonly identified areas of concern based on lived experiences where there is a knowledge gap requiring a solution (Liamputtong, 2017). The

research problem identified in this thesis was developed through the researcher's professional and personal experience. Determination of the research problem was guided by the population, intervention, comparison and outcome (PICO) framework, as seen in Table 2.1 (Palaskar, 2017), allowing the researcher to delve into the unknown and contribute to healthcare practice (Liamputtong, 2017).

Table 2.1

PICO for Identifying the Research Problem

P (Population)	Adult rural cohort (over 18 years)
I (Intervention)	Community engagement intervention
C (Comparison)	Design, development, and implementation
O (Outcome)	Improved physical and mental wellbeing

2.4 <u>Objective 1</u>: To examine how community engagement, participation and empowerment addresses the mental health of adults living in rural communities.

2.4.1 *Reviewing the Literature and Theoretical Model*

To refine the research problem and to determine any pre-existing literature, a systematic literature review was completed. The publication is shown in Chapter 3 of this thesis. Literature reviews are central to academic research. Any progress in research must be built on pre-existing knowledge (Liamputtong, 2017; Xiao & Watson, 2019). The purpose of a literature review is to serve as a background review, allowing researchers to analyse the current knowledge of a topic and to justify the study of that topic (Liamputtong, 2017; Xiao & Watson, 2019). The researcher is able to evaluate the existing research by analysing related literature. In doing so, the researcher is able to determine what is known about the issue, the concepts and theories, the research design and methods, any unanswered questions, other key researchers, and how the literature ties in with the topic (Liamputtong, 2017). Literature reviews need to be valid, dependable, and replicable (Xiao & Watson, 2019). These values are components of a systematic literature review, the highest level of evidence in all research designs (Liamputtong, 2017).

A systematic literature review is a well-known component of academic research used to identify current work and to determine gaps within research areas (Xiao & Watson, 2019). Systematic reviews are often used in areas of health to include research from a variety of

studies, providing an objective summary of the literature (Liamputtong, 2017). To ensure objectivity, the risk of bias can be minimised in a systematic literature review by transparent reporting and verifying that it can be replicated by following a documented procedure (Liamputtong, 2017). Systematic reviews follow a strict protocol, with well-structured methods, to certify that the topic is fully covered (Liamputtong, 2017). To ensure transparency and clarity, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement was used to guide this review (Moher et al., 2011).

2.5 <u>Objective 2</u>: To explore the community's level of readiness to engage in a physical activity intervention to address community mental health of Australian adults living in remote communities.

2.5.1 *Selecting the Research Methodology*

The CRM was chosen as the model to guide this study to address mental health through physical activity within the community because of its individualised culturally appropriate structure. For this study, the CRM was adapted from the original document (Plested et al., 2009) to ensure its relevance to physical activity and mental health in remote areas. The CRM has previously been implemented to address suicide prevention (Edwards et al., 2000) and physical activity (Brand et al., 2016; Ehlers et al., 2013; D. L. Jones et al., 2012; Wells et al., 2019), with one study looking at rural locations (Gansefort et al., 2018).

To determine the level of readiness of a community (Table 1.2), an anchored rating technique was adapted, creating a multidimensional model that includes the stages of development (Edwards et al., 2000). Anchor ratings have a successful history in industrial psychology and can be used to assess psychotherapist traits (Edwards et al., 2000). The model developed for the CRM uses a Delphi procedure to create anchored ratings (Oetting et al., 2001). The final data from the CRM is anchored and averaged out along a continuum, aligning with the nine stages of readiness (Table 1.2) (Donnermeyer et al., 1997).

To support the quantitative scoring, the researcher analysed the answers from open-ended questions using a qualitative approach. The fluid approach of qualitative research allows researchers to hear and share the voices of marginalised groups, or to discuss topics that are usually ignored (Liamputtong, 2020). The open-ended questions addressed multiple factors within the community and revealed the community's views on physical activity programs for mental health. The researcher was able to focus on the social situations through the subjective lens of the participants living in the day-to-day reality, creating an interpretative and flexible lens (Liamputtong, 2020). The lack of research using community engagement to address mental health in adults in rural areas (Russell et al., 2023) highlights the importance of understanding qualitative data obtained from the CRM.

When working with limited resources to obtain relevant information directly from adults living in rural and remote regions, qualitative descriptive research is the most appropriate research approach (Bradshaw et al., 2017). By using a qualitative descriptive research approach, the researcher was able to examine physical activity and mental health in the natural state, and to seek factual responses from the community (Colorafi & Evans, 2016). Qualitative descriptive research is especially appropriate in health environment research, since the view on the social context is developed from the factual information provided by the participants (more specifically, from marginalised groups) (Colorafi & Evans, 2016).

Qualitative descriptive research attempts to understand the social setting perspective of those involved, as opposed to other methodologies where the sole focus is on the culture, lived experience or developing a theory (Bradshaw et al., 2017). The CRM was able to be used to gain such an understanding in this study, acknowledging that communities are fluid in their social contexts; consistently changing, adapting and growing (Edwards et al., 2000). Qualitative descriptive research can help to understand the phenomenon through shared

participant stories and enables us to gain a deeper understanding of the issue's context (Bradshaw et al., 2017; Colorafi & Evans, 2016). This premise was supported by the CRM, since it allowed the researcher to develop an understanding of the phenomenon of physical and mental health in a rural and remote context, based on the information provided by the participants (Bradshaw et al., 2017).

The information provided was based on the subjective view of each participant on physical activity for mental health, meaning that the information obtained from the participants would be based on their own realities, aligning with natural inquiry (Bradshaw et al., 2017). Naturalistic inquiry often aligns with qualitative descriptive research because the information that participants share is in their natural context (Bradshaw et al., 2017; Colorafi & Evans, 2016). Naturalistic inquiry supports that realities (for this study, views on physical activity for mental health) are moulded when one's consciousness is combined with objects that have meaning for individuals (Bradshaw et al., 2017). Therefore, the information obtained in the CRM varied based on each participant.

To analyse the information derived from the CRM in this study, thematic analysis was used as an independent approach to the qualitative descriptive research, and is defined as 'a method of identifying, analysing and reporting patterns (themes) within data' (Braun & Clarke, 2006 p. 79). Thematic analysis is commonly used in qualitative descriptive research as it allows the researcher to describe the individual's experiences in their own words (Willis et al., 2016). The researcher can use several interviews to identify themes through a flexible, yet rich and detailed analysis of the data (Vaismoradi et al., 2013). Additionally, both thematic analysis and qualitative descriptive research are based on the view that the data is accurate and identifies the true reality (Sandelowski, 2010). Thematic analysis is commonly used in research on sport and exercise (Braun & Clarke, 2019), and in psychology research

(Braun & Clarke, 2006); therefore, it has logically has been applied this study on physical activity for mental health.

2.5.2 *Selecting Research Participants and Addressing Ethical Issues*

The participants in this study were purposefully selected, with the CRM suggesting a mixture of people who represent varying community segments (Plested et al., 2009). Purposeful sampling is used in qualitative research for the depth of information that selected participants can provide (Liamputtong, 2020). When addressing social issues, key members of the community can greatly influence the acceptance or rejection of an intervention (Oetting et al., 1995), and it is common for members in communities to decline to participate in research (Donnermeyer et al., 1997). Key informants have shown to be effective in assessing community characteristics (Oetting et al., 1995), as a consequence of their knowledge of local viewpoints (Donnermeyer et al., 1997). The CRM uses the knowledge of local key informants to identify the community's readiness to undertake behaviour change while considering the culture, social constructs, and the available resources (Wells et al., 2019).

To access key informants, participants were initially recruited through a community champion (a well-respected community member and former health professional) via the distribution of an information sheet (Appendix B). The National Health and Medical Research Council requires that participant information sheets and consent forms should be written in plain language of school grade eight equivalent or below (Symons & Davis, 2022). The Flesch–Kincaid Grade Level is a readability test commonly used in health literacy and is based on sentence length and word complexity, with 8.0 indicating the expected literacy level of an eighth grader in the United States (Sobolewski et al., 2019). Therefore, the information sheet readability scored a Flesch–Kincaid Grade Level of 8.0. In addition to the information

sheet distributed by the community champion, the researcher contacted personal and professional networks.

From the information provided prior to the interviews, all participants willingly contacted the researcher to partake in the study. The CRM recommends using a minimum of six participants within the community (Plested et al., 2009), and seven participants consented to taking part in the present study. All participants were informed about where their information would be stored and how it would be used, and were assured of the anonymity of the interviews. The confidentiality of the interview recordings and transcripts was a significant priority, because of the heightened concerns regarding privacy in rural and remote regions (Fennell et al., 2018).

Research ethics involves finding the appropriate balance between the risks and benefits associated with the study (Liamputtong, 2017). Health researchers rely solely on participants that willingly contribute to the research; therefore, researchers must conduct their research in a way that supports this relationship (Liamputtong, 2017). This study was conducted in accordance with the National Statement of Ethical Conduct in Human Research with an emphasis on ethical principles, respecting autonomy, beneficence, non-maleficence and justice (Australian Government et al., 2018).

To ensure that the participants' autonomy was respected, they were informed that they had the right to withdraw from the study at any time prior to the transcription of their interview, and they verbally consented at the beginning of the interview. Beneficence is the obligation to provide benefits for the public good (Liamputtong, 2017), and in accordance with this, the participants were informed of the reason for the interview and were invited to ask questions throughout. To reduce the risk of causing harm, it is essential in qualitative interviews to inform participants about the study, protect interviewees' information and minimise exploitation (DiCicco-Bloom & Crabtree, 2006). Since mental health is a sensitive

topic, particularly in rural and remote regions (National Rural Health Alliance, 2017), and the researcher was an AEP, it was decided that the focus of the interviews would be on physical activity, with the by-product being improved mental health. The information sheet provided the contact number for Lifeline and details regarding the nature of the study (Appendix B), aligning it with the concept of justice where benefits, risks and costs are equitably distributed (Liamputtong, 2017).

2.5.3 *Collecting Data*

Because of the sensitivity around mental health issues within remote communities (National Rural Health Alliance, 2017), individual interviews were conducted to allow personal and social concerns to be discussed more freely (DiCicco-Bloom & Crabtree, 2006). The interviews were in-depth whereby the researcher facilitated the conversation, and the participants were the main converser (Liamputtong, 2017). This allowed the researcher to discover an insider perspective on physical activity for mental health in the remote community. To ensure that rich data were gathered, the CRM semi-structured interviews allowed for specific information to be discussed, while also permitting the participants to elaborate if desired (Liamputtong, 2017). Sampling continued until data saturation occurred, where no new themes were being developed from the interview questions (Liamputtong, 2020).

The question dimensions in the CRM semi-structured interview were developed by researchers and prevention program practitioners, acknowledging that community-based programs involve several dimensions of social issues (Donnermeyer et al., 1997). These dimensions include community efforts with regard to the social issue and the knowledge surrounding the efforts, leadership for the social issue, community attitude towards the social issue, knowledge about the issue, and resources for prevention efforts (Plested et al., 2009). The semi-structured interview questions (Appendix A) for this study were guided by the

supervisory team, one of which had employed the CRM in a similar setting addressing mental health through physical activity in a rural community (Wells et al., 2019). The adaptations included the use of the town name and local vernacular.

Adapting linguistic choices based on the participants is recommended to create a comfortable and non-judgemental environment (Liamputtong, 2017). Other strategies included using open-ended questions, active listening, monitoring the use of jargon, and not assuming knowledge or using leading questions (Liamputtong, 2017). On completion of the interviews, participants were provided with an opportunity to ask the researcher questions.

The interviews were audio-recorded and were conducted to face to face and via technology (Zoom and telephone). Because of the geographical spread of the participants, providing online options was a practical and cost-effective approach. Online interviews have both advantages and disadvantages. While some may believe that online interviews can hinder rapport and interactions between participants and the researcher, other participants are more likely to open up to researchers when online (Liamputtong, 2020). Online interactions also provide confidentiality of participation from within the community, which is a common concern in rural and remote communities (Fennell et al., 2018).

2.5.4   *Analysing and Interpreting Data*

On completion of the collection of both the quantitative and qualitative data according to the CRM, the interviews were transcribed by the researcher. Transcribing the interviews allowed the researcher to review their own interviewing style, and emotional and social aspects could be revisited by listening to the interviews, furthering the analysis of the data (Liamputtong, 2020). The interviews were transcribed verbatim, allowing the researcher to make sense of both the quantitative and qualitative data (Liamputtong, 2020).

The data analysis of the CRM assessment consisted of two parts: quantitative scoring of the level of readiness and thematic analysis from the interviews. An Excel document was

used for the quantitative scoring. NVivo software was used to facilitate the data analysis through displaying text, developing codes, retrieving coded text and viewing the context of the original document (Liamputtong, 2020).

The first part consisted of scoring the community's level of readiness regarding physical activity for mental health. Two researchers worked independently of each other. As per the CRM manual, the researchers read the entire interview, before going back to score the interview (Plested et al., 2009). The anchor rating (1 to 9) was used in each dimension, ranging from no awareness through to a high level of community ownership of the social issue (Plested et al., 2009). Because of the fluid nature of the semi-structured interviews, some information provided by the participants may have been related to other dimensions of the interview. The researchers met and discussed their individual scores to determine an average score for each dimension, as per the CRM manual.

For the second part, the research candidate used thematic analysis of the answers to the open-ended questions. Thematic analysis is based on the analytical interest in physical activity for mental health (Braun & Clarke, 2006), and was therefore applied in this study. Thematic analysis is an independent qualitative descriptive research approach that identifies, analyses and reports patterns within the data, ensuring a detailed account of the data (Vaismoradi et al., 2013). Thematic analysis is recommended for qualitative research, specifically qualitative descriptive research, ensuring a reliable analysis method (Bradshaw et al., 2017; Vaismoradi et al., 2013). Thematic analysis enabled the research team to both identify and interpret key components from the interviews (Clarke & Braun, 2017). Additionally, the CRM aligns with theoretical thematic analysis, since thematic analysis allows the researcher to identify common themes over the entire interview (Vaismoradi et al., 2013).

The themes are the key characters in the story of the data, and are the main concepts derived from the observations (Clarke & Braun, 2018). Creating themes is based on a central concept (Clarke & Braun, 2018) and involves grouping data from the research based on common issues and meanings (Liamputtong, 2017). Emerging themes were based on the transcribed interviews, allowing for a reflection to ensure that the raw data was interpreted accurately (Liamputtong, 2017). This reflective practice minimises external bias, ensuring appropriate rigour (Liamputtong, 2017).

2.5.4.1 Rigour. Since qualitative research is socially constructed, the realities cannot be measured or tested for validity (Liamputtong, 2020). To ensure a high quality of data, qualitative research focuses on credibility, transferability, dependability, and confirmability (Bradshaw et al., 2017). Credibility is the fit between the participant views and how the researcher represents those views (Liamputtong, 2020). Dependability is the ability to replicate the research in various settings (Liamputtong, 2017). Confirmability shows that the data produced is true and not influenced by researcher bias (Liamputtong, 2020). Transferability is the generalisation of the findings and whether they can be applied in different settings (Liamputtong, 2020). The criteria addressing the various questions and actions used to support this study are shown in Table 2.2 (Bradshaw et al., 2017; Liamputtong, 2020).

Table 2.2

Actions to Support Rigour in This Master's Study

Criteria	Question	Actions to support
Credibility	Does the explanation fit the description and is the description credible?	Reflexivity, establish rapport, develop a trusting relationship, prolong the engagement, express compassion and empathy during interviews
Dependability	Will the research methods be consistent over time?	Audit trail describing study procedures, account for changes in study
Confirmability	Are the findings influenced by researcher bias?	Reflexivity, description of participant demographics, findings represent data shown in direct quotes from participants
Transferability	Can the findings be replicated in other settings?	Purposeful sampling, providing sufficient study details, rich description

2.5.4.2. Credibility. Because of the researcher's professional and personal experience, reflexivity was essential to ensure that the information provided by the participants was accurately represented. Reflexivity allowed the researcher to undergo critical self-reflection regarding how their social background, assumptions and behaviour would impact the research (Bradshaw et al., 2017). The difference between the researcher's perspectives and their experiences makes the research more meaningful (Liamputtong, 2020). When combined with critical self-reflection, the researcher's background makes their research more credible (Liamputtong, 2020).

In addition to the researcher's background highlighting the need for reflexivity, their professional and personal experiences aided in establishing rapport, developing a trustworthy relationship and prolonging their engagement with the community. This had already been occurring naturally in previous interactions with the community as a consequence of the researcher's working history and residence location. This allowed the researcher to develop

an in-depth understanding of the culture and to gain the trust of the local community members and stakeholders, furthering an understanding of the context of the phenomenon (Guba & Lincoln, 1985). These previous relationships facilitated the expression of compassion and empathy during the interviews.

2.5.4.2 Dependability. Dependability was achieved through the use of audit trails. Audit trails are often used with qualitative data to confirm the research process and to gain insight into the decisions made by the researcher (Liamputtong, 2020). The use of an audit trail was supported by research documentation, written communication, raw data, and analysis. The study design and process were documented following consultation with the advisory team. Ethics approval was also obtained for this study.

Records were kept on the recruitment and interview processes. Audio recordings of the interviews and consent were retained, along with the interview transcripts. Data analysis was completed using NVivo software as the data management tool. All data was backed up on James Cook University–approved platforms: Microsoft OneDrive and two separate hard drives.

2.5.4.3 Confirmability. To minimise researcher bias, reflexivity was implemented throughout the data analysis process. Participant quotes were used verbatim in the findings, limiting misinterpretation from both the researchers and the readers. Because of confidentiality issues, the only participant demographics recorded were their age range (over 18 years old) and location (rural and remote region in Australia). The stigma surrounding mental health in rural and remote regions (National Rural Health Alliance, 2017) meant that the researcher was responsible for ensuring that the privacy of the participants was protected

when they described their private world (Liamputtong, 2020). When choosing quotes for the study, the researcher was conscious of ensuring that the participants could not be identified.

2.5.4.4 Transferability. Transferability was achieved throughout this study from the structured use of the CRM. The CRM specifically describes the requirements for participants and the way to construct the semi-structured interviews (Plested et al., 2009), allowing other researchers to replicate as required. To guide further replication of the study, a rich description is essential; however, maintaining confidentiality at the same time is a fine balance (Liamputtong, 2020). In all the research documentation available to the public, careful consideration was taken to remove all potential for direct or indirect identification of the location or people involved. This included the amended questions (Appendix A) that were guided by the CRM.

2.5.5 *Writing Up and Disseminating the Research Findings*

Qualitative research requires consideration of the audience and needs to be written accordingly, with formats, language and levels of abstract considered (Liamputtong, 2020). Both research papers in this thesis are applicable to all health professionals working in rural and remote locations, and one has been published and the second manuscript is under review in open access journals. The papers include a literature review (Chapter 3) and an implementation of the CRM in a rural and remote community (Chapter 4).

Despite the target audience being health professionals working in rural and remote regions, there is a high possibility that many readers of the research would be unfamiliar with the remote context. Therefore, a detailed description of the research process was essential to allow for transferability to appropriate settings for the readers (Liamputtong, 2020). To develop a detailed description of the process and to allow for a high level of interpretation of the phenomenon, verbatim quotes were used, permitting readers to interpret the results directly without researcher influence (Liamputtong, 2020), enhancing data triangulation.

2.5.6 *Incorporating Findings into Evidence-Based Practice*

As the primary target audience for this research is rural and remote health professionals, it is essential to ensure that the research findings are practical. Many healthcare services promote their use of evidence-based practice (EBP), which is defined in health care as 'a process that requires the practitioner to find empirical evidence about effectiveness or efficacy of different treatment options and then determine the relevance of the evidence to a particular client's situation' (Liamputtong, 2017). Using EBP ensures consumer, professional and government expectations are met, and that care is both clinically and cost effective (Liamputtong, 2017). To achieve EBP, systematic frameworks ensure clinical effectiveness (Liamputtong, 2017). Clinical effectiveness is achieved by using the health professional's expertise in clinical practice guidelines and systematic frameworks, while also acknowledging client preference (Liamputtong, 2017). This process is similar to that of community engagement.

Although rural and remote health professionals may implement client preference in their use of EBP, there is a lack of quality clinical guidelines on systematic models to achieve community engagement for physical activity to address mental health. To achieve EBP, five steps are recommended (Liamputtong, 2017):

1. ask an answerable clinical question
2. acquire the best available evidence
3. appraise the evidence
4. apply the evidence
5. assess the process.

This thesis by publication has addressed steps one to three. Steps one to three have been developed in articles, one published and another under review. Both articles will be available in an open access journal, ensuring that step four is addressed. The publications will be distributed to the local health workforce, allowing them to implement the systematic

CRM. On completion of this thesis, the researcher will continue to reflect on the process and identify ways to improve the efficiency of the process, thus fulfilling step five.

3 Publication One: Fostering Community Engagement, Participation and Empowerment for Mental Health of Adults Living in Rural Communities: A Systematic Review

Rationale

Systematic literature reviews are essential to determine the gaps within the literature to ensure researchers and health professionals are implementing evidence-based practice. Many literature reviews have been conducted on mental health in rural and remote communities. To date, none published review has addressed evidence-based strategies for community engagement, participation and empowerment. The lack of evidence-based strategies to guide health professionals on culturally appropriate community engagement strategies to address rural mental health is concerning, considering the physical and mental health disparities between remote and urban regions. In order to provide health professionals working in rural and remote regions evidence-based strategies for community engagement to address mental health, a systematic literature review was conducted. The finding of this published review will inform future research and support health professionals to empower rural and remote communities to address mental health.

Abstract

This literature review examined how community engagement, participation and empowerment were used in the development and implementation of interventions aimed at improving mental health of adults residing in rural communities. Databases CINAHL, EmCare, Google Scholar, Medline, PyschoInfo, PubMed and Scopus were systematically searched from database inception to July 2021. Eligible studies included adults living in a rural cohort, where community engagement was used to develop and implement a mental health intervention.

From 1,841 records identified, six met the inclusion criteria. Methods were both qualitative and quantitative, including participatory-based research, exploratory descriptive research, community-built approach, community-based initiative and participatory appraisal. Studies were located in rural communities of the United States of America (USA), the United Kingdom (UK) and Guatemala. Sample sizes ranged from six to 449 participants. Participants in the included studies were recruited via prior relationships, a project steering committee, local research assistants and local health professionals. All six studies underwent various strategies of community engagement and participation. Only two articles progressed to community empowerment where locals influenced one another independently. The underlying purpose of each study was to improve community mental health. The duration of the interventions ranged from five months to three years. Articles in the early stages of community engagement discovered there was a need to address community mental health. Studies where interventions were implemented resulted in improved community mental health.

This systematic review found similarities in community engagement when developing and implementing interventions for community mental health. Community engagement should involve adults residing in rural communities when developing interventions; if

possible, both with a diverse gender representation and a background in health. Community participation can include upskilling adults living in rural communities and providing appropriate training materials to do so. Community empowerment was achieved when the initial contact with rural communities was through local authorities and there was support from community management. Future use of the strategies of engagement, participation and empowerment could determine if they can be replicated across rural communities for mental health.

3.1 Introduction

The World Health Organisation (WHO) defines mental health as "*a state of health in which every individual realises his or her potential, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community*" (World Health Organization, 2018). Several components contribute to mental health, including social, psychological, and biological factors (World Health Organization, 2018), all of which can be influenced by one's geographical living location. The heightened burden of poor mental health in rural locations is evident. Despite the prevalence of mental disorders diagnoses being similar in urban and rural locations, suicide rates are 40% higher in rural communities (Brown, 2017).

The term 'community' is often inappropriately used throughout political processes (Head, 2007). The concept suggests engaging with the community to develop 'community based' programs; a 'quick fix' for many of economic and social concerns (Head, 2007). Moving forward, there have been recognised benefits to genuine engagement of community members (Head, 2007). When mental health is the focus, community engagement allows people residing in rural communities to contribute to their community, consequently impacting on one's mental health (World Health Organization, 2018).

Community engagement is commitment from the community that includes the individuals, their support structures and social networks, organisations providing relevant services to individuals, and relevant community stakeholder relationships (Wilson & Sanyal, 2013). The resultant community development strengthens social networks and capital learning to an enhanced awareness of social concerns and the community taking responsibility for interventions (Wilson & Sanyal, 2013). This develops community empowerment where people residing in rural locations can independently and collectively influence one another (Wilson & Sanyal, 2013) and contribute to their community. Along with contributing to their community, one's mental health can be determined by their ability to work productively and fruitfully (World Health Organization, 2018).

People living in rural locations often report a high subjective wellbeing (SWB) if their productivity is maintained; despite experiencing poor mental health, chronic conditions, or persistent pain (Elliot-Schmidt & Strong, 1997). High SWB may be due to the rural ideal of stoicism; "*the endurance of pain or hardship, without the display of feelings and without complaint*" (Kaukiainen & Kõlves, 2020). However, stoicism may not be the only factor contributing to the stigma of mental health in rural communities. Other factors may be privacy, distance to the nearest healthcare service, or associating SWB with productivity alone, rather than with quality of life (Elliot-Schmidt & Strong, 1997). The rural view of SWB could be why people living in rural communities score higher in happiness surveys, despite having poorer mental health outcomes (Bishop et al., 2017). SWB may also impact upon a rural community's level of readiness to address the mental health of those residing in rural communities.

Communities vary in their level of engagement and readiness to adapt or even acknowledge social concerns (Edwards et al., 2000). This can significantly influence the success of interventions supported by a local community (Edwards et al., 2000). Models like

the Community Readiness Model (CRM) are strategically designed to determine a community's current level of readiness to action social concerns (K. J. Kelly et al., 2003). When interventions like the CRM involve local community members, they are more likely to be culturally appropriate for communities (Edwards et al., 2000). This encourages community ownership and longevity of interventions (Edwards et al., 2000), further fostering community engagement, participation and empowerment.

To engage the community in some cases, culture and gender should be considered in the frameworks. Despite many frameworks claiming to be community based, often cultural norms are not acknowledged. For example, gender matching participants with researchers is essential in Indigenous cultures due to differences in men and women's business (Warwick et al., 2019). Gender matching in research supports true community engagement, in participatory frameworks.

Previous studies (Barnard et al., 2004; Barry et al., 1999; Bryant et al., 2015; Chomat et al., 2019; Stacciarini et al., 2011; Thirlwall & Whitelaw, 2019) have considered participatory frameworks for mental health in rural communities. However, there have been no reviews to date that have focussed on the process of community engagement for mental health in rural communities. Nor is there a recommended established framework of community engagement. This review aims to examine how community engagement, participation and empowerment were used in the development and implementation of interventions aimed at improving mental health of adults residing in rural communities.

3.2   Methods

A systematic search was conducted in July 2021 to identify research investigating the development and implementation of community engagement interventions aimed at improving the mental health of adults residing in rural communities. The systematic review

was conducted in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021) as seen in Figure 3.1.

An amalgamation of keyword search and MeSH terms, with Boolean structure, was utilised for the following databases: Medline, CINAHL, PsychInfo, EmCare, Scopus, PubMed and Google Scholar. Keyword search and MeSH terms were amended based on the database, with the following themes: community engaged, intervention, mental health and rural. For a full list of search terms, please see Appendix D.

The aim of this review was based on the PICo (Population, Interest, Context) framework (The Joanna Briggs Institute, 2014), as seen in Table 3.1. The population were adults within a rural cohort. Rural is defined as any location that is not urban, with urban recognised as a concentrated spatial distribution of people whose lives are not focused on agriculture activities (Weeks, 2010). Studies included the used of community engagement. Community engagement requires the involvement of individuals, their support structures and social networks, organisations providing relevant services to individuals and relevant community stakeholder relationships (Wilson & Sanyal, 2013). Community engagement was to be used in the development or implementation of the intervention. The context was mental health. Studies selected for inclusion were original, peer reviewed studies and published in English. Studies from database inception to the search date (28th July 2021) were included.

Studies focussed on children and adolescents were excluded. If identified studies focused on comorbidities associated with mental health or a clinical diagnosis of mental illness based on *Diagnostic and Statistical Manual of Mental Disorders* (DSM)/International Classification of Diseases (ICD) conditions were also excluded ensuring the research was focussed on community mental health, not personal illness. Studies were excluded if the community engagement did not occur in the development or implementation of an intervention

The development of the search was undertaken by the researcher author with the guidance of an independent research librarian. Duplicates were removed by the researcher. The PRISMA flow diagram was used to guide screening of the remaining articles by the researcher and a second reviewer. EndNote libraries were shared to achieve this. To maintain rigour, the six included full text articles were evaluated for eligibility by a third reviewer.

Critical appraisal of studies included in the present systematic review was undertaken using the McMaster Critical Review for Qualitative Studies (Letts et al., 2007). To understand the development and implementation of community-engaged interventions to improve the mental health of adults in rural communities, a narrative synthesis was based on information provided in the studies. Data extracted from each study included the methodological quality of the study and study model, the community (location of community, population involved, phase and type of community engagement methods), the action (purpose of the study, study/intervention duration, data collection methods, data obtained) and the intervention outcomes. The phases of community engagement included pre-development (the phase between origination and initiation of the intervention), developing the intervention and actioning the intervention.

Table 3.1

Population, Interest, Context framework for the study

P (Population)	Adult rural cohort (over 18 years) residing in rural setting
I (Interest)	Involvement of individuals, their support structures and social networks, organisations providing relevant services to individuals and relevant community stakeholder relationships in the development and implementation of an intervention
C (Context)	Mental health
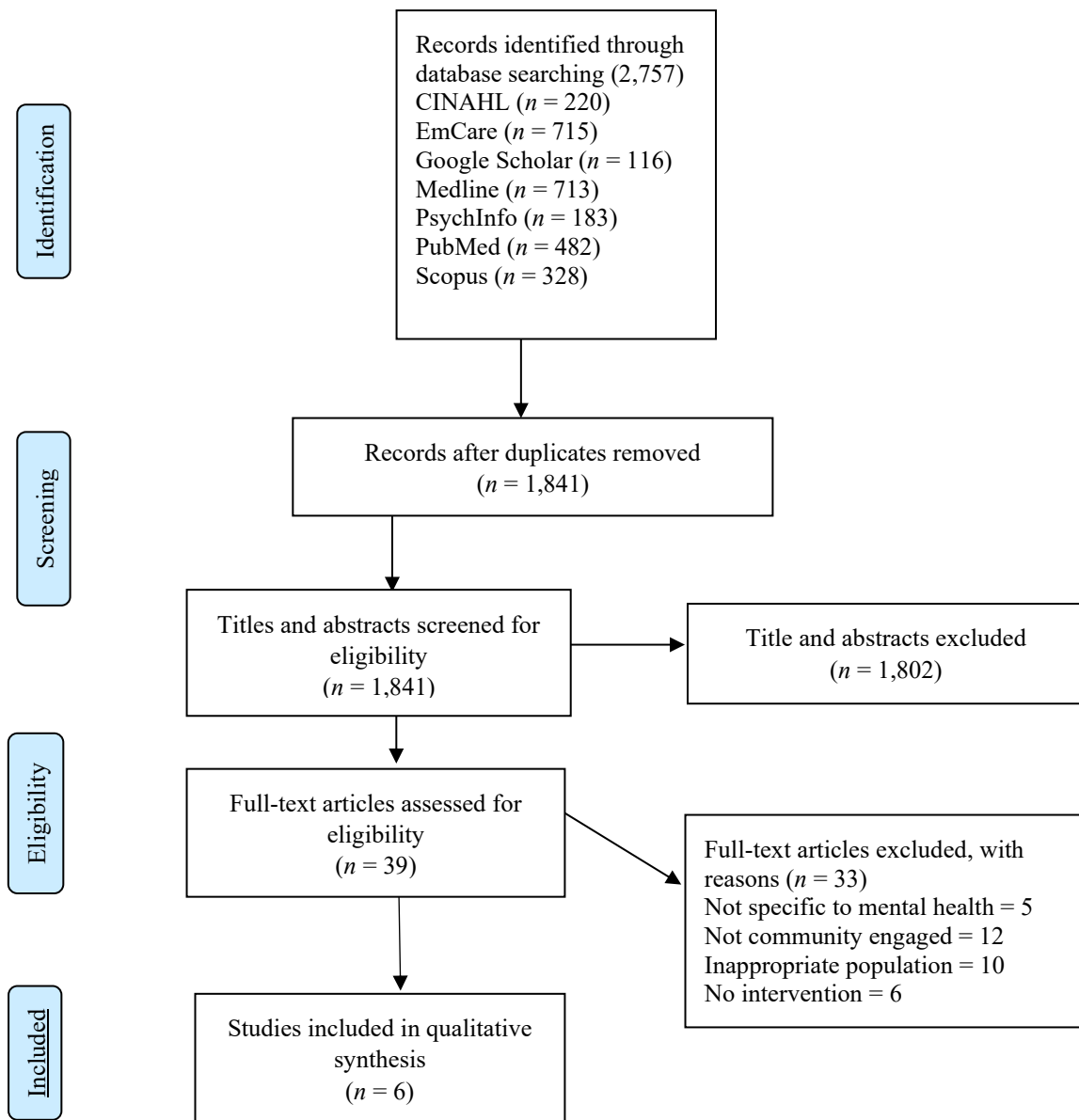
Figure 3.1. PRISMA flowchart of the literature search process

3.3   Results

A total of six studies met the inclusion criteria, guided by PRISMA format as seen in

Figure 3.1. The data extracted is summarised in Table 3.2.

Table 3.2

Details of included studies

Study	Community	Actions	Outcomes
Barnard et al. (2004)	Location: Tillery Community Centre, United States of America Population. Elders of community First program (*n*=6) Second program (*n*=12) Phase and type of community engagement: *Development*: immersion weekend to build rapport with elders + obtain community input for program *Actions*: education of elders for program maintenance	Purpose: Implement a community-built wellness program to enhance participants' lives through purposeful experience Study duration: once yearly x 5 weeks for 2 years Data collection: Focus groups Data obtained: Health conditions, activities contributed to wellness, reflections on the meaning of wellness and satisfaction with activities.	14/18 participants had chronic physical disease Varying categorising on activities contributing to wellness and meaning of wellness Increased knowledge on nutrition and exercise Increase satisfaction and maintenance of activities they undertook.
Barry et al. (1999)	Location: Small rural community Northern Ireland (population <2,000) Population: Project steering committee (*n* = NA) representatives from community: health and social care staff, farming organisations and voluntary sector People surveyed (*n* = 242) 43% male, 52% under 40 years of age, 21% had attained a primary standard of education only, with 46% secondary level and 33% third-level. 10% previously had a high level of exposure to mental health problems Phase and type of community engagement: *Development*: initial consultation with local mental health senior management and steering committee *Actions*: local research assistant promoted the project. Researchers verbally delivered surveys to the population	Purpose: Community needs assessment to determine attitudes, beliefs and practices of rural people in relation to mental health issues (provide baseline data) Study duration: 3 years Data collection: Cross sectional surveys + vignettes Data obtained: Level of awareness and knowledge of mental heal conditions, services, barriers, stigma and personal views	High level of awareness of suicide rate. GP was most common profession thought to treat depression. Social stigma most common barrier to seeking help. Need for mental health programs, specifically for men and younger adults
Bryant et al. (2015)	Location: Mississippi County, United States of America Population: Pastors, parishioners, African American men with history	Purpose: Develop a stress management intervention for the rural African American faith community	Needs from focus groups: 1) tools for parishioners to manage stress 2) educating faith

Study	Community	Actions	Outcomes
	of stress/depressive symptoms ($n =$ 24) Phase and type of community engagement: *Development*: employee of local health organisation, local outreach ministry director *Actions*: 6 focus groups with population Community Advisory Board (CAB) ensured cultural appropriateness (a clergy, a primary care physician, a mental health counselor, a registered nurse, and persons from the faith community interested in the health of their congregations)	Study duration: 6 months Data collection: Focus groups + verbal discussions Data obtained: Key components to be included in depression focused intervention + CAB attitudes and understanding of health	community to recognise and seek help for depression 3) confidentiality and privacy in seeking mental health services 4) training of church lay leaders to be 'depression experts' 5) amend language due to stigma e.g. stress instead of depression CAB increased education of mental health + experience in research
Chomat et al. (2019)	Location: 5 rural communities in Guatemala (population 1,000 – 16,000) Population: Women currently pregnant or under 2 years postpartum ($n = 84$) Circle leaders - former community health workers (CHWs), comadronas (midwives) and former mayor ($n = 10$) Phase and type of community engagement: *Pre-development*: Local health workers *Development*: surveys and in-depth interviews with population *Actions*: circles leaders facilitating program with pregnant women	Purpose: Assess acceptability, feasibility and impact of co-designed psychosocial intervention Study duration: 5 months Data collection: surveys and in-depth interviews Data obtained: * Maternal symptoms of depression and anxiety * Maternal wellbeing * Self-efficacy measurement * Mother's engagement in early infant stimulation	Improved maternal wellbeing/self-care, no changes in total self-efficacy, symptoms of depression/anxiety or engagement in infant stimulation. More sessions participated = higher scores. Circle leaders accepted by women + upskilling of circle leaders. Population had positive experience and requested it to be continued. Improved self-esteem/emotional health and wellbeing/social support and relationships The intervention was feasible, acceptable and possibly effective
Stacciarini et al. (2011)	Location: rural Latino community in Florida, United States of America	Purpose: Describe collaboration to develop a	Surveys: Specific goals regarding education,

Study	Community	Actions	Outcomes
	Population: CAB - church members, public school teacher, public health department staff (*n* = 8) Phase and type of community engagement: *Development*: site visits by Latino mental health researcher + community leaders *Actions*: CAB bi-monthly meetings with surveys and scribes' notes	mental health promotion intervention Study duration: 2 years Data collection: surveys + scribe notes Data obtained: * community understanding * community services needed * CAB members' interactions	collaboration, culturally appropriate resources, grant writing and confidentiality Scribe notes re CAB interactions: caring, knowledges, interpersonal dynamic, future impact on the community Denied access to school
Thirlwall et al. (2019)	Location: Dumfries and Galloway region, Scotland (population <2,000) Population: Train the Trainer (*n* = 43) 33 women and 10 men Interviewees (*n* = 443) LGBT support groups, men's sheds, walking groups, art groups as well as participation at local community events. Twice as many females as males, ~50% were >60 years old, ~20% were under 25 years old Community focus group (*n* = NA) community members Phase and type of community engagement: Community level: *Development*: Train the Trainers training *Action:* interviews for focus groups at community engagement events and community support groups + community focus groups to validate data obtained Strategic level: *Pre-development:* support from Director of Public Health *Development*: Workshop for key stakeholders (*n* = 20) representatives from community planning, strategic, commissioning, social work, mental health services, human resources, public health *Action*: Mental health forum (*n* = 12) representatives from mental	Purpose: Obtain community views on mental health and factors impacting it, then amend mental health outcomes framework Study duration: 2 years (3 days 'Train the Trainer', 6 weeks interviewing population) Data collection: focus groups Data obtained: * how community perceived mental health and wellbeing * how community copes with mental health * desires for community and personal mental health and wellbeing	Focus groups: social community factors important, stigma and discrimination, resilience, improved access to services, social connections Framework adapted to: increase social support/networks, improve access to interventions to improve mental health, increased awareness of positive mentally behaviours, increased local participation in decision making processes. Community satisfaction with involvement and use of information Initiating of mental health festival, 'Health Promoting Health Service Framework', access to screening program (community engaged)

Study	Community	Actions	Outcomes
	health, social work, commissioning, LBGT services and HR services		

3.3.1 *Location*

All studies were conducted in rural communities. Three were conducted in the United States of America (USA), two in the United Kingdom (UK) and one in Guatemala. Populations ranged from 1,000 – 4,000 community members.

3.3.2 *Population*

The sample size of participants ranged from six to 443 participants. Four studies included both men and women. One study included only men and one study included only women. Barnard et al. (2004) focused on the elders of the community. Six elders participated in the first wellness program. One year later twelve elders took part in the second wellness program. Barry et al. (1999) had a higher number of participants (242 people surveyed) and initially used a project steering committee (unknown number involved) including health and social care staff, farming organisations, and the voluntary sector. Ten percent of participants had previous high level exposure to mental health problems. Thirlwall and Whitelaw (2019) had a larger number of participants;: 43 involved in the 'Train the Trainer' (33 women and 10 men) which allowed engaged 443 interviewees. This included twice as many females compared to males, 50% over 60 years of age and 20% under 25 years of age. A community focus group (number of participants unknown) was used to validate the data, through surveys in the structure of an interview.

Chomat et al. (2019) also used local health care professionals to engage the sample population, which was 84 women currently pregnant or under two years postpartum and 16 circle leaders (nine former community health workers, six midwives and one former mayor). This was similar to Bryant et al. (2015), where the local outreach minister identified 24 men to be involved. The men included pastors, parishioners, and African American men with

stress/depressive symptoms. In Stacciarini et al. (2011) eight Community Advisory Board (CAB) members were used for the data collection. The CAB included church members, public school teacher and public health department staff. Recruitment for community engagement varied throughout the studies according to community need determined from consultations. Community engagement methods utilised depended on each community to maximise sample size.

3.3.3 *Phases and type of community engagement*

Methods of community engagement varied throughout the intervention phases (pre-development, development and action) in each of the studies. Barnard et al. (2004) used prior relationships between the community and university to facilitate an immersion weekend for Occupational Therapy (OT) students in the development stage. This allowed the students to build rapport and obtain the elders input for program development. When the program was in the action phase, the elders of the community were responsible for taking notes in each session to replicate the program independently.

In the development phase, Barry et al. (1999) choose to liaise with the local mental health senior management. Management assisted in developing a community-based initiative including voluntary and legislative sector organisations. When moving into the action phase, a local research assistant promoted the project, and the researchers verbally delivered the surveys to the community. Chomat et al. (2019) also used local health workers who requested the intervention after being involved in another project with the research team. When developing the project, surveys and in-depth interviews were used with the population, along with circle leaders facilitating the program.

Bryant et al. (2015) also used an employee of the local health organisation who had an interest in depression and linked the research team in with the director of an outreach ministry. Both the health employee and ministry director assisted to develop the project and

engaged a CAB. The CAB partook in six focus groups to ensure the project was culturally appropriate. Stacciarini et al. (2011) also relied on CAB for cultural guidance. The research was originally developed by a Latino mental health researcher that met with community leaders. This prompted bi-monthly meetings between the CAB and research team. Surveys were used to determine community needs. Scribe notes were also used based on the stage of research.

Thirlwall and Whitelaw (2019) also made initial contact with community leaders in the pre-development phase. A 'Train the Trainer' technique was used to develop community engagement and carried out focus groups at community engagement events and community support groups (LBGT support groups, men's shed, walking and art groups). Community focus groups were also used to validate the data collected. At a strategic level, researchers held workshops for key stakeholders. The workshops discussed outcomes from the focus groups and mapped out current projects. To action an intervention, a mental health forum identified key outcomes from the workshop. The community engagement methods varied for each study. However, the underlying general purpose remained consistent; that of improving community mental health.

3.3.4   *Study duration, data collection and data obtained*

Intervention durations ranged from five months to three years. Of the studies that implemented interventions, qualitative and quantitative outcome measures were used to evaluate the impact of the intervention on community mental health. To determine the results of the five-month intervention, surveys and in-depth interviews were used (Chomat et al., 2019). The surveys included determinants of mental wellbeing (maternal symptoms of depression and anxiety, maternal wellbeing, self-efficacy, and mothers' engagement in early infant stimulation). After the five-week wellness program in the second year, Barnard et al. (2004) choose to use focus groups with interview questions. This clarified participants' health

conditions and reflections (activities that contributed to wellness, the meaning of wellness and satisfaction of program activities). Thirlwall and Whitelaw (2019) used discussion focus groups to determine community perceptions on mental health, how the community copes with mental health, along with the desires for community and personal mental health and wellbeing. Focus groups were also used for feedback of community satisfaction of the intervention.

Varied data collection methods was used for community engagement to develop interventions. Surveys and vignettes were implemented over three years for community needs assessment through determining community level of awareness and knowledge of mental health conditions, services, barriers, stigma, and personal views (Barry et al., 1999). Surveys were also used over two years to determine community's understanding, community services needed and CAB members' interactions (Barnard et al., 2004). Bryant et al. (2015) used focus groups over a period of six months to find key components to include in the intervention. Using surveys, focus groups and vignettes, studies were able to adapt the development and implementation of interventions to achieve results.

3.3.5 *Intervention outcomes*

Outcomes for each study are displayed in Table 3.2. Three studies in the development phases identified what is required to improve community mental health (Barry et al., 1999; Bryant et al., 2015; Stacciarini et al., 2011). This included a need for a mental health program specifically for men and younger adults (Stacciarini et al., 2011); a gap in upskilling, education (Barnard et al., 2004; Stacciarini et al., 2011), confidentiality (Barnard et al., 2004; Stacciarini et al., 2011), culturally appropriate language (Stacciarini et al., 2011) and resources (Barnard et al., 2004), and goals for collaboration and grant writing (Barnard et al., 2004).

The three studies which implemented a community engaged intervention, reported positive outcomes to improve community mental health (Barnard et al., 2004; Chomat et al., 2019; Thirlwall & Whitelaw, 2019).

3.4   Discussion

To our knowledge this is the first review to examine how community engagement, participation and empowerment are used in the development and implementation of interventions aimed at improving mental health of adults residing in rural communities. In all studies community engagement was facilitated to include the individual, their support structures, and social networks (Wilson & Sanyal, 2013). Community participation developed ownership by building social network for increased awareness and moving focus to the responsibility of citizens (Wilson & Sanyal, 2013). Two (Stacciarini et al., 2011; Thirlwall & Whitelaw, 2019) studies demonstrated community empowerment where locals were able to influence each other independently (Wilson & Sanyal, 2013) to improve the mental health of adults in rural communities.

Using community engagement to develop the intervention prolonged community engagement and resulted in larger sample sizes (Barry et al., 1999; Chomat et al., 2019; Thirlwall & Whitelaw, 2019). This allowed trust to be formed between locals and the research team, resulting in participants more freely sharing information (Liamputtong, 2020). Results show trust and community engagement can be achieved through fostering local organisations and community stakeholder relationships (Barry et al., 1999). Characteristics of community members involved influenced the sample population. For example, when local health professionals assist in recruiting participants, purposive sampling is achieved (Liamputtong, 2020).

Consistent with purposive sampling, the gender of community researchers influences sample characteristics (Bryant et al., 2015; Chomat et al., 2019). For example, a greater

number of female community champions led to a greater number of female study participants (Bryant et al., 2015). Aligning with cultural norms, rural Indigenous communities have increased project ownership through yarning (informal discussions) to amplify their voices in research (Geia et al., 2013). Informal meetings with Indigenous rural communities can be effective in establishing collaborations for research (Fitzpatrick et al., 2017). This ensures communication about research is relatable, for a positive influence on participation rates (Fitzpatrick et al., 2017).

Where informal yarning was used for initial engagement in community (Bryant et al., 2015; Stacciarini et al., 2011), the Community Advisory Boards (CAB) also had a personal interest in the project. This was evident in their commitment to the project without financial gain, influencing communities readiness to change (Holt et al., 2007). CABs often take on the role as an advisor in community engaged interventions (Miles, 2015). The CABs do this through being upskilled to develop research, collect data, and facilitate collaborations between community members and researchers (Miles, 2015). The upskilling of interested community members demonstrates community empowerment, where locals respond to mental health promotion effectively (Stacciarini et al., 2011; Thirlwall & Whitelaw, 2019).

By employing local research assistants the studies showed support for community engagement (Barry et al., 1999; Chomat et al., 2019) and minimise relying on the research team (Hardy et al., 2016). In community participation, ownership of the project is developed, increasing local awareness and moving the focus to the responsibility of locals (Wilson & Sanyal, 2013). The local community taking on responsibility addresses possible inequalities between researchers and communities that may contribute to data collection being a false representation of community (Hardy et al., 2016). This empowers local organisations to influence one another (Wilson & Sanyal, 2013) to also address community mental health.

Community empowerment aligns with the research team whose initial contact was not through local health workers; rather, other authority figures in the community. Holt et al. (2007) confirms that organisation management support, highly impacts community readiness. If management can envision project achievements over a prolonged period of time (one to eight years), there is increased support (Young & Jordan, 2008). The increased supports minimises negative impacts from short term decreased outcomes (Young & Jordan, 2008). The studies (Stacciarini et al., 2011; Thirlwall & Whitelaw, 2019) reiterated the need for management support to achieve community empowerment, project longevity and successful outcomes.

The elements of community engagement, participation and empowerment align with strategies demonstrated in the CRM to support project longevity and successful outcomes. The use of the CRM to address a social issue, in this case mental health, involves local community members from varying sectors of the community (Plested et al., 2009). Using the CRM prior to intervention delivery can determine the community's readiness to address a social issue, ensuring strategies are culturally appropriate to facilitate community ownership through community engagement, participation, and empowerment.

3.4.1 *Future Research*

As evident by the paucity of studies in this review, frameworks to guide research in addressing mental health in rural communities is limited. Prior to delivering interventions which address mental health concerns in rural communities, future research should consider employing an evidence-based framework to assess the community's readiness for change. A model such as the CRM which considers community engagement, participation and empowerment could be appropriate since it may ensure the right intervention is developed and delivered in the right way, by the right people, for the betterment of the community.

Future research in rural communities should also engage local personnel, including health professionals, gender matched to the target population to ensure cultural norms are recognised. More specifically, future research should describe in greater detail, the protocols used for community engagement, intervention delivery and assessment to facilitate translation of interventions to other communities so direct comparisons of effectiveness across geographic boundaries can be conducted. Finally, the included studies that only focused on the development of the intervention should consider continuing community consultation to implement the developed intervention to examine its effectiveness.

3.4.2 *Limitations*

This review has a number of limitations. To capture as many potential studies as possible, the search strategy was deliberately broad. Despite this, only a small number of studies met the inclusion criteria. This likely reflects the paucity of research specifically examining how community engagement, participation and empowerment is used in the development and implementation of interventions aimed at improving mental health of adults residing in rural communities. Moreover, the included studies are only from three countries. This again reflects the limited research and makes the generalisability of the findings to other regions difficult. The review only included studies focused on adult populations and therefore translation of findings or recommendations to younger populations are not feasible. Only studies published in English language were included in the present review and it is therefore possible that some studies published is other languages may have been missed.

Included studies are also not without limitation. Data were collected using only surveys and focus groups. An absence of within-study reporting regarding thematic saturation and details of data collection makes study replication difficult and contribute to the heterogeneous nature of included studies. Community consultation and feedback on interventions are limited. Determining the success in developing and implementing

interventions appears to be relative to each community and community members involved. This results in a lack of transferability across rural communities.

3.5   Conclusion

The studies included this in this systematic review identified similarities in developing and implementing community engaged interventions to address mental health of adults living in rural communities. Community engagement requires the early involvement of local community members. Community engagement should also use a local research assistant with a background in health or local health professional to engage the sample population. Community participation should upskill local health professionals as community researchers. Community empowerment requires support from community management and the initial contact with community be through local authorities.

Overall research into community engaged interventions to address the mental health of adults living in rural communities is emerging. Due to the varying culture of each rural community and stigma toward mental health, there are limited frameworks that have been adapted to address mental health. To achieve community engagement, participation and empowerment in rural communities more research into implementing interventions guided by pre-existing models, such as the CRM is needed. This could determine if these models are transferable across rural communities to address social concerns like mental health.

3.6   Literature update

The initial literature review was conducted in July 2021. To ensure this thesis included all current literature, the literature search was updated in August 2023 using the same search terms and databases in the original search. The updated search resulted in two additional relevant articles that met the search criteria (Figure 3.2). The data extracted from these new studies is summarised in Table 3.3.
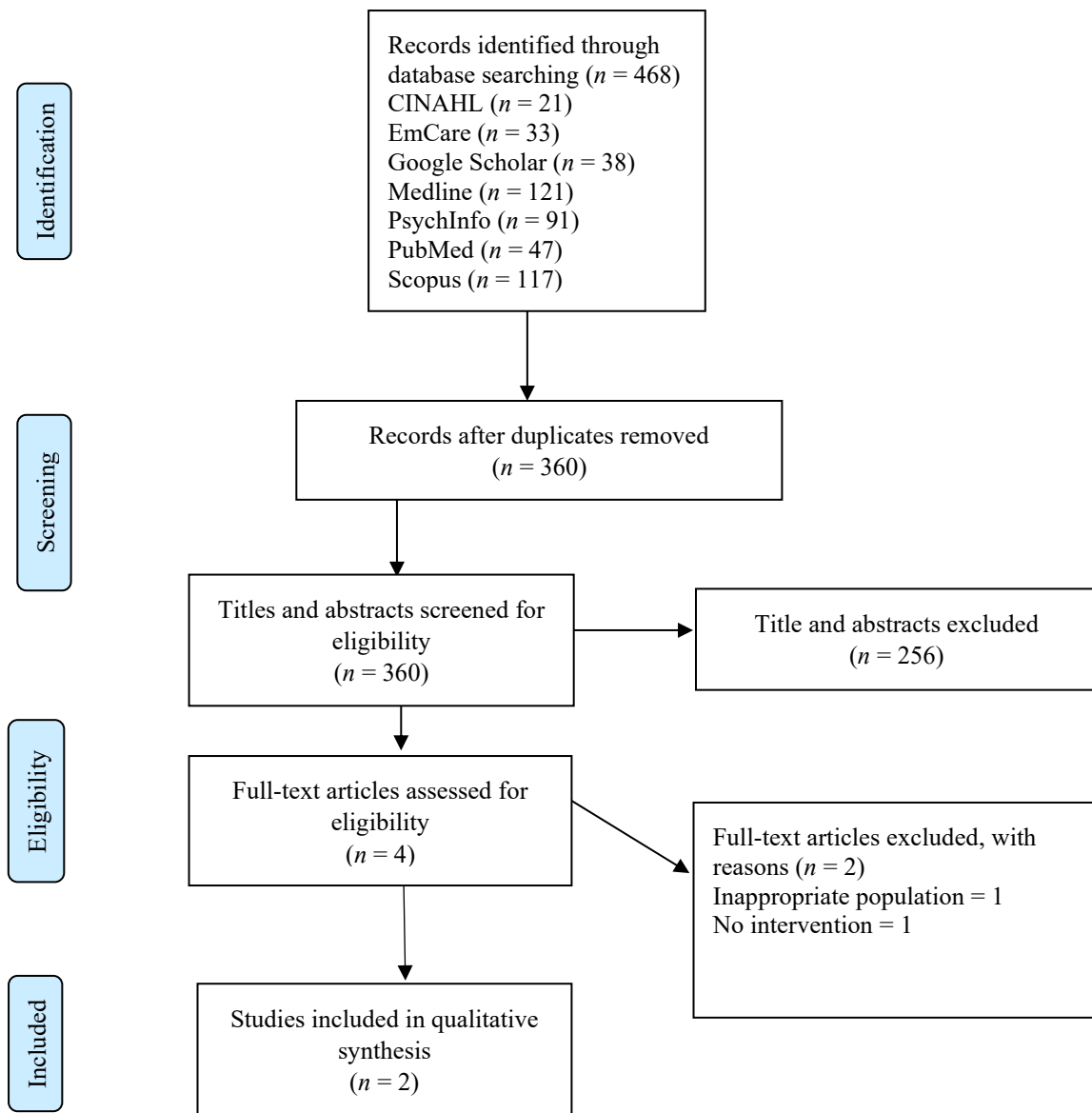
Figure 3.2. PRISMA Flowchart for Updated Literature Review

Table 3.3

Data Extracted From Included Studies

Study	Community	Actions	Outcomes
Kelter et al. (2022)	Location: Two rural communities in Michigan, United States of America Population: Focus groups: healthcare providers and community members (n = 38) 28 females and 10 males Mental health research advisory committee: patients, family members, community members, researchers, clinicians and stakeholder (n = 30) 21 females and 9 males Phase and type of community engagement: *Development*: community health researcher, collaboration with key partner mental health organisations, feedback sessions *Actions*: mental health research advisory committee	Purpose: To develop a mental health patient-centred research community and advisory board for a rural region to improve mental health care, self-management and outcomes Study duration: Focus groups: 5 x 90 minutes Advisory meetings: 2-hour monthly meetings for 7 months Data collection: Focus groups Data obtained: Identify unmet behavioural health needs as well as available mental resources in rural communities	Established new partnerships between the university and the community Themes such as stigma, lack of substance use treatment options and inadequate physician education in areas such as the opioid epidemic
Lavrencic et al. (2021)	Location: Aboriginal community on Gumbaynggirr Country, Australia Population: Community members Pilot program (n = 6) Feedback session (n = 12) Phase and type of community engagement: *Development*: working groups, Elder involvement in research, yarning with community to develop program, rapport built with participants prior to program *Actions*: partnered with local Aboriginal community organisations to support throughout program, Elder support to maintain rapport with participants	Purpose: Pilot a culturally grounded modified mindfulness-based stress-reduction program with First Nations Australian community Study duration: 8 x 2-hour sessions over 4 weeks Data collection: Semi-structured interviews, mental health and cognitive assessments Data obtained: Understanding of mindfulness, basic demographic information, medical history	Improved understanding of mindfulness Reduced stress and improved feelings of relaxation and connection Feedback from participants regarding changes for program

The two studies were conducted in rural communities: one in Australia and the other in the USA. Both studies employed participatory action research to guide the research. The sample sizes ranged from six (Lavrencic et al., 2021) to 38 (Kelter et al., 2022) community members and included both men and women. Kelter et al. (2022) involved direct care

providers and community members, along with a mental health advisory committee which comprised of patients, family members, community members, researchers, clinicians, and local mental health organisations. Lavrencic et al. (2021) focused on one First Nations community and the First Nations people living in the community.

Both studies achieved community engagement and participation, yet there was no evidence of community empowerment. The methods of community engagement varied between the studies. For community engagement methods, both studies included individuals, their personal support networks, and social networks (Wilson & Sanyal, 2013). Kelter et al. (2022) formed relationships with local mental health organisations. Through these local relationships, focus group participants were recruited by flyers, social media, networking, and word of mouth. Lavrencic et al. (2021) did not document how the working group was established in the First Nations community, or the time spent building rapport with the participants prior to the program. However, research did record involving local Aboriginal community members in developing the program. Part of this included the yarning group, where participants were recruited via local Aboriginal organisations. Yarning is an established research method when working with First Nations people, facilitating in-depth conversations in a relaxed, open manner (Bessarab & Ng'andu, 2010).

A co-researcher in the Australian study was an Aboriginal Elder who guided conversations between researchers and participants. Elders within the Aboriginal culture are commonly known to support social and emotional wellbeing (Gibson et al., 2020). Community health workers also take on a similar role in liaising between researchers and community, and are also commonly used in health promotion programs within marginalised communities (Coulter et al., 2020). For example, Kelter et al. (2022) implemented the use of a community health worker in their study, minimising reliance on the research team. The upskilling of locals in both studies demonstrated ongoing consultation and reciprocity,

encouraging community participation. This level of participation allows the community to develop an enhanced awareness of social concerns and encourages the community to take on ownership of the intervention (Wilson & Sanyal, 2013).

During the four-week mindfulness-based stress-reduction program within the First Nations community, semi-structured interviews were conducted, along with mental health and cognitive assessments. The intervention showed that the First Nations participants had an improved understanding of, and strategies for, mindfulness, and the participants were asked for feedback upon completion. Although Kelter et al. (2022) did not obtain feedback regarding the intervention, the study did address unmet health needs, and the available mental health resources to determine barriers for mental health care. However, there was no evidence of community empowerment. For community empowerment to be achieved, local organisations would have independently influenced one another to address community mental health. The lack of community empowerment for both studies reflects the findings of the initial literature review (Russell et al., 2023), with neither study ensuring that their initial contact was with community authorities.

These two additional studies continue to highlight the varying community engagement strategies for rural and remote communities to address community mental health. Both of the additional studies used local organisations for purposeful sampling, and involved local community members to guide the development of the projects. The community participation strategies echoed the original literature review, which included upskilling locals to assist in the research project (Russell et al., 2023). Neither of the two additional studies reached community empowerment. It can be assumed this was because the initial engagement with the community was not conducted through local authorities—a strategy highlighted in the original literature review (Russell et al., 2023).

The two additional studies that were published between 2021 and 2023 reiterated several considerations. First, strategies for community engagement vary based on the community and local members involved. Although there may be similarities, local organisations and community climates vary significantly and strategies may be implemented in different ways. Second, there are only two new studies that demonstrate true community engagement to address rural and remote mental health, neither of which progressed to community empowerment. Future research should strongly consider thorough documentation of their strategies to allow for a richer dataset to determine strategies and consequently develop an evidence-based framework.

4 Publication Two: Physical Activity to Address Mental Health in a Remote Australian Community: Community Readiness Assessment

This manuscript has been submitted to the *Journal of Mental Health Training, Education and Practice* and is currently under review. This manuscript is presented in the manner in which it was submitted to the journal.

Rationale

A key finding from the literature review was the lack of evidence-based models that can be adapted to the varying cultures of rural and remote communities to address mental health. It was acknowledged that more research was needed for pre-existing models like the community readiness model (CRM) to determine if the models can be transferred across communities to address social concerns. Consequently, the initial stages of the CRM were conducted in a remote Australian community. Due to the bidirectional relationship of physical activity and mental health, and the scope of practice of the researcher as an AEP, the focus of the CRM was physical activity, with improved meatal health as a byproduct. Based on the data collected, recommendations were made for community leaders to address mental health through physical activity. The community's highest score was in leadership, enhancing the likelihood of the community achieving empowerment to address the lower scores of physical activity knowledge, community attitude and resources. The findings from this paper

support the use of the CRM as a feasible evidence-based model that health professionals can implement to address social issues in rural and remote regions.

Abstract

The mental and physical health of those residing in Australian rural and remote communities is poorer compared to major cities. Physical health comorbidities contribute to almost 80% of premature mortality for people living with mental illness; with a shortened life expectancy between 10 to 25 years. Leisure time physical activity (LTPA) is a well-established intervention to improve physical and mental health. To address the physical and mental health of rural and remote communities through LTPA, the community's level of readiness should be determined. This study explores the level of community readiness in a remote Queensland community to address mental health through LTPA.

Individual semi-structured interviews were conducted according to the Community Readiness Model (CRM) focusing on LTPA to address mental health. The interview dimensions included community efforts and knowledge of LTPA programs, leadership, community attitude and knowledge towards LTPA and resources for LTPA programs. Quantitative outcomes were analysed based on the community's stage of readiness for LTPA programs to address mental health using the CRM categories of one (no awareness) to nine (high level of community ownership). Qualitative outcomes were thematically analysed using the methods of Braun and Clark.

The community scored six (initiation) for community efforts and knowledge of LTPA programs and seven (stabilisation) for leadership. A score of four (preplanning) was determined for the community's attitude towards LTPA and resources for programs, and three (vague awareness) in their knowledge of LTPA. The interviewees noted limited community knowledge of LTPA, and word of mouth being commonly used to advertise

LTPA programs and recruit volunteers. Older men were least likely to access LTPA programs.

The CRM is demonstrated to be a useful tool to determine a community's readiness for LTPA to address mental health. With extensive number of current LTPA programs recognised by community and strong support from leaders, strategies can address community attitude, knowledge of LTPA and, resources for programs.

4.1   Introduction

Poor mental health is global problem, with one in every eight people living with a mental disorder (World Health Organization, 2022a). The mental health of those residing in Australian remote communities is often poorer compared to those in major cities (Fennell et al., 2018). The reasons for poorer mental health in rural communities is multifactoral and may include geographical isolation resulting in health access disparities, health workforce shortages, lower healthy literacy, and limited knowledge of available services(Fennell et al., 2018). There are also subcultural values in rural areas in seeking support for health-related matters such as stigma, reluctance to seek help from 'new-comers', confidentially and self-reliance (Crnek-Georgeson et al., 2017; Fennell et al., 2018).

The lack of engagement with health services also contributes to people with a mental illness living in rural and remotes areas, being at an increased risk of developing physical illness (Australian Institute of Health and Welfare, 2020b). People living in in rural and remote aeras have a larger consumption of alcohol (Brumby et al., 2011; Perceval et al., 2020), higher rates of obesity and chronic disease (e.g. diabetes) resulting from suboptimal diet, insufficient exercise, and poor sleep (Brumby et al., 2011; Taylor et al., 2005). Physical health comorbidities, such as cardiovascular and respiratory diseases, and certain cancers have been reported to account for 80% of early mortality for Australian people living with mental illness (Australian Institute of Health and Welfare, 2020b), with a shortened life

expectancy between 10 to 25 years (Edmunds, 2018). However, mental and physical illnesses can be successfully managed with the appropriate intervention and treatment.

One well-accepted non-pharmacological intervention to prevent and treat mental and physical health concerns is physical activity (Wells et al., 2019). Physical activity is known to improve outcomes for future depressive episodes, post-traumatic disorder, anxiety disorders and psychotic illnesses (Wells et al., 2019). To improve health benefits leisure time physical activity (LTPA) is recommended, which is defined as "*dynamic movements at conditioning intensity levels, sufficient to improve cardiorespiratory fitness and metabolism and is more performed voluntarily over short periods with enough recovery time*" (Holtermann et al., 2018). When considering geographical location, occupations in remote communities have a high level of occupational physical activity (OPA), with the population physically active for the majority of their days for most of the year (Holtermann et al., 2018). However, OPA does not deliver the same benefits seen by participation in LTPA. There are increased health risks linked with OPA due to the constant loading, heavy lifting, and repetitive and awkward postures over a prolonged time period (Holtermann et al., 2018). As a consequence, OPA is associated with elevated blood pressure, heart rate and inflammation levels, without adequate time for the body to recover (Holtermann et al., 2018). These adverse outcomes highlight the importance of regular LTPA even when community members have high levels of OPA. Additionally, to successfully address physical and mental health in remote communities, health and social factors should be explored using community driven interventions (Wells et al., 2019).

4.1.1 *Current Research*

There is limited research utilising community engagement frameworks to design and develop interventions to address rural and remote mental health (Russell et al., 2023). Since communities differ in their level of engagement and readiness to adapt or acknowledge social

concerns, the level of readiness can significantly influence the effectiveness of an intervention that is supported by local people (Edwards et al., 2000). One way to determine a community's readiness for change is using the Community Readiness Model (CRM); an evidence-based approach developed to determine a community's current level of readiness for addressing a recognised social concern and facilitate actions appropriately (Kelly et al., 2003).

The CRM provides a framework to engage the community to determine the current programs in the community for the social concern and their knowledge of the programs, knowledge of the social concern, current leadership for the social concern and resources available for the social concern to guide interventions. Given LTPA is an effective intervention to address poor mental health (Wells et al., 2019), and rural and remote communities are known to have poorer mental health compared to metropolitan areas (Fennell et al., 2018), this research aimed to implement the CRM in a single remote community to determine the level of readiness for using LTPA to address the mental health of adults living in the community. The results from the CRM will guide future LTPA interventions that target rural mental health interventions that are culturally appropriate, encourage community ownership and have long-term sustainability (Australian Institute of Health and Welfare, 2020c). For the purpose of this paper, rural and remote will used interchangably to cover any area outside major cities (population over 100,000 people; Australian Bureau of Statistics, 2021) based on the Australian Statistical Geography Standard (ASGS) Remoteness Structure (Australian Institute of Health and Welfare, 2022b).

4.2   Methods

Ethical approval was obtained through James Cook University Human Research Ethics Committee (H8529).

4.2.1 *Procedures*

The study was undertaken in a remote community in Queensland, Australia. A community champion (a former health professional and respected community member) not associated with the study design or data collection was initially engaged to distribute an information sheet to their personal contacts via email. To improve the reach of recruitment, the lead researcher (KR) used purposive sampling to distribute information to selected community members through email and social media. Community members were invited to undertake a one-on-one semi structured interview regarding community LTPA programs, community knowledge and attitude of LTPA, community leadership for LTPA and availability of community resources (Table 4.1). Interviews were conducted by the lead researcher (KR) between December 2021 and April 2022, either face to face at a mutually agreed location, or via electronic means (Zoom or telephone). The interviews were audio-recorded and transcribed verbatim by the lead researcher.

Table 4.1

CRM dimensions

Dimension	CRM Question
A. Community efforts	What are the efforts, programs and policies in place to address physical activity?
B. Community knowledge of efforts	How aware are community members of the local efforts, and how effective and accessible are the physical activity programs?
C. Leadership	Who are the leaders of physical activity in the community and are they supportive of physical activity efforts?
D. Community climate	What is the community attitude towards physical activity?
E. Community knowledge about physical activity	What do community members know about physical activity and the links between physical and mental health? Does the community have access to information?
F. Resources for physical activity programs	Are the local resources (people, finances, facilities) able to support physical activity efforts?

4.2.2 *Participants*

Seven community members provided verbal informed consent and were interviewed. The CRM manual notes that data repetition tends to occur after six interviews (Plested et al., 2009). Eligible interviewees were remote community–dwelling adults, aged 18 years or over. The CRM requires interviewees to be people who represent different segments of the community. Based on these guidelines, interviewees were purposefully chosen to ensure a range in age, sex and their role in the community, and their willingness to contribute to the research.

4.2.3 *The Community Readiness Model (CRM)*

Semi-structured interviews with community members were guided by the CRM assessment. The CRM was adapted for this study to focus on LTPA for mental health as the social concern. Open ended questions in the CRM semi structured interview are categorised into six dimensions (Table 4.1) with responses assigned a numerical value according to the description in Table 4.2. A higher score is indicative of a greater level of readiness to action the social concern, which in this study, was LTPA for community mental health.

Table 4.2

Stages of the CRM

Stage	Description
1. No awareness	LTPA may not be an issue or isn't recognised as an issue by community/leaders.
2. Denial/resistance	Some of the community accept LTPA as a concern, yet not seen as a local concern.
3. Vague Awareness	Most accept there is a local concern for LTPA, yet there no immediate motivation to address
4. Pre-planning	Clear recognition LTPA should be addressed, however efforts are not specific.
5. Preparation	Leaders are actively planning LTPA programs with modest support from community.
6. Initiation	Enough information to justify efforts and activities are underway.
7. Stabilisation	Physical activity programs are supported by community and leaders. Staff are trained and experience
8. Confirmation/expansion	LTPA are implemented. Local use and support programs expansion. Local data is regularly obtained.
9. High level of community ownership	Community members have extensive knowledge about LTPA, specifically links to physical and mental health. Evaluations may direct new programs.

4.2.4 *Interviews*

The interviews were informed by LTPA to support community mental health. The

open-ended questions in the CRM were adapted to the local context, by using the

community's name and local vernacular; for example, using common abbreviations for local

landmarks. CRM questions were based on a previous study that examined LTPA in the context of mental health (Wells et al., 2019) (Appendix A). Probing questions were used to elicit more detailed information from interviewees in each dimension e.g., Community Knowledge of Efforts prompted questions about advertising for programs, what locals did and did not know about LTPA efforts, and the strength and weaknesses of current LTPA programs.

Interviews began with an overview of the research and an explanation of the nature of the information being sought. LTPA was defined, and interviewees were reminded of the voluntary nature of the interview, and how data collected would be used. In addition to the CRM, the final questions in the interview explored the community's perceived level of fitness and identified population groups with limited access to or engagement with LTPA.

4.2.5 *Data Analysis*

The CRM uses two coding systems, quantitative and qualitative. Quantitative scoring of the CRM determines the community's level of readiness. For the qualitative component thematic analysis was undertaken for each individual dimension, guided by Braun and Clarke (2006). Thematic analysis was chosen to enable the research team to both identify and interpret key components from the interviews (Clarke & Braun, 2017). Thematic analysis is also recommended for the use of qualitative descriptive research (Kim et al., 2017) particularly with a social meaning around a topic (Clarke & Braun, 2017), hence is applicable for physical and mental health research. The following steps identified and interpreted key components from the interviews: becoming familiar with the data, initial coding, searching for themes, reviewing themes, defining and name themes, and report production (Clarke & Braun, 2017).

Community Readiness Model. As per the CRM guidelines, researchers (SV, KR) separately read the interview transcripts and scored the dimensions between stage one to nine for each

interviewee's perception of community level of readiness (Table 4.3). Both reviewers' scores were identical in all dimensions except leadership. The disparity between reviewers for the leadership dimension was resolved by averaging the scores of the two reviewers as per the CRM guidelines. Interviewees' scores were averaged and rounded down to whole numbers to correspond with stages of readiness.

Table 4.3

Community readiness score

Interviews	#1	#2	#3	#4	#5	#6	#7	Score	Stage
Community Efforts	6.00	5.75	7.00	7.63	7.50	7.75	3.18	6	Initiation
Community Knowledge of efforts	5.17	7.34	6.88	7.25	7.63	7.38	4.83	6	Initiation
Leadership	7.00	7.63	7.50	8.38	6.75	8.00	4.38	7	Stabilisation
Community Climate	4.50	4.50	1.50	6.50	6.50	3.50	5.00	4	Preplanning
Community Knowledge	3.33	3.67	2.67	4.33	4.67	3.33	3.00	3	Vague awareness
Resources	5.00	4.40	3.00	6.80	4.80	5.30	4.20	4	Preplanning

4.2.5.1 Thematic Analysis. Transcripts were thematically analysed by one author (KR), guided by Braun and Clarke (2006) through familiarisation of data, and the development of codes and themes. Interviews were analysed using NVivo (version 12, QRS International, Burlington, MA). Themes were extracted and organised under headings and sub-headings. Authors (KR, RS, FB) reviewed and discussed themes and sub-themes. Upon consensus, themes were renamed and categorised. Relevant interviewees quotations were extracted.

4.3   Results

Seven eligible interviewees were interviewed, averaging 34 minutes in duration (range: 20 to 60 minutes).

4.3.1 *Quantitative Results*

Average community readiness scores from the seven interviewees varied between 3 (vague awareness) and 7 (stabilisation) (Table 4.3).

4.3.2 *Qualitative Results*

Thematic saturation was reached with themes developed from the seven interviewees. Result headings were categorised based on the dimensions of the CRM (Table 4.1).

A. Community efforts

All seven interviewees were able to identify the current LTPA programs in the community. Programs run by the Police-Citizens Youth Club (PCYC) were highlighted by six of the interviewees. The PCYC programs included the gym, Senior Fit, Wild Womens program, personal training, boxing, and group fitness. Team sports were a common topic, with six interviewees discussing local sporting competitions such as touch football, netball, rugby union, soccer, rugby league, tennis, basketball, cricket, and futsal (indoor soccer). A variety of self-directed recreational activities were raised by four of the interviewees. The recreational activities included water skiing, walking, mountain biking, kayaking and the shooting club. The self-directed activities included the the use of the swimming pool, the PCYC gym facilities, walk ways, tennis courts, and basketball courts. Less commonly mentioned activities were Parkrun, Pilates and equestrian events.

B. Community knowledge of efforts

Community knowledge of efforts discussed the interviewee's awareness of current local programs, accessibility of programs for the community, and if the programs are effective.

Interviewees agreed that word of mouth was the most common method used to disseminate LTPA information. Four interviewees discussed the effectiveness of community advertising, such as community notice boards. Notably, the absence of a local newspaper was highlighted by these interviewees. Four interviewees brought up online advertising methods like social media, council website and council emails. They expressed the community knowledge of efforts in the following ways:

In some areas, it's just sort word of mouth. Depends on what circles they circulate in too. (Interviewee 7)

[I]f we could get the paper going again to be able to advertise like events coming up … (Interviewee 6)

When people come to town they go look online and stuff. (Interviewee 5)

Local knowledge of progams was divided. Four interviewees stated locals are aware of programs and how to access them. In contrast, three interviewees believed that locals were not aware of available local programs and what they offer. Three interviewees expressed that locals need to actively seek out information.

[E]veryone always understands how to get involved and what the program is. (Interviewee 5)

The other portion of the community that may be interested, aren't or generally don't know that the groups are happening. (Interviewee 2)

Once they make the enquiry they definitely know. I suppose that's the challenge of the ones really wanting to do something. (Interviewee 4)

Six interviewees noted social interactions are key aspects of community perceptions of a program's strengths. Four interviewees highlighted human resources and local education for programs as weaknesses.

[P]roviding people opportunities to meet others and then for social interactions. (Interviewee 1)

There just aren't enough people to generate [help/support for programs]. Because if someone drops off, that is a fair percentage of your group. (Interviewee 3)

[E]ven if they were given a bit more education and had it a little bit more individualised to the clients … (Interviewee 2)

C. Leadership

The perceived support from leaders for LTPA programs was explored and interviewees identified the local leaders for LTPA, including the PCYC and Council. The PCYC was seen as the 'sports hub' in the community, where people can access information and activities. The Council was acknowledged for funding and supporting new activities.

PCYC is absolutely a hub for sports in town. (Interviewee 5)

Council put out things from time to time, that talk about being out and being active and promoting things like Clean up Australia Day is some sort of outdoor physical activity, so there is probably a lot of indirect stuff. (Interviewee 4)

D. Community climate

Interviewees were unanimous when discussing the community's attitude towards LTPA. All interviewees spoke of locals' desire to engage but acknowledged the range of barriers. All agreed that there is a portion of the community who are active by choice, in contrast to those choosing not to partake in LTPA for a variety of reasons.

[It] comes down to the individual whether they want to engage in the physical activity behaviour … whether they want to do anything with physical activity it's up to their choice. (Interviewee 1)

Along with people's desire to engage, many barriers for undertaking LTPA were acknowledged. These included the heat, local's jobs, travel, and human resources.

Apart from a bit of the time when it does get a bit hot, there is no other barrier to not wanting to be outside doing something fun and healthy. (Interviewee 4)

[Joining] sporting groups is a bigger commitment, and a lot of people don't or can't see that they can commit due to work. (Interviewee 3)

Probably one of the biggest barriers for sport is the distance … (Interviewee 7)

[There are] massive gaps … people run programs … community sports and activities are volunteer based. (Interviewee 5)

E. Community knowledge about physical activity

Interviewees discussed their own knowledge of LTPA, and their assumption of the community's knowledge of LTPA. From the discussions, it appears there is a general knowledge of the benefits of LTPA from both groups and commonly noted the link between LTPA and mental health. Interviewees also acknowledged local involvement in LTPA which correlated with an increase in knowledge of the benefits of physical activity.

[W]e probably do [know the link between physical and mental health], but don't link it together. Like we think 'oh gee we feel good after that'. But then it doesn't register why. (Interviewee 6)

You've got the ones that would know everything just about, but they are the ones that are physical fit and want to remain so. (Interviewee 3)

When prompted for knowledge of specific information (e.g., National Physical Activity Guidelines, the responses suggested limited knowledge. Interviewees suggested locals required more education on the benefits of physical activity, and resources for education are limited for people not accessing LTPA programs.

I don't think they know much about it [national physical activity guidelines and recommendations]. (Interviewee 1)

Probably not, because they don't seem to think that they need to [know specific information on physical activity] … it would be fairly low their knowledge of

anything like [physical activity] … So you've got one extreme to another

[involvement and knowledge of physical activity]. (Interviewee 3)

F. Resources for programs

All interviewees discussed community facilities, however opinions differed. Some interviewees spoke about facilities being easily accessible to the public, with others considering facilities a barrier, due to cost and useability under extreme environmental conditions, such as the high temperatures. While some interviewees suggested access to facilities is negatively impacted by cost, four interviewees believed that funding is not a concern, due to support from larger organisations within the community. Five interviewees acknowledged that finances were also associated with accessing equipment. If people chose to do their own LTPA or lived out of town, they would need to purchase their own equipment. However, for locals involved in planned activities there was access to equipment.

[S]o it's mainly public areas people can use and there seem to be quite a few about. (Interviewee 6)

[There may be a] good gym they can access, but again that is a cost some people aren't willing to pay … (Interviewee 2)

[The need for] facilities is always going to be a big one. That comes back to environment as well. (Interviewee 5)

[T]here's no issues with sponsorship and support like [financial donations and space] … it's not hard in these mining communities and mines helping out. They all have grant programs. (Interviewee 7)

[There may be] difficultly purchasing and getting items in terms of being able to do physical activity at home … exercise bikes, treadmills, bands, dumbbells. (Interviewee 2)

[I]f people are involved in activity, say volleyball for here. Everything is provided for

them. (Interviewee 5)

Despite planned activities providing equipment in the community, interviewees spoke

of challenges for planned activities. They identified difficulties associated with the transient

workforce in the community, lack of volunteers and lack of resources to support local

knowledge. This aligned with a common theme of burnout.

[A]lways a portion of the population that is itinerant … we'll get some new people

that will come and they're really keen, then they might go … a core of locals that are

just active in everything. (Interviewee 4)

[Attracting] volunteers is a big issue facing a lot of sports in town … (Interviewee 5)

It just burns you out and having those people to maybe have the support behind them

and, but they can go to people for support, even mentor them in what they can do

better so they don't lose interest or burn out. (Interviewee 7)

4.3.2.1 Community level of fitness. Interviewees were asked their opinion on how fit

they perceived the locals in community are. Six interviewees believed the community would

have low to moderate levels of fitness due to low participation in LTPA. One interviewee

stated the community is rather fit, due to their physical work.

[The] majority of the population probably aren't hitting the physical activity

guidelines at the moment … (Interviewee 2)

There would be some very fit people. There'd be a good portion that don't do much

planned activity, but because of their work, reasonably fit because of that.

(Interviewee 4)

4.3.2.1 Limited population groups. Interviewees were asked about population

groups in the community that were limited in participating in LTPA. Four interviewees

suggested the elderly are lacking LTPA, especially men. Three interviewees acknowledged shift workers were limited in their engagement with LTPA.

4.4   Discussion

The use of the CRM to address physical activity is limited (Brand et al., 2016; Ehlers et al., 2013; Gansefort et al., 2018; D. L. Jones et al., 2012; Wells et al., 2019), even more so for the mental health of adults living in remote Australian communities. The present study used an evidence-based model (CRM) to determine a remote community's current level of readiness regarding LTPA to support community mental health. Future interventions can be guided by the CRM based on the quantitative score of each dimension and qualitative themes developed.

For interventions to be actioned by local community, the community's vague awareness in their knowledge of LTPA must be acknowledged. The interviewees indicated the community has the knowledge that there is a concern for LTPA to support community mental health, but with limited motivation to address the social concern. This is not surprising with 60% of adults living in Australian rural and remote communities being insufficiently active (Australian Institute of Health and Welfare, 2018b). Social and environmental factors, such as family responsibilities, lack of services to assist with family responsibilities and limited available LTPA facilities are known barriers limiting motivation for LTPA in rural and remote areas of Australia (Boehm et al., 2013), as supported by interviewees of this community.

The community's vague knowledge of LTPA could be underpinned by the community's low motivation for activity, which may be addressed through raising awareness for LTPA. CRM strategies to raise awareness include having LTPA on agendas at non-health related community groups (Plested et al., 2009). Regular community interactions through

community health events and informal education sessions/surveys to gauge community attitudes towards LTPA are suggested (Plested et al., 2009).

The community scored preplanning for their attitude, suggesting locals realise LTPA needs to be addressed, however efforts are not focused or detailed (Plested et al., 2009). In this scenario the CRM recommends conducting local focus groups and visiting and investing in community leaders. The local focus groups will encourage community engagement through involving locals when developing strategies (Russell et al., 2023). The high score of 'stabilisation' for leadership in the community indicates a successful intervention. Support from local authorities and community management is recommended to allow for community engagement to move towards empowerment, where locals can independently influence one another to address LTPA (Russell et al., 2023).

Although support from local authorities and community management is beneficial, a review of the existing programs and target populations in community are recommended to address community attitude (Plested et al., 2009). This may maximise uptake of LTPA programs involving a wide range of populations. Despite the strong support from leaders and extensive current LTPA in place the interviewees regularly emphasised there is only a select population within the community consistently involved in the LTPA programs.

This limited involvement may be a result of word of mouth being the most common advertising method for LTPA programs. The word of mouth phenomena requires interactions, and in small communities this is more influential than commercial advertising (Cannarella & Piccioni, 2008). In this community it is evident when locals are interacting at the LTPA programs, word-of-mouth advertising for other programs occurs. Consequently, the same group of locals are regularly involved in LTPA programs and the same group of locals volunteering for the LTPA programs.

Locals living in remote communities take pride in working together for positive change (Eversole, 2011). A common opinion is that volunteering is the only way to provide additional services in the community (Eversole, 2011). Interviewees in the present study acknowledged that while relying on the same volunteers caused burnout, the social interactions of being involved in LTPA programs were beneficial at the personal and community level. Volunteering can produce both positive and negative outcomes for locals, relative to physical and mental health (Morse et al., 2022). As well as the community's smaller population, the community's workforce creates a transient population, with shift work impacting the support for LTPA programs. For population groups not involved in LTPA programs, this raises many challenges to accessing social interactions, physical and mental health information, and facilities.

The elderly, particularly men, were noted as the main population group not participating in LTPA. Older men living in rural areas have a reluctance to access professional help for health related disorders (Radermacher & Feldman, 2015). When implementing strategies, the community needs to be cognisant that strategies targeting older men need to be specially tailored to that population group (O'Kane et al., 2008). Often midlife men may demonstrate their masculinity based on their physical work and income produced by their labour (Carnahan et al., 2018). As a result, the community may value OPA over LTPA as supported by the interviewees reporting low to moderate levels of fitness.

4.4.1 *Limitations*

The results of the CRM are individualised based on the community. The outcomes and recommendations in this research are specific to that community and not applicable for other rural or remote communities in Australia. The quality of data could have been enriched by purposively sampling people who are currently not involved in LTPA programs. While the

sample size is small, it meets the requirements of the CRM, thus can be considered representative for the purpose of this study.

4.5   Conclusion

This research was able to implement a community engaged framework to determine the community's level of readiness to address LTPA with the by-product of improving the mental health of adults residing in the remote community. The community has strong support from leadership with many current LTPA program in place that the community is aware of. Those benefits may counteract the community's lower scores of physical activity knowledge, community attitude and resources. Consequently, the CRM recommendations are feasible for the remote community to implement culturally appropriate interventions for LTPA and indirectly address the mental health of locals in the remote community.

5 Discussion

The aim of this thesis was to understand community engagement for physical activity to address mental health. Specifically, this thesis examined how community engagement, participation and empowerment address the mental health of adults living in rural and remote communities. This thesis also explored the community's level of readiness to engage in a physical activity intervention to address community mental health of Australian adults living in a remote community.

The findings presented in this thesis have demonstrated that it is possible to engage the community to address mental health through physical activity for those living in rural and remote locations. The literature review 'Fostering community engagement, participation and empowerment for mental health of adults living in rural communities: A systematic review' (Russell et al., 2023) highlighted varying strategies for co-design through community engagement. These strategies varied for community engagement, participation and empowerment. Because of the similarities in co-design with the CRM, the CRM was used as an evidence-based approach in this thesis to address mental health through physical activity for adults living in rural and remote Australian communities.

The CRM was employed in this thesis to score a remote Australian community's level of readiness to implement programs that use physical activity to address the mental health of the local community. By determining the community's level of readiness, recommendations to support the community in progressing from community engagement to participation and empowerment can be made. In contrast, the current literature contains very few international studies that have reported on programs guided by evidence-based models to support community engagement and participation, and even fewer supporting empowerment. Further, only one study was found that incorporated community engagement and participation to address rural and remote mental health in an Australian setting.

Although there were no evidence-based approaches used among the studies within the literature review, all the studies underwent some form of community-based participatory research (CBPR). CBPR is appropriate for rural and remote communities because it allows an understanding of the cultural and environmental diversity (Hansen et al., 2015). When implementing CBPR, there should be a collaborative partnership between the community and researchers, with both contributing their own knowledge (Wallerstein & Duran, 2006). This approach creates co-investment and ensures that the social issue under consideration is important to the community, with the aim of improving community health and minimising health disparities (Wallerstein & Duran, 2006).

5.1   Community-Based Participatory Research

CBPR has been successful when used to engage diverse minority groups in addressing community physical and mental health (Rodriguez Espinosa & Verney, 2021), and is guided by the following principles: the academic and the community learn from one another, academics build research capacity in community members, it should benefit all involved and the long-term commitment from all involved reduces health disparities (Wallerstein & Duran, 2006). However, while CBPR can engage diverse minority groups, it is an orientation to research with a focus on the relationships between researchers and community stakeholders, rather than a methodological approach (Wallerstein & Duran, 2006). Indeed, there are very few evidence-based models with a step-by-step process to guide both researchers and health professionals in appropriate community engagement. One such EBP model with a methodological approach that implements the principles of CBPR is the CRM.

A principle supported by the CRM is that both the academics and the local community learn from each other about the social issue. The CRM also supports the community in building capacity with strategies that further community empowerment. In doing so, this reinforces the principles of CBPR whereby long-term commitment from local

community members reduces disparities regarding the social issue. Although there are similarities between the CRM and CBPR, the CRM provides a scaffolded step-by-step approach for community engagement. Future research addressing community physical and mental health should incorporate and evaluate the effectiveness of the CRM evidence-based model in supporting community engagement, participation and empowerment.

5.2   Strategies for Community Engagement

While very few studies in the literature review were guided by evidence-based models, researchers did use a range of strategies to support community engagement, participation, and empowerment. For example, when health professionals are in the initial stage of community engagement, it is essential that they include individuals, support structures, and social networks and organisations that provide services to the individuals and the relevant community stakeholders (Wilson & Sanyal, 2013). To enhance trust and build relationships with the community, extensive engagement with a range of community stakeholders is recommended, with the initial contact being through informal discussions (Russell et al., 2023). Extensive engagement and informal discussions will foster relationships in an environment of trust and increase the number of people willing to participate in a project on the social issue (Russell et al., 2023).

The involvement of locals in the community will increase the success of recruiting participants (Russell et al., 2023) and promote the upskilling of locals to assist with the project addressing the social issue. Thus, health professionals empower the community, support community engagement, and facilitate progression to community participation. By including community members in the project, awareness of the social issue within the community increases, encouraging them to take on responsibility for, and ownership of, the social issue (Wilson & Sanyal, 2013). When the community takes on responsibility for the

social issue, the power imbalances are reduced, and the local knowledge allows for a more appropriate representation of the community to be involved in the project.

Community engagement and participation strategies to address mental health in rural communities are consistent within the research (Barnard et al., 2004; Barry et al., 1999; Bryant et al., 2015; Chomat et al., 2019); however, community empowerment strategies are limited (Russell et al., 2023). Community empowerment is achieved by enabling individuals and groups within the community to influence one another to address social issues (Wilson & Sanyal, 2013). To achieve community empowerment, it is essential that the initial community contact is with local authority figures (Russell et al., 2023). This initial contact with local authorities increases the support and longevity of projects addressing the social issue (Russell et al., 2023).

This lack of research on empowering communities to address mental health through the use of physical activity suggests that there may be limited resources supporting the process. To ensure that appropriate projects are implemented to support residents living in rural and remote regions in addressing social issues, it is vital that health professionals are adequately skilled to manage the complexities of rural and remote health (Cosgrave et al., 2019). However, in Australia, there are few health professionals with extensive experience of living and working in rural and remote areas (Cosgrave et al., 2019; Health Workforce Queensland, 2022). In the context of addressing mental health through physical activity, this also includes AEPs.

Most AEPs who support their clients' physical and mental health are aged between 21 and 30 years, with only 0.5% of all AEPs living and working in remote and very remote Australia (Exercise and Sports Science Australia, 2023). Although AEPs are spread over a wide geographical footprint equal to approximately 85.7% of Australia (The Department of Health and Aged Care, 2016), this expanse is serviced by only a small number of AEPs. The

average age of AEPs indicates that they may have limited experience to address the complexities of rural and remote health.

Compounding the complexities of Australian rural and remote health care is the high turnover of health professionals in those regions (Cosgrave et al., 2018). This may be attributed to a lack of access to professional development and supervision, professional isolation or, being overwhelmed because of a lack of acceptance into the community (Cosgrave et al., 2018). To address this high turnover, employing EBP can lead to greater professional autonomy and job satisfaction (Melnyk et al., 2010), with many registration and governing bodies encouraging health professionals to be competent in EBP (Albarqouni et al., 2018). EBP can be used to support health professionals in professional development worldwide, and is used by new health professionals to guide them in developing rapport with communities and consequently acceptance.

Implementing EBP requires health professionals to form strong therapeutic relationships with consumers. This can be aided by asking relevant questions, synthesising the information, considering client values and preferences, and applying this information in their clinical decision-making (Lienesch et al., 2021). Building a therapeutic relationship with clients both in the clinic and through community engagement events (e.g. using the local shops, taking a walk, attending church) can result in community inclusion (Chipp et al., 2011). The benefits that can be achieved through the use of EBP, in both professional development and community acceptance, may work towards addressing the high turnover of health professionals in rural and remote regions.

To ensure that rural and remote health professionals are supported in their journey of community engagement, healthcare organisations should provide easily accessible evidence-based models that can scaffold their strategies for community engagement. By implementing evidence-based models with a step-by-step process, local organisations can be confident that

the health professionals, regardless of their rural and remote experience, are ensuring that their practice is culturally and geographically suitable for the community they are servicing. However, the intervention will have limited success if the community is not ready to accept and implement changes (Kehl et al., 2021). To overcome this concern, the CRM can be used as an EBP approach to determine the community's level of readiness and to support community engagement.

5.3   Community Readiness Model as EBP in a Rural and Remote Setting

To determine if the community is ready to accept and incorporate changes, the CRM model can be implemented in a rural and remote setting, especially to support health professionals providing services in a community they are not familiar with, or if they are new to rural and remote work. The CRM is specifically designed for rural and remote communities, and was initially developed by researchers attempting to address substance use, violence and victimisation in First Nations and rural communities (Edwards et al., 2000). The research team acknowledged the importance of developing a way to increase a community's readiness for prevention programs regarding social issues and to support community empowerment (Edwards et al., 2000). The CRM and its role in determining a community's level of readiness makes it an ideal behaviour change model for rural and remote communities, and can be used for addressing mental health through physical activity, as evidenced in this thesis.

However, the use of the CRM for addressing mental health through physical activity has been limited (Brand et al., 2016; Ehlers et al., 2013; D. L. Jones et al., 2012; Wells et al., 2019), with only one study conducted in a rural location (Gansefort et al., 2018). The second study in this thesis, 'Physical activity to address mental health in a remote Australian community: Community Readiness Assessment' applied the initial stages of the CRM in a remote Australian community. When comparing the research of Gansefort et al. (2018) to the

current study, the CRM scores vary for each dimension, therefore no similarities could be identified. The lack of similarities between the two rural communities in each of the studies is not surprising. The CRM is based on the concept that communities may be at different stages of readiness depending on the social issue being considered (Edwards et al., 2000). This concept reinforces the notion that, even though the CRM is a structured evidence-based approach, it also represents the individual rural community's health needs at that time.

5.4   How to Combine the CRM and Community Engagement Strategies

While the studies in the literature review (Russell et al., 2023) did not use the CRM to respond to the rural community's health needs, they did demonstrate similar strategies that complement the CRM. These combined strategies from both the literature review and the CRM can be used to guide health professionals in rural and remote communities. In particular, those who aim to address a certain social issue, yet do not have experience in working in rural and remote communities. This will support the health professionals to ensure that their community engagement techniques are culturally appropriate.

For the initial community engagement, the CRM recommends including a range of people, such as those who provide services and who may coordinate or refer people to healthcare services. By incorporating this initial community engagement process of the CRM, the health professional should be purposeful in engaging with a broad representation of individuals when they are new to a community. Continued and extensive engagement is recommended to increase the likelihood of the community supporting the health professional. This engagement should be in the style of informal conversations, increasing the likelihood of locals with a personal interest in the social issue being involved.

However, the health professional must be conscious that the recruitment of locals may be affected by the characteristics of the people supporting the initial community contact, such as their professional role and gender (Russell et al., 2023). Consequently, the health

professional may need assistance from a broad range of key community members to support them in their initial stages of community engagement. This assistance from community members could be in the form of recruiting and upskilling the local people, encouraging both community engagement and participation.

The importance of involving the local community was evident in the literature review, with all studies either recruiting or upskilling local people to achieve community participation. Community members included local research assistants (Barry et al., 1999), community elders (Lavrencic et al., 2021), community advisory groups (Bryant et al., 2015; Kelter et al., 2022; Stacciarini et al., 2011) and project participants (Barnard et al., 2004; Thirlwall & Whitelaw, 2019). Although these strategies minimise the power imbalance between locals and the research team, and reduce reliance on the research team (Hardy et al., 2016), they have not been shown to lead to community empowerment (Russell et al., 2023). To advance to community empowerment, a health professional's initial contact with the community should be through local authorities (Russell et al., 2023).

5.5   Community Recommendations

The recommendations of the CRM for each dimension varied for the remote Australian community based on the readiness score. However, it was evident that support from local authorities is essential for the community to progress through their stages of readiness. If local authorities can foresee the benefits of a project over a prolonged period of time, they are more likely to support the project, increasing the likelihood of project longevity (Young & Jordan, 2008). Strong leadership can influence a community's level of readiness (Holt et al., 2007), with local council and the PCYC being noted by the leaders in the community for supporting physical activity in the current research.

A local government's position, influence and connection with their community puts them in a unique position to adapt state or national government projects based on the locals'

needs for community health and wellbeing (Baldwin et al., 2021). In the rural and remote

context, councils have the capacity to provide services to address community health

requirements when other local organisations may not (Baldwin et al., 2021). According to the

scoring of the CRM for this Australian community, community leaders can be effective in the

provision of services for physical and mental health.

The high score of 'stabilisation' in the leadership dimension for the remote Australian

community indicates that physical activity programs are supported by community, and that

leaders and staff are trained and experienced (Plested et al., 2009). As a result of this score,

the CRM recommends the planning of community events between stakeholders to support

physical activity for mental health. Fortunately, many of the participants in the current study

noted the pre-existing collaboration between the council and the PCYC when it came to

supporting physical activity programs.

To fully utilise this high level of leadership in the community, the CRM endorses

transparency with community locals regarding program evaluation and future plans, and

recognition for local supporters (Plested et al., 2009). The CRM also recommends the

upskilling of locals, both professionals and community members, which aligns with the

concept of community participation. The projections from the CRM show that this remote

Australian community may have a high probability of addressing community mental health

through physical activity. However, as with all projects, the weakest factor must be

acknowledged and addressed for progression.

In the current study, the lowest CRM score for the remote Australian community was

'vague awareness' for knowledge about the Australian physical activity guidelines and the

links between physical and mental health. This may be an indication that health literacy is a

limiting factor for this community, relative to addressing mental health through physical

activity. Health literacy is defined as 'the ability of individuals to gain access to, understand

and use information in ways which promote and maintain good health' (Australian Bureau of Statistics, 2018b). A high level of health literacy allows people to navigate a complex healthcare system. If local community members are unable to navigate this health system, they may not be able to implement actions to address modifiable risk factors for preventable health conditions. Increasing a person's health literacy may also support community members to engage in positive health behaviour change (Buja et al., 2020).

One positive health behaviour that is a well-established modifiable risk factor for preventable health conditions is physical activity (Buja et al., 2020). High physical activity levels have a positive correlation with increased physical literacy (Sport Australia, 2019). Physical literacy is defined as 'lifelong holistic learning acquired and applied in movement and physical activity contexts and is vital in helping us lead healthy and fulfilling lives through movement and physical activity' (Sport Australia, 2019). If people can improve their health literacy through gaining access to, and using, information to maintain good health, they can make the choice to maintain their good health through physical activity. By using their health literacy skills, people can advance their physical literacy to address their health through movement and physical activity.

However, 59% of the Australian public aged between 17 and 74 years do not have the health literacy skills to understand and implement health-related information in their lives (D. Jones et al., 2020). There are many factors that affect people's physical and health literacy. These include environmental, cultural, physical, cognitive, psychological, and social factors (Sport Australia, 2019). The impact of geographical isolation is evident, with people living in rural and remote Australia experiencing lower levels of health literacy compared with those in metropolitan areas (National Rural Health Alliance, 2016).

Nevertheless, health literacy should not be seen as a community deficit, rather an opportunity for health professionals to improve their services for the local community. Health

literacy is dynamic and can be based on the situation, culture, or environment (D. Jones et al., 2020). However, if an environment is not supportive, educating people on health behaviour change may not have an impact on the sustainability of an intervention (D. Jones et al., 2020). Health professionals can use the CRM to address health behaviour change by implementing strategies that create a supportive environment that is appropriate to the community and their level of readiness. To further the community's understanding of how physical activity can address mental health, the CRM suggests raising awareness and education at a variety of community events and local news outlets, and informally gathering information on local attitudes to the issue (Plested et al., 2009).

The community's attitude to engaging in physical activity for mental health, along with the resources for physical activity, was scored as 'pre-planning'. To support the community in their current stage of readiness with regard to resources and attitude, the CRM recommends raising awareness with direct approaches. By raising awareness of the benefits of physical activity for mental health through the media, the CRM aims to reduce stigma within the community. Raising awareness may be achieved by the community leaders hosting physical activity forums to develop strategies to address mental health through physical activity based on community recommendations (Plested et al., 2009), reinforcing community participation and encouraging locals to take ownership of future projects (Wilson & Sanyal, 2013). The CRM also recommends reviewing the current physical activity programs in the community and considering the level of success based on the community driven priorities related to community mental health (Plested et al., 2009).

Fortunately, the community involved in the present study scored 'initiation' for the community efforts and knowledge of efforts where the information gathered supports the efforts and activities that have commenced (Plested et al., 2009). As a result of this score, the CRM recommends providing community-specific information. This can be achieved by

interviewing locals to identify gaps, improving existing services and determining key places to distribute information (Plested et al., 2009). Continued transparency with the community is recommended by sharing meeting updates on progress and other events that encourage physical activity for community mental health (Plested et al., 2009). Training on community readiness should be provided to local physical and mental health professionals (Plested et al., 2009), creating community participation that encourages the locals to take responsibility for community mental health (Wilson & Sanyal, 2013). As the community implements the suggested strategies, it is anticipated that it will move through the process of community engagement, participation, and empowerment to address community mental health through physical activity.

5.6   Strengths and Limitations

As with all research, the studies presented in this thesis have strengths and limitations that should be acknowledged. The literature review demonstrated the sparsity of structured evidence-based models with strategies that support community engagement, participation, and empowerment for rural and remote communities. However, the literature review conducted in this thesis was limited to manuscripts published in English language, so there is the potential for other recommendations published in other languages. The literature review was published in an open access journal and presented to health professionals working in remote Queensland, ensuring access was not a barrier. The review also provides health professionals with evidence-based strategies to ensure appropriate community engagement, participation, and empowerment.

The research conducted in this thesis may set the scene for health professionals and local organisations to implement the use of the CRM within their community. By doing so, the community can be guided to reach empowerment not only in addressing mental health through physical activity, but also in other issues identified by the community. Supporting

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rural and remote communities in using the CRM affords many possibilities for future research to support communities in a culturally appropriate manner and in a way that responds to the ever-changing rural health landscape. The CRM is an easy model to use and adapt for each community's social issues, and it needs limited resources. The CRM is simple to score and provides robust recommendations based on the outcomes. The support provided by the CRM can guide communities through their stages of change, and by empowering the community, it can implement strategies to address social issues independently.

The community in the current research showed a high level of support for the use of the CRM assessment through their engagement. Although the sample size of seven participants for the CRM interviews was small, it exceeded the CRM recommendations of six. The participants were purposefully chosen, as directed by the CRM, based on their varying ages, genders and roles in community. This ensured an accurate representation of community members with a rich dataset.

However, this research had the time constraints associated with a Master of Philosophy thesis, so it was not feasible to translate the findings into practice. Although this research did not progress to community participation and empowerment, the detailed recommendations provided by the CRM allow for easy translation into practice. In addition, the results will provide guidance to community leaders and visiting health professionals on how to progress through the community stages of readiness to achieve community empowerment.

The recommendations from the CRM will be presented to the community leaders (local council and the PCYC) through a report and face-to-face discussions. This will allow the local council and the PCYC the opportunity to implement the strategies suggested by the CRM based on the stage of readiness. Local health organisations will also be presented with the results for the creation of appropriate community engagement strategies to support health

professionals to implement a true community-engaged intervention progressing to community empowerment.

It must be acknowledged that only two studies in the literature review reached the stage of community empowerment in terms of rural and remote mental health. This leads to the question: Why are interventions with rural and remote communities not reporting on the achievement of community empowerment? An updated search of the literature was conducted, and it was confirmed that there was no follow-up research on achieving community empowerment from the studies that implemented the stages of community engagement and participation (Barnard et al., 2004; Barry et al., 1999; Bryant et al., 2015; Chomat et al., 2019; Kelter et al., 2022; Lavrencic et al., 2021). This absence of follow-up research means that we still do not know if the interventions addressing mental health resulted in community empowerment. More research is needed to determine appropriate strategies.

Although this lack of follow up from the original studies is not uncommon (Herbert et al., 2018), the reasons for not reaching empowerment could be determined through participant feedback on the community engagement and participation process. Despite all studies in the literature review reporting on outcomes of the intervention, only half of the studies received feedback from the participants on their experience of the intervention (Barnard et al., 2004; Chomat et al., 2019; Lavrencic et al., 2021; Thirlwall & Whitelaw, 2019). Despite this feedback, none of these studies stated how they actioned the feedback. Although the intervention outcomes provide insight into the effectiveness of the study, the participant experience can be more thoroughly understood through the subjective view of the participants (Haidous et al., 2021).

Adapting interventions based on the feedback from participants ensures true community engagement and participation by allowing the participants to feel a level of

ownership of the project. By obtaining qualitative feedback, participant satisfaction, demographics, cultural variables and mental health outcomes can be determined (Haidous et al., 2021). This provides researchers with appropriate information on the complexity of varying contexts and group dynamics.

This involvement from participants continues to support the concept of community engagement and participation. Future research should obtain and act on qualitative feedback from local community members, with long-term follow up that continues to adapt the intervention accordingly. This will ensure that interventions can be developed in a way that will empower the rural and remote communities, and will enable the interventions to be sustainable.

5.7   Conclusion

The research in this thesis has explored how strategies for community engagement, participation and empowerment address the mental health of adults living in rural communities, while also exploring a community's level of readiness to engage in a physical activity intervention to address community mental health of Australian adults living in remote communities.

The thesis has examined the literature to determine strategies for community engagement, participation, and empowerment, that can support health professionals to address mental health in rural and remote communities. From the studies, strategies were identified to provide evidence-based recommendations for culturally appropriate community engagement that can progress to participation and empowerment. The strategies are as follows:

- community engagement: prolonged community engagement through informal meetings, purposeful recruitment through local community members specific to the target population

- community participation: upskilling local community members
- community empowerment: initial contact with community authorities.

The literature identified significant gaps in the evidence-based community engagement models used to address rural and remote mental health. However, this process can be guided by pre-existing models such as the CRM. The initial stages of this model were implemented in a remote Australian community.

The CRM indicated that the remote Australian community was at varying stages of readiness for each CRM dimension with regard to using physical activity to address mental health. The stages for each dimension were as follows: 'vague awareness' in knowledge of physical activity for mental health, 'preplanning' in community attitude and resources, 'initiation' in community efforts and knowledge of efforts, and 'stabilisation' in leadership. According to the results, the CRM recommendations for the community varied for each dimension, yet also aligned with the strategies determined in the literature review.

Community engagement involves a range of community members determining appropriate strategies for raising awareness and reducing stigma. The CRM recommends upskilling local community members in terms of community readiness to achieve participation, with empowerment being achieved through support from community leaders. This research shows that it is possible to understand the community's readiness for change with regard to using physical activity to address the issue of community mental health in a remote Australian community.

The research undertaken in this thesis has provided strategies for community engagement, participation, and empowerment to address rural mental health. These strategies are also supported by an evidence-based model that responds to rural and remote health needs. The strategies determined in this study can support rural health professionals by

providing an easily accessible step-by-step process to ensure that they are engaging the community in a culturally appropriate manner.

The CRM can be provided to health professionals working and living in rural and remote communities so that they have access to a structured evidence-based model that improve outcomes, creating a health system that responds to rural health needs. The strategies determined in this thesis can support local success through guiding the development of national healthcare systems. Consequently, this thesis has presented an approach with the potential to assist rural and remote Australian communities in addressing their physical and mental health, as well as other social issues.

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Appendix A:

Interview Questions

We would like to learn about how physical activity may help support the mental wellbeing for adults living in the … Shire.

As I mentioned, we'll also be discussing physical activity. The type of physical activity we're talking about is leisure time physical activity. Leisure time physical activity is what do you do for fun. When you're moving so your heart and lungs are working harder than usual. It's only a short period of time and also have time to rest.

So now we'll get into the CRM assessment – your interview will be scored and averaged out with other interviews to get an overall view from … locals, with the focus being on adults.

Community Readiness Assessment Interview Questions

A. COMMUNITY EFFORTS (programs, activities, policies, etc.) AND

B. COMMUNITY KNOWLEDGE OF EFFORTS

1. From a 1–10, how important do you think physical activity is in …? (1 being 'not at all' and 10 being 'great importance')? Please explain.
2. Are there any physical activity programs in … (A) (e.g., sports, movement groups, walking groups etc). What types of programs exist?
3. If so, how long have these programs been going in town here? (A) (B)
4. What are the strong points of the programs? (B)
5. What are the gaps in the programs? (B)
6. How have … locals supported the programs? (A)
7. Generally, do adults in … use the programs?
8. From 1 – 10, how aware are locals of the programs? (1 being 'no awareness' and 10 being 'very aware')? (B)
9. What do the adults in … know about the programs? (e.g., such as what they provide, how to access).

C. LEADERSHIP

10. Who are the current 'leaders' specific to physical activity in …?
11. From 1–10, how concerned to do you think leaders are about locals being involved in physical activity programs? (1 being 'not at all' and 10 being 'of great concern')? Please explain.
12. How do the leaders support the current physical activity programs? Please explain.
13. Would the leadership support additional efforts? Please explain.

We will ask you questions about attitudes in the community. Please answer based on how you think people in this community would respond, rather than your own opinion.

D. COMMUNITY CLIMATE

14. What is … attitude to physical activity?
15. What is attitude of adults living in … towards joining in physical activity programs?
16. What are the main barriers to locals accessing programs in town?

E. KNOWLEDGE ABOUT THE ISSUE

17. How much do … adults know about physical activity? (e.g., national guidelines/recommendations). Please explain.
18. How much do … adults know about the benefits of physical activity? More the links between mental and physical wellbeing?
19. What type of educational information is available in the shire about physical activity? If so, from where?

F. RESOURCES FOR PROGRAMS (time, money, people, space, etc.)

20. How would … locals currently access space and equipment for physical activity? Is there anyone in … who could help out this? Why?
21. What is the attitude for adults in … to support physical activity programs? (e.g., people volunteering time, making financial donations, and/or providing space).
22. Are you aware of any proposals or action plans that have been written to address physical activity in …? If yes, please explain.
23. Do you know if anyone is evaluating the current programs? If yes, from 1 to 10, how good is the evaluation effort (with 1 being 'not at all' and 10 being 'very good?')?
24. How much of a concern is access to programs for physical activity in the town, from 1 to 10, (with 1 being 'not at all' and 10 being 'of great concern')? Please explain.
25. What services are lacking in the … to address physical activity concerns?

That is all for the CRM assessment, there a few additional questions.

1. How would you describe the level of physical activity/fitness for adults living in …?
2. Are there some people who would find it more difficult to get enough physical activity? Who are they and why?

Is there anything you would like to ask from me?

Appendix B:

Information Sheet

Physical activity and community mental wellbeing services in …..

You are invited to take part in a research project. It is about physical activity and community mental wellbeing. The research is with a Masters in Philosophy student. The research is through James Cook University. This research uses the Community Readiness Model (CRM). The CRM looks at how ready a community is to action a health issue.

Participation includes an audio recorded interview. The interview will take about 1 hour. It can be done face to face, by video, or phone. Some things you will be asked include:
- Knowledge of physical activity programs in ….
- Do locals know how to access physical activity services?
- Do community leaders (e.g., council, health services) support physical activity programs?
- Does the community get involved with physical activity programs?
- Do locals know how physical activity and mental wellbeing are linked?
- What local resources are available for physical activity services?

There are no right or wrong answers. You can decline to answer and question. You can stop or pause the interview at any time.

You may feel uncomfortable talking about mental wellbeing. This is only an interview, not a mental wellbeing service. The questions are not about your mental wellbeing. They are about services in community. The interview may take up your time. You may not directly benefit from the interview. Information may improve services in the future. If the interview upsets you, please contact Lifeline (Phone: 13 11 14) or your doctor.

The information you provide will be used in a thesis, research journals and presentations. Your information will remain confidential. Your name or other details will not be used in any reports. Your information will be stored by James Cook University for 5 years.

You can withdraw from the study before or during the interview. This won't affect any current or future relations with the research team. Once the interview is typed up, you can't withdraw. If you have any questions about the study, please contact Kirsten Russell or Fiona Barnett.

Principal Investigator: Kirsten Russell   Supervisor: Fiona Barnett
College of Healthcare Sciences   College of Healthcare Sciences
James Cook University   James Cook University
Phone: Phone: 07 4781 6678
Email: kirsten.russell2@my.jcu.edu.au   Email: fiona.barnett@jcu.edu.au

If you have any concerns regarding the ethical conduct of the study, please contact:
Human Ethics Officer, JCU Connect
James Cook University, Townsville, Qld, 4811
Email: ethics@jcu.edu.au, Phone: (07) 4781 5011
Ethics approval number: H8529

Appendix C:

Ethics Approval

This administrative form
has been removed

Appendix D:

Search Terms

<u>Medline</u>

Date searched: 14.07.2021.

exp Community Participation/ or community engagement.mp. or exp Community-Based Participatory Research/ or community readiness model.mp. or community engagement intervention.mp.

AND

psychological distress.mp. or exp Stress, Psychological/ or exp Psychological Distress/ or exp Depression/ or psychological distress.mp. or exp Stress, Psychological/ or exp Psychological Distress/ or exp Depression/ or mental health.mp. or exp Mental Health/ or psychological wellbeing.mp.

AND

exp Rural Health/ or exp Rural Population/ or exp Agriculture/

Limits: all adult, English only

Date searched: 14.07.2021.

mental illness.mp.

AND

exp Rural Health/ or exp Rural Population/

AND

exp Community Participation/ or community engagement.mp. or exp Community-Based Participatory Research/ or community readiness model.mp. or community engagement intervention.mp. or community health services/ or exp community mental health services/ or exp community participation/

Limits = all adult, English only

Date searched: 14.07.2021.

(wellbeing or well-being).mp. or exp Personal Satisfaction/ or psychological distress.mp. or exp Stress, Psychological/ or exp Psychological Distress/ or exp Depression/ or exp Stress, Psychological/ or exp Mental Health/ or psychological well-being.mp. or psychological wellbeing.mp. or mental well-being.mp. or mental wellbeing.mp. or Community mental health.mp. or exp Community Mental Health Services/

AND

exp Community Participation/ or exp Community-Based Participatory Research/ or exp Community-Institutional Relations/ or community engagement.mp. or exp Community Health Services/ or community led.mp or community empowerment.mp. or exp Community Networks/ or community readiness model.mp. or Community-based intervention.mp.

AND

rural.mp. or exp Rural Health/ or exp Rural Population/ or exp Rural Health Services/ or exp Agriculture/ or farmer.mp. or exp Farmers/

Limits: all adult, English only

Date searched: 14.07.2021.

"co design".mp. or codesign.mp. or "co-design".mp.
AND
(wellbeing or well-being).mp. or exp Personal Satisfaction/ or psychological distress.mp. or exp Stress, Psychological/ or exp Psychological Distress/ or exp Depression/ or exp Stress, Psychological/ or exp Mental Health/ or psychological well-being.mp. or psychological wellbeing.mp. or mental well-being.mp. or mental wellbeing.mp. or Community mental health.mp. or exp Community Mental Health Services/
AND
rural.mp. or exp Rural Health/ or exp Rural Population/ or exp Rural Health Services/ or exp Agriculture/ or farmer.mp. or exp Farmers/

Limits: all adult, English only

<u>CINALH</u>

Date searched: 15.07.2021

"mental health" OR "mental illness" OR "psychological distress" OR "psychological wellbeing" OR "psychological well-being" OR "mental wellbeing" OR "mental well-being" OR depression OR "community mental health" OR wellbeing OR "well-being" OR "psychosocial"

AND

"community participation" OR "community based participatory research" OR "community led" OR "community readiness model" OR "community based intervention" OR (MH "Community Mental Health Services") OR (MM "Community-Institutional Relations")

AND
rural OR "rural health" OR "rural population" OR agriculture OR farmer OR (MM "Rural Population") OR (MM "Rural Areas") OR (MM "Rural Health")

Date searched: 15.07.2021

"mental health" OR "mental illness" OR "psychological distress" OR "psychological wellbeing" OR "psychological well-being" OR "mental wellbeing" OR "mental well-being" OR depression OR "community mental health" OR wellbeing OR "well-being" OR "psychosocial"

AND

"co-design" OR "codesign" OR "co design"

AND

rural OR "rural health" OR "rural population" OR agriculture OR farmer OR (MM "Rural Population") OR (MM "Rural Areas") OR (MM "Rural Health")

Limits: English, adult only, peer reviewed

Date searched: 14.07.2021

"mental health" OR "mental illness" OR "psychological distress" OR "psychological wellbeing" OR "psychological well-being" OR "mental wellbeing" OR "mental well-being" OR depression OR "community mental health" OR wellbeing OR "well-being"

AND

"community participation" OR "community based participatory research" OR "community led" OR "community readiness model" OR "community based intervention"

AND

rural OR "rural health" OR "rural population" OR agriculture OR farmer

Limits: Adult over 18, peer reviewed, English

Date searched: 14.07.2021

"mental health" OR "mental illness" OR "psychological distress" OR "psychological wellbeing" OR "psychological well-being" OR "mental wellbeing" OR "mental well-being" OR depression OR "community mental health" OR wellbeing OR "well-being"

AND

rural OR "rural health" OR "rural population" OR agriculture OR farmer

AND

CoDesign OR co-design OR "co design"

Limits: Adult over 18, peer reviewed, English

EmCare

Date searched: 14.07.2021

exp wellbeing/ or exp psychological well-being/ OR exp mental health/ or exp community mental health/ OR exp mental health/ OR well-being.mp. OR exp depression/ OR mental wellbeing.mp. OR mental well-being.mp. OR mental health.mp.

AND

exp community participation/ OR exp participatory research/ OR community based participatory research.mp. OR exp community/ or exp community participation/ or community engagement.mp. OR community led.mp. OR community based intervention.mp. OR community readiness model.mp. OR exp participatory action research/ or exp action research/

AND

rural.mp. or exp rural population/ or exp rural health/ or exp rural area/ or exp rural health care/ OR farmer*.mp. or exp agricultural worker/

Limits: adult (18–64 years), aged < 65+, English

Date searched: 14.07.2021

exp wellbeing/ or exp psychological well-being/ OR exp mental health/ or exp community mental health/ OR exp mental health/ OR well-being.mp. OR exp depression/ OR mental wellbeing.mp. OR mental well-being.mp. OR mental health.mp.

AND

codesign.mp. or co-design.mp. or "co design".mp.

AND

rural.mp. or exp rural population/ or exp rural health/ or exp rural area/ or exp rural health care/ OR

AND

farmer*.mp. or exp agricultural worker/

Limits: adult (18–64 years), aged < 65+, English

<u>Scopus</u>

Date searched: 15.07.2021

((TITLE-ABS-KEY ("mental health" OR "mental illness" OR "psychological distress" OR "psychological wellbeing" OR "psychological well-being" OR "mental wellbeing" OR "mental well-being" OR depression OR wellbeing OR "well-being")) OR (

TITLE-ABS-KEY ("psychosocial"))) AND (TITLE-ABS-KEY (rural OR "rural health" OR "rural population" OR agriculture OR farmer OR "rural areas")) AND (TITLE-ABS-KEY ("community participation" OR "community based participatory research" OR "community led" OR "community readiness model" OR "community based intervention" OR "Community-Institutional Relations" OR "community intervention")) AND (LIMIT-TO (LANGUAGE , "English")) AND (EXCLUDE (EXACTKEYWORD , "Adolescent") OR EXCLUDE (EXACTKEYWORD , "Child"))

Date searched: 15.07.2021

((TITLE-ABS-KEY (codesign)) OR (TITLE-ABS-KEY (co-design)) OR (TITLE-ABS-KEY ("co design"))) AND (TITLE-ABS-KEY ("mental health" OR "mental illness" OR "psychological distress" OR "psychological wellbeing" OR "psychological well-being" OR "mental wellbeing" OR "mental well-being" OR depression OR wellbeing OR "well-being" OR psychosocial)) AND (TITLE-ABS-KEY (rural OR "rural health" OR "rural population" OR agriculture OR farmer OR "rural areas")) AND (LIMIT-TO (LANGUAGE , "English")) AND (EXCLUDE (EXACTKEYWORD , "Adolescent") OR EXCLUDE (EXACTKEYWORD , "Child"))

Google Scholar

Date searched: 22.07.2021

allintitle: rural community depression OR intervention OR based OR wellbeing "mental health" -adolescent -teen -child –youth

allintitle: rural community intervention OR CBPR OR based OR led OR engagement OR engaged "well-being" -adolescent -teen -child –youth

allintitle: rural community intervention OR CBPR OR based OR led OR engagement OR engaged "mental health" -adolescent -teen -child –youth

Date searched: 15.07.2021

(("mental health" OR "mental illness" OR "psychological distress" OR "psychological wellbeing" OR "psychological well-being" OR "mental wellbeing" OR "mental well-being" OR depression OR wellbeing OR "well-being" OR psychosocial) AND (codesign OR "co-design" OR "co design") AND (rural OR "rural health" OR "rural population" OR agriculture OR farmer OR "rural areas"))

Filters: Journal Article, English, Adult: 19+ years