Living well in a Pandemic: Experiences and impacts of the COVID-19 lockdowns on older adults with and without Mild Cognitive Impairment in New Zealand

Pippa J Grierson

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Abstract

The Coronavirus (COVID-19) pandemic of 2020 resulted in many nations, including New Zealand, adopting strict restrictions, such as lockdown measures (with people largely confined to their homes for long periods of time), in an attempt to minimise the spread of the virus. Understanding the impact of these restrictions on the quality of life, life satisfaction and well-being of the population is important for planning for future pandemics. This thesis focuses on the impacts of the 2020 lockdown restrictions in New Zealand on older adults with and without mild cognitive impairment (MCI), using a mixed-methods approach. Eighteen MCI and 10 matched cognitively-healthy older adults who were part of an existing study examining predictors of 'living well' participated. Pre-COVID measures of life satisfaction, well-being, quality of life, social networks and loneliness were available for comparison to post-COVID lockdowns. Twenty-six of these individuals shared their experiences of the lockdowns and easing of restrictions in a semi-structured interview. MCI participants experienced an increase in the quality and quantity of interactions with family following lockdowns, whilst conversely control participants reported a reduction in number and quality of family connections. Both groups reported an increase in loneliness post-pandemic and lockdowns, driven by an increase in perceived emotional loneliness. No clinically significant changes in anxiety and depression symptoms occurred for either participant group, consistent with reports of mixed emotional responses to the lockdowns. Thematic analysis identified themes encompassing connection/challenges in reconnection with others, emotional responses to the lockdown and restriction easing, impacts on activities, and concerns for cognitive decline. Difficulties maintaining relationships and managing the burden of loneliness whilst fearing for their own safety and that of others was universal. These results suggest assertive efforts to engage older adults with their communities during these crises are essential, with technology being supportive, but not sufficient at ameliorating the loss of face-to-face interaction for these populations. Indeed, it appeared more that the quality and depth of connections with others was most important to facilitate coping with the challenges of restrictions, something that digital interaction alone could not quite provide.

Foreword and Study Adaptation

The current study is an adaptation of my original research on the predictors of life satisfaction, well-being, and quality of life in individuals with early stage Alzheimer's disease. This was a subset of a wider project through the Dementia Prevention Research Clinics (DPRC's) in New Zealand looking at predictors of 'Living Well': life satisfaction, well-being and quality of life, in individuals with Mild Cognitive Impairment (MCI) and Alzheimer's disease compared to cognitively healthy older adults.

As of January 2020, control participant data had been collected, with another researcher collecting the MCI participant's responses. I was just starting to collect the research on the experiences of individuals with early stage Alzheimer's disease. However, the onset of the Coronavirus Pandemic in 2020 resulted in a significant disruption to my research. As my study was focussed on the predictors of 'living well', the introduction of a global pandemic, with the significant changes to daily life, and potential impacts on both physical and mental health, my original research questions were no longer viable with just over half of the data collected – and all from one participant group (cognitively healthy controls). The COVID-19 pandemic, introduced numerous confounding variables (for example, fears around the illness, prevention measures and restrictions placed by government) which would render any comparison between data collected on the predictors of well-being for the Alzheimer's group and the control group invalid, as the latter group had not experienced a global pandemic. Subsequently, the original project had to be abandoned, and like many researchers, we pivoted to a new project.

Using pre-COVID data for both the MCI and control participants, we had a measure of their individual sense of well-being, quality of life, and life satisfaction before the COVID-19 pandemic. With increasing restrictions being placed on individuals internationally, in particular the mandates to self-isolate, especially if you were deemed 'vulnerable' (which for most nations was over 65 years of age), it appeared that the age group already collected was likely to be experiencing an unprecedented shift in the ability to engage in activities that would previously have contributed to "living well". Little was understood of the impacts that the pandemic and subsequent restrictions would have on the older population, and even less still on individuals whom were already struggling cognitively – such as individuals with MCI.

The data already collected on pre-COVID experiences of life-satisfaction, well-being, and quality of life created an opportunity to explore the impact the pandemic and subsequent response in New Zealand had on both cognitively healthy older adults and individuals with MCI. Given the pre-pandemic data, the same questionnaires could be administered to obtain a measure of the quantitative impacts of restrictions on these participants. Additionally, qualitative interviewing could help understand the experiences of COVID-19 lockdown and restrictions on participants, as this was a unique experience. Understanding the impact of these responses on these vulnerable populations could inform how we support people to live well in future crises.

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Chapter One: Introduction

Coronavirus

At the end of December 2019, the first reported cases of an infectious respiratory illness were beginning to emerge from Wuhan, in the Hubei province of China (Strongman, 2020). These were subsequently identified as the initial cases of the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). By January 12, 2020, the World Health Organisation (2020b) had been notified of 41 confirmed cases of SARS-CoV-2 from within the Wuhan region. At this time, it appeared to be contained; however, the virus was spreading more rapidly amongst citizens, and its severity was becoming increasingly evident, with one individual dying, and others becoming severely ill. To aid in the identification of the virus – should it spread beyond China, genetic sequencing was released on the 12th of January 2020. Subsequently, the first case external to China was identified in Thailand on January 13th, in a woman who had travelled from Wuhan. Following this, cases were reported across several countries, including Taiwan, Singapore, Italy, Malaysia, Australia, and the United States of America by February 2020 (Hiscott et al., 2020; Warner et al., 2020). New Zealand's first case was recorded on February 28th, in a person travelling from Iran to New Zealand (Strongman, 2020). As the virus spread globally, infection rates and deaths began to climb dramatically, with countries such as Italy and the United States of America being significantly affected. On March 11, 2020, the World Health Organisation declared the spread of this disease now labelled coronavirus 2019 (COVID-19) a pandemic. The global spread of COVID-19 was rapid, with over 100 countries recording cases before the declaration of the pandemic (Warner et al., 2020).

The spread of COVID-19 continued, expedited by international travel and close-quarter living and working conditions. Infection was passed predominantly through respiratory fluids carrying the COVID-19 virus. Three primary modes of infection were identified: inhalation of infected droplets, deposition of droplets from coughing/ sneezing on mucous membranes, and touching mucous membranes with hands that had come into contact with virus-infected surfaces (Centres for Disease Control and Prevention, 2021). Following infection, COVID-19 has an incubation of 2-5 days before the onset of symptoms, with individuals being infectious 1-2 days prior, and 3-5 days after symptom onset. Symptoms include a dry cough, sore throat, chills, nasal congestion, headache, and in some cases, nausea and diarrhoea (Centres for Disease Control and Prevention, 2021). The loss of taste and smell was also common among infected individuals (Centres for Disease Control and Prevention, 2021). Symptoms varied between individuals; however, increased severity and predisposition to infection were seen amongst vulnerable populations: pregnant women, immunocompromised people, and older adults (55-years and older) (Huang, Wei, Hu, Wen, & Chen, 2020; Shereen, Khan, Kazmi, Bashir, & Siddique, 2020).

The virulent nature of this disease, in the absence of effective treatment or preventative medicine, saw international death tolls rising and health systems overwhelmed (Aristodemou, Buchhass, & Claringbould, 2021; Pincombe, Reese, & Dolan, 2021). Hospitals and healthcare centres began triaging patients, only taking the most unwell, and discharging any non-urgent patients for fear of them catching COVID-19 from other infected individuals. Many health systems cancelled elective surgeries, converted spaces into isolation wards and began rationing medical supplies as shortages in protective and life-saving equipment became the norm (Basseal et al., 2022; Cotel et al., 2021). Healthcare workers were overextended and placed at an increased risk of burnout and trauma, due to the spread of the virus amongst staffing and the general population (Cotel et al., 2021). These challenges began to impact care. Hospitals internationally were short staffed, did not have enough personal protective equipment (N95 masks, face shields, gowns) and were stretched to the breaking point. Visitors were banned from medical facilities, leading to people being isolated and alone undergoing complex medical procedures. Antivirals had limited effect and were not easily accessed, and there were no vaccines available to prevent or treat the infected and those looking after them (Mallhi et al., 2020).

Soon not only was healthcare stretched, but so too were death care systems (Bear et al., 2020; Zavattaro, Entress, Tyler, & Sadiq, 2021). In the United States refrigerated trucks were used to store bodies once the morgues were full, mass graves were brought into effect and used for unclaimed decedents (Zavattaro et al., 2021). In Italy, crematoriums were overwhelmed in some areas, with trucks brought in to take bodies to other regions, and mandates were placed around funerals and cremations to minimise exposure risks (Castelfranco, 2020; Ussai et al., 2020).

In the absence of treatment options, the only choice for healthcare systems and governments to manage the spread was through the instigation of public health measures (Naimark et al., 2021; World Health Organization, 2020a). Some of these included mandating social distancing, the wearing of PPE, lockdowns requiring people to stay in their homes, and quarantining if infected, or living with someone infected. The goal of all of these measures were to "flatten the curve" of infection and try to ease the burden on overwhelmed healthcare systems.

Controlling & Coping with COVID-19 Internationally in 2020

With COVID-19 being a global pandemic without vaccine or effective treatment options, the focus internationally became on reducing the spread of the disease. COVID-19 was recognised as being a particularly infectious disease, evidenced by it taking three months to initially reach 100,000 cases, whilst the next 100,000 was attained in just 12 days (World Health Organization, 2020a). The rapid spread was in part due to asymptomatic individuals or the newly infected spreading the virus without realising.

International reactions to the threat of COVID-19 were unlike anything seen in recent history. Governments ranged in their responses, with many following WHO guidelines to varying degrees. These included: physical distancing of at least one metre from others to reduce transmission risks; hand hygiene, with emphasis on frequent hand washing with soap and water or use of an alcohol-based sanitiser; behavioural etiquette; covering the mouth when sneezing or coughing with a bent elbow disposing soiled tissues immediately, and staying home when unwell or symptomatic. These general guidelines were shared with the world, to help slow the spread of COVID-19 in the absence of treatment options. By March 31st, 20 days following the declaration of the pandemic, most countries were utilising a range of these options, and had developed strategies which for the most part fell into one of three categories; aggressive containment, suppression or mitigation.

China was one of the hardest hit nations, and imposed very strict lockdowns in cities where the outbreak was most dominant, including Wuhan. China adopted what could be categorised as an "aggressive containment" strategy to the outbreak (Wu et al., 2021). These lockdowns saw the closure of public spaces such as restaurants, shops and religious centres. Any public space such as buses, schools, or hospitals were frequently sanitised, and people's access to certain areas were restricted, with stay-at-home measures in place. Most residents were only permitted essential travel for groceries and medical appointments. To enter these shops, often health checks were completed, with temperature readings commonplace at public locations. Quarantine requirements were strict, with anyone in close contact with a confirmed case required to isolate for two weeks (Edouard Mathieu, 2020; Hale et al., 2021; Wu et al., 2021).

In Europe, Italy was particularly impacted by the early stages of the pandemic, being one of the first European nations to have cases. Initially, restrictions were looser, with restaurants allowed to be open during the day for example (World Health Organization, 2020b) . However as the death toll rose in Italy in February and March 2020, it led to the declaration of nationwide lockdowns, with all public gatherings and non-essential businesses closed. Schools were closed and movement was limited throughout the country (Edouard Mathieu, 2020). The United Kingdom, initially adopted a “mitigation” approach with looser public health restrictions in place at the onset of the pandemic, aiming to minimise economic and health system impacts, much like Italy. However, as of April 2020, they shifted into a “suppression” approach due to rapidly increasing COVID-19 infection numbers and deaths (Wu et al., 2021). At this time, phases of lockdowns were implemented, including nationwide restrictions where residents were only allowed to interact with those within their household or support “bubble” a term adopted from New Zealand’s lockdown messaging. The tiered level of restrictions allowed flexibility in their lockdowns, with more stringent rules in place for areas of greater infection (Ebrahim, Ahmed, Gozzer, Schlagenhauf, & Memish, 2020; Edouard Mathieu, 2020).

A “mitigation” approach was the primary method of containment taken by Sweden. This approach aimed to flatten the curve of infection to reduce the burden on health systems, whilst working towards achieving herd immunity (Hale et al., 2021; Wu et al., 2021). Instead of mandated lockdowns and restrictions, they requested people be vigilant about hand hygiene and etiquette, and asked people where possible to work remotely. Unlike most other nations, schools did not close, and most businesses remained open with encouraged physical distancing in place. The main measures put in place to combat COVID-19 included contact tracing and isolation requirements, as well as investing money and resources into their healthcare system to support the increased workload brought on by COVID-19 patients.

Outside of Europe, the United States of America’s response significantly varied from state-to-state. In California and New York, state-wide restrictions were put in place, which limited people’s movements outside their homes, curbing any activities outside of those essential for living. Early on in 2020, the Centres for Disease Control and Prevention recommended the use of masks in public settings such as transportation, however did not mandate their usage nationwide. Some states such as New York required them in public, whilst in other states, these strict rules were not put in place, with more flexible arrangements made, deeming the use of personal protective equipment such as facemasks "optional". These varied arrangements saw COVID-19 spreading and impacting the United States significantly in 2020, with their healthcare system struggling to support the influx of sick individuals.

Australia adopted a maximum suppression policy initially, with intensive border closures – internationally and between states – and stringent quarantines and isolation rules (Basseal et al., 2022; S. L. Chang, Harding, Zachreson, Cliff, & Prokopenko, 2020). Travellers to Australia were required to quarantine in facilities for 14-days, and bans on local travel and group gatherings were enforced by police. Contact tracing and mask wearing requirements were put in place, and restaurants were only able to supply takeaway food (S. L. Chang et al., 2020; McAnulty & Ward, 2020).

International responses to COVID-19 varied to some degree between nations, but for the most part fell into one of three categories; aggressive containment, suppression or mitigation. Some countries such as China took the aggressive containment approach, with stringent lockdowns, social distancing measures, surveillance testing, contact tracing, and nationwide restrictions. The goal of these measures were to eliminate community transmission for more than 28 days. Other nations focussed more on trying to supress the outbreak such as the United States of America, and the United Kingdom in later stages. These nations aimed to minimise the amount of cases, but did not aim to eliminate transmission within the community. Mitigation as a strategy was used predominantly by Sweden, and this aimed to develop herd immunity, whilst allowing community transmission in low risk groups, and trying to protect vulnerable groups.

Controlling & Coping with COVID-19 in New Zealand in 2020

As an isolated island nation, New Zealand was able to consider the international strategies to managing COVD-19 outbreaks, and adjust and plan a response most beneficial to the nation. Prior to this, New Zealand had been following their pandemic plan for an influenza outbreak, in the absence of one for COVID-19. Primarily, this plan focussed on minimising an outbreak, utilising social distancing and hygiene measures – as for an influenza epidemic it was assumed that elimination was not possible without extreme measures. However, following observations of international actions, where strategies of mitigation were largely abandoned for a strategy of suppression, New Zealand appeared to alter their approach to managing the COVID-19 pandemic (Baker, Kvalsvig, Verrall, Telfar-Barnard, & Wilson, 2020; Ministry of Health, 2022). The new focus was on suppression, aiming for elimination – with zero-to-low incidence of COVID-19 if possible (James, Hendy, Plank, & Steyn, 2020; Ministry of Health, 2022).

When COVID-19 pandemic began to escalate, many countries opted for border closures to reduce the chance for further spread. Similarly, New Zealand opted to close to international travel, shutting the borders to all but citizens and permanent residents on March 19, for the first time in the nation's history. On March 21 2020, New Zealand introduced its suppression plan, and the nation went into Alert Level 2. The Alert Level System was the label of the graduated stages of the nation's suppression plan, with increasing numbers relating to increased levels of restrictions (Ministry of Health, 2022).

Alert Level 1 was designated as the 'prepare' phase, with COVID-19 being seen as being contained within the community. There were no restrictions on movement or gatherings, however individuals aged 12-years and older were required to use facemasks on public transport and airplanes. Alert Level 2 was the 'reduce' phase, with low community transmission understood to be occurring. Gatherings of up to 100 people were allowed, with mandatory record keeping in place. Individuals were allowed to return to work and school, but there was a minimum one-metre social distancing requirement, and limits on numbers in hospitality and event spaces. Vulnerable individuals, such as older adults were encouraged to take further precautions if leaving their homes. Mandatory face mask wearing was in place for healthcare, retail, public services (social services, libraries) and on public transport (Cousins, 2020; Ministry of Health, 2022).

Alert Level 3 was the 'restrict' phase, which was when there were multiple community transmission cases and active clusters. At this time, people were expected to remain home in a "bubble" – of only household contacts. There was some expansion allowed to one other bubble to allow support with caregiving or engagement with isolated individuals, but only one other bubble was allowed to join with another exclusively. Inter-regional travel was highly restricted, with only some reasons permissible (Ministry of Health, 2022). Businesses who could operate under level three distancing restrictions, and were unable to be work from home (for example builders) were allowed to open. Working and learning from home was mandatory where possible, those under the age of Year 10 (14-15 years old) who could not learn from home, or needed to be at school due to their parents work were allowed to attend in-person schooling with distancing measures. A maximum of ten people were allowed for weddings and funerals, and all other gatherings were cancelled. Contactless trading was allowed, with the public only allowed inside essential services such as supermarkets and pharmacies. Public facilities were closed, and healthcare was recommended to undertake virtual consultations where possible. Vulnerable individuals such as the elderly were encouraged to stay home where possible. Face masks were mandatory as in level two, and when leaving home a two-metre distance requirement was in place for the public.

Alert Level 4 was the ‘lockdown’ level, and most stringent restrictions were in place. At this phase the risk was that the disease was not contained and was spread throughout the community. No gatherings were allowed of any kind. No extensions of bubbles were provided, excepting for people working in essential services who needed childcare support. People were mandated to stay home, with no travel available, except for trips to the supermarket or for medical care. All public and education facilities are closed. Only essential services and workers are allowed to move; healthcare and supermarket workers for example.

Following the announcement of the Alert Level System on March 21st 2020, and movement of New Zealand in to Level 2, the nation gradually progressed to level three on March 23rd, and finally into its first Level 4 lockdown on March 25th at 11.59pm, with a national state of emergency declared at 12.21pm. The nation remained at Alert Level 4 till the 27th of April at 11.59pm, when it moved to Alert Level 3 till May 3rd, following no new COVID-19 cases reported on May 4th. As of 8th of June 2020, New Zealand declared that its elimination strategy had been successful, with no active cases of COVID-19 in New Zealand, and the nation moved to level one. This strategy of elimination at this time as deemed to be effective, with less than 60 cases reported, and 5 deaths in the nation (Baker, Wilson, & Anglemyer, 2020; Cousins, 2020). The post-elimination phase had a maintained focus on border control, with all entrants to New Zealand required to isolate in government quarantine facilities for at least 14-days to prevent community transmission. There was brief resurgence in cases in August 2020, with four community cases detected in Auckland. On 12th August 2020, Auckland was moved to Alert Level 3, whilst the rest of New Zealand was moved to Alert Level 2. On August 30th, Auckland moved to Alert Level 2 with extra restrictions on travel and gatherings (no movement outside of the Auckland region boundaries). On

September 21 2020, the rest of New Zealand returned to Alert Level 1, with Auckland following on October 7th 2020.

In 2020, New Zealand’s focus on elimination appeared somewhat successful, with the focus on tracing and controlling cases as quickly as possible enabling the country to return to a semblance of normalcy much quicker than the rest of the world who were still working on supressing and mitigating the COVID-19 pandemic. These lockdowns and restrictions whilst similar to those internationally, were employed much more rapidly in New Zealand, and combined with intensive border measures allowed for a thorough suppression, and mitigated the impact on the community, resulting in one of the lowest death tolls and case numbers of COVID-19 internationally.

Impacts of Restrictions on Health

In 2020 whilst the pandemic was still in its early stages, and nations were implementing strategies to combat COVID-19, the effects of more intense control measures such as lockdowns were unknown. Whilst practical and public health benefits were clear: control disease spread, reduce burden on health care systems and potential to reduce deaths due to COVID-19, the secondary impacts of restrictions on the health of those the measures sought to protect were less well known.

Prior to the pandemic there was a growing body of evidence suggesting that perceived isolation and social disconnection can have a detrimental impact on the mental health of older adults, with increased incidences of depression and anxiety amongst those feeling more isolated (Kuiper et al., 2015; Santini et al., 2020; Shankar, Hamer, McMunn, & Steptoe, 2013). Santini and colleagues (2020), identified that perceived loneliness and disconnection from others as measured by the size of their social network and number of social interactions could predict anxiety and depression symptom severity in older adults. Considering this, it highlights the potentially detrimental impacts that the lockdown restrictions may have had on this population during the pandemic, as a primary containment measure used internationally was lockdown restrictions which resulted in social isolation for many populations.

A recently published systematic review by Chiesa and colleagues (2021) looking at the health impacts of COVID-19 lockdown measures such as social distancing and stay-at-home measures, summarised direct and indirect impacts on health that have emerged since early 2020. Of the direct effects, they found several studies reported a high number of mental health difficulties in people who experienced isolation or quarantine. These difficulties included anxiety, depression, stress and post-traumatic stress disorder (PTSD) (Brooks et al., 2020; Chiesa, Antony, Wismar, & Rechel, 2021; Henssler et al., 2021; Hossain, Sultana, & Purohit, 2020). In the older adult population, the review showed a potential link between PTSD and isolation/ quarantine (Chiesa et al., 2021).

Chiesa and colleagues (2021), also reported that not only was mental health impacted, but so too was physical health. People were not only less able to access healthcare in non-urgent situations, with elective procedures in many countries cancelled, but also there was an avoidance of medical facilities for fear of contracting COVID-19. Additionally, the restrictions in place limited people's access to facilities such as gyms, and resulted for many in an increased sedentary lifestyle, reducing their physical health.

Limitations on an individual's physical and mental health, restricted access to everyday activities, and increased stress from fear of infection, therefore likely had noticeable impacts on the well-being, quality of life and life satisfaction for those experiencing lockdowns and increased restrictions (Alhalaseh et al., 2022; Chiesa et al., 2021; Kotwal et al., 2021).

Vulnerable Populations

If the COVID-19 lockdowns and restriction measures did have an impact on healthy, neurotypical individuals, it is feasible to consider that there may have been differentially greater impact on 'vulnerable populations', such as people with cognitive impairments, chronic health conditions and older adults (aged 55 years or older). In many nations, restrictions were directed at people deemed as "vulnerable", as they were more likely to develop severe-to-fatal cases of COVID-19 (Kang & Jung, 2020; Wang et al., 2020). For example, a study by Wang and colleagues (2020) found that people aged 80 or older had a 25% fatality rate from COVID-19 infection, compared to those under the age of 50, whom had a 1% fatality rate (Wang et al., 2020). In some nations, these populations were asked to self-isolate prior to enforced lockdowns, and continue these after restrictions had eased for the general population.

In addition to the conditions imposed by governments, there were increased concerns from these individuals about contracting COVID-19, therefore, this led in many cases, to self-imposed restrictions and increased vigilance and isolation to reduce their own risks. These individuals often limited contact with the outside world, reduced physical activities, and often did not proactively seek out healthcare as much as previously for fear of contracting COVID-19 (Agrawal et al., 2021; Lu, Kong, & Shelley, 2021; Schuster et al., 2021). However, for many vulnerable populations, in particular older adults, isolation can detrimentally impact their mental health, with increased symptoms of anxiety and depression (Lara et al., 2019; Manca, De Marco, & Venneri, 2020; Penninkilampi, Casey, Singh, & Brodaty, 2018; van Maurik et al., 2020). This may have resulted in a self-perpetuating cycle for these vulnerable individuals. If their connections were limited by enforced measures, but they also felt it necessary to self-limit social connections, it may have resulted in detrimental impacts on their mental and physical health as a result of the inability to access activities that ordinarily bring them enjoyment, such as hobbies and groups which kept them connected with the world.

Additionally, often ‘vulnerable’ older adults have more comorbidities, and have ongoing follow-ups to maintain their health, as do immunocompromised and chronically ill individuals. This suggests that compared to healthy adults, shifts in the healthcare systems made to cope with the influx of COVID-19 patients may have had more detrimental impacts for these vulnerable populations. With medical facilities limited or closed, and resourcing stretched, many individuals may not have had the opportunity for regular follow-up that they required, if they felt safe enough to even attend these appointments during the pandemic – as many vulnerable people avoided healthcare facilities in the early days of the pandemic (Lu et al., 2021; Schuster et al., 2021). One way healthcare facilities tried to adapt to the pandemic was through the offering of virtual consultations. However, for older adults in particular, the shift to online medical assessments and connections was likely inaccessible for many – with technology difficult to access or utilise, leading to unmet health needs over the course of the lockdowns, and restrictions globally (Elbaz et al., 2021; Farhang et al., 2022; Gately et al., 2022; Schuster et al., 2021).

In summary, given the impacts on the health of the general population, it is likely these differentially affected the health of vulnerable populations, in particular older adults. Limited access to routine healthcare, social connections, and fitness facilities to keep physically active, may have both impacted their health detrimentally, as well as likely impaired their ability to thrive. Whilst the COVID-19 restrictions were put in place to mitigate the impact of the virus on the general public, it may be that the secondary effects of the restrictions on vulnerable populations were potentially incredibly detrimental to the health of these individuals in the long-term. Understanding how the isolation, lack of access to healthcare, and social connection impacted vulnerable populations physical and mental health moving forward is important in shaping how these types of restrictions are potentially utilised in the future for these populations.

Mild Cognitive Impairment: The Vulnerable within the Vulnerable

Individuals with mild cognitive impairment (MCI) are typically older, and thus were at increased risk living through the COVID-19 pandemic. They may also, however, have been at increased vulnerability to the effects of the restrictions. Lack of social engagement, and physical inactivity have been shown to be associated with increased risk of cognitive decline, and development of dementia (Devita, Bordignon, Sergi, & Coin, 2020; Liu et al., 2021; Livingston et al., 2020; Norton, Matthews, Barnes, Yaffe, & Brayne, 2014; Penninkilampi et al., 2018). In 2016, dementia was the fifth-largest cause of death worldwide, accounting for 2.4 million deaths (Nichols et al., 2019). With the aging population increasing, there are concerns about a “tidal wave” of dementia occurring in the coming years, with an estimation of 152.8 million cases worldwide by 2050 (Nichols et al., 2022; Sloane et al., 2002). Therefore, understanding how COVID-19 restrictions impacted those at increased risk of developing dementia, such as people with mild cognitive impairment (MCI) is essential.

Overview of Mild Cognitive Impairment (MCI). Mild cognitive impairment (MCI) is estimated to occur in up to one fifth of individuals over the age of 65, and is a risk factor for the development of dementia (Livingston et al., 2017; Petersen et al., 2018). MCI has been defined as a decline in cognitive abilities, usually involving memory, which is evident on objective testing, with relatively preserved functioning in daily life (Petersen et al., 2014; Petersen et al., 2018). This cognitive decline is measureable across one or more cognitive domains, and is a greater deficit than would be expected due to normal ageing (Albert et al., 2013). MCI is often thought of as an interim stage between age-related cognitive decline, and early dementia. Thus, all individuals with dementia will go through MCI, however, not all individuals with MCI will develop dementia (Livingston et al., 2017; Petersen et al., 2018).

From the systematic review of Petersen and colleagues (2018), the diagnosis of MCI continues to increase in prevalence for individuals as they age, with individuals aged 80 – 84 having the highest prevalence rate in the study of 25.2%. Individuals over 65-years old diagnosed with MCI have an increased risk of developing dementia at a rate of 14.9% over the next 2 years when compared to age-matched controls. Whilst diagnosis with MCI can result in reversion to normal cognition in rates of 14.2% - 38% of patients in the studies reviewed by Petersen and colleagues (2018), they also noted that overall, these individuals are still at increased risk of later developing MCI (55% risk) or dementia (65% risk) than those without any MCI diagnosis (Petersen et al., 2018).

MCI can also be divided into amnestic MCI (aMCI), single domain and multi-domain, and non-amnestic MCI, single domain or multi-domain (Cooper, Sommerlad, Lyketsos, & Livingston, 2015; Tangalos & Petersen, 2018). Individuals with aMCI have specific difficulties with their episodic memory, and of these individuals, some studies have estimated that 11.7% - 12.2% will do on to develop Alzheimer's disease, dependent on whether they have a single or multiple domains impaired at diagnosis of MCI (Oltra-Cucarella et al., 2018).

Modifiable risk factors for MCI progression. Given the increased rates of progression to Alzheimer's disease and other dementia types from individuals with MCI, understanding what can be done to support their cognitive health and prevent/delay this decline is of particular importance. Considering physical health, recent meta-analyses found that pre-diabetes, diabetes, metabolic syndrome and cardiovascular conditions such as carotid stenosis, hypertension and atrial fibrillation resulted in increased risk of progression from MCI to one of the dementia types (mixed, vascular or Alzheimer's disease) (Campbell, Unverzagt, LaMantia, Khan, & Boustani, 2013; Livingston et al., 2020; Pal, Mukadam, Petersen, & Cooper, 2018). Ways to moderate the impact of some of these conditions included diet, exercise, and regularly taking prescribed medications (Livingston et al., 2020; Pal et al., 2018).

A growing body of evidence indicates that physical activity is associated with improved cognitive outcomes in both individuals with MCI and Alzheimer's disease (Erickson et al., 2019; Pisani, Mueller, Huntley, Aarsland, & Kempton, 2021). The meta-analyses by Pisani and colleagues in 2021 indicated that physical activity has comparably beneficial effects to Donepezil – a recommended medication for Alzheimer's disease.

Regular exercise also may reduce cardiovascular risk factors such as high blood pressure and obesity which can also contribute of progression of MCI to Alzheimer's disease, and reduce quality of life (Ahlskog, Geda, Graff-Radford, & Petersen, 2011; Rovio et al., 2005).

Outside of physical exertion, there is also some evidence that cognitive stimulation is also beneficial in supporting individuals with MCI to remain cognitively healthy. Some studies have found computerised cognitive stimulation exercises, reading and group activities to be beneficial at reducing incidence to dementia (Hill et al., 2017; Karp et al., 2009). Social engagement has been a particular area of importance in maintaining not only cognitive health, but also an individual's quality of life. Studies have shown that people who engage in social groups (of their choice), and socialise with friends/ family regularly have had higher health related quality of life (Hughes, Flatt, Fu, Chang, & Ganguli, 2013; Pitkala, Routasalo, Kautiainen, Sintonen, & Tilvis, 2011; Saito, Murata, Saito, Takeda, & Kondo, 2018). Social participation in particular predicts cognitive decline in older populations, and has been posited to be protective of dementia through the increasing of cognitive reserve and reduction in stress levels (Bourassa, Memel, Woolverton, & Sbarra, 2017; Fratiglioni, Paillard-Borg, & Winblad, 2004). Considering social engagement and participation, systematic reviews of the literature have indicated that limited social interaction is associated with poorer cognitive outcomes for older adults, including people diagnosed with MCI and dementia (Kelly et al., 2017; Kuiper et al., 2015; Lisko et al., 2021; Livingston et al., 2020).

In addition to limited physical activity, and reduced social interactions, difficulties in mental health, such as anxiety and depression, have been shown to impact cognitive function in older adults (Chow, Verdonschot, McEvoy, & Peeters, 2022). Depression and anxiety are common in older adults, and are reported at rates of 36-63% and between 8-71% respectively in some studies of MCI (Ballard et al., 2000; Ma, 2020; Palmer et al., 2007; Solfrizzi et al., 2007). Tan and colleagues (2019) concluded that depressive symptoms are often present amongst individuals with MCI dwelling in the community. However, it remains unclear if this relationship is causal – if the depression symptoms are part of transition to dementia, or whether depression causes this transition. However, if experiencing depressive symptoms, individuals with MCI are at increased risk of conversion to dementia (Tan et al., 2019). This supports the findings of previous reviews and meta-analyses indicating similar impacts of depression on the risk of transition from MCI to dementia (Mourao, Mansur, Malloy-Diniz, Castro Costa, & Diniz, 2016).

MCI and potential impacts of COVID-19 Restrictions

Given New Zealand's 2020 lockdowns involved strict limitations of movement, cancellation of events, and minimising exposure risk, this raises the question of potential impacts on the functioning of older adults, especially those with MCI. In particular, the loss of the ability to go out to exercise beyond a solitary walk/run, to socialise with friends and family, attend groups/ activities which stimulate them cognitively could have notable impacts on their well-being and cognitive functioning. As noted above, staying physically active, and mentally engaged through connection with others has been shown to reduce the incidence of progression to dementia for individuals with MCI (Erickson et al., 2019; Hughes et al., 2013; Livingston et al., 2020; Pisani et al., 2021). Due to the restrictions, these opportunities may have been limited for these individuals, potentially impacting their mental health, as increased depression and anxiety symptoms are common in older adults whom are less physically and socially active (Brooks et al., 2020; Chiesa et al., 2021; Tan et al., 2019).

Limiting activities which not only maintain cognitive health, but also mental and physical health may have had flow-on effects as to how these individuals not only felt, but perceived their lives during this period. The COVID-19 pandemic was an unprecedented phenomenon in modern times, and much speculation has been had at how people coped, lived, and potentially thrived through this period of restriction and isolation. Understanding how individuals with MCI perceived their lives during this time, and how restrictions impacted their sense of well-being and quality of life is important, as it seems unlikely that this will be the last time the world experiences a devastating pandemic or catastrophe. This is the focus of this thesis. Knowing how best to support people with cognitive impairments during this time to care for themselves physically, and mentally is of the utmost importance to maintaining their long-term health and live their most fulfilled lives given the circumstances in which they live.

"Living well" and its determinants

Many factors influence an individual's ability to feel like they are living their best possible lives in any given circumstance. Mental state, physical health, economic situation, purpose, social connection, relationships, and independence are all contributing factors to how an individual may feel about their life at any given time (Clare et al., 2014; Steptoe, Deaton, & Stone, 2015). Often for individuals whom are considered 'vulnerable', in particular older adults with a chronic illness such as Alzheimer's disease, the idea of considering their individual life, impacts of the disease, and how to ensure their contentment and comfort in their lives is at times missed. The focus is often on the burden of the disease, the limitations of functioning, and less on the things that can be enjoyed despite it.

'Living well', is a term used by Harris and colleagues (2012) that refers to "the best achievable state of health that encompasses all dimensions of physical, mental, and social well-being" (Clare et al., 2014; Harris & Wallace, 2012). This concept considers the idea that the circumstances of an individual's life – for example, chronic illness, disability, or older age – do not predetermine one's ability to perceive their life with enjoyment and contentment (Harris & Wallace, 2012). This definition is more holistic than others, emphasising the role that social and environmental factors play in an individual's ability to "live well" (Clare et al., 2014; Harris & Wallace, 2012; Institute of Medicine, 2012). The concept of "living well" seeks to incorporate quality of life, life satisfaction, and well-being into a broader concept that captures an individual's "self-perceived level of comfort, function and contentment with life" (Wallace et al., 2012, p 32).

Quality of Life

Quality of life has many different definitions across the literature. Some equate it with health-related quality of life, however, others define it in a wider sense considering well-being, and some consider it analogous to health status (Karimi & Brazier, 2016). Even with keeping just the phrase quality of life there a myriad of different definitions, some considering subjective well-being, others based on human needs and some on objective measures such as evaluations of material and physical well-being (Karimi & Brazier, 2016).

The World Health Organisation (WHO) defines quality of life as "individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (Whoqol Group, 1995). This definition reflects individuality and subjectivity in the concept, as well as including influencing factors such as culture (Dichter & Meyer, 2017).The WHO definition continues, to state that quality of life "is a broad ranging concept affected in a complex way by a person's physical health, psychological state, level of independence social relationships and their relationship to salient features of their environment" (Whoqol Group, 1995). Given the wide ranging effects that disease and the pandemic have had on an individual's connection to the world, it is important to have a definition of quality of life that goes beyond the purely health-related, and includes factors such as culture and their environment, as well as the health-related and psychosocial influences.

For the current research, in keeping with the WHO definition of quality of life, the WHOQoL questionnaire is a logical choice. Created by the WHO, this questionnaire has been used in a number of studies on people with cognitive deficits, such as Alzheimer’s disease and MCI (Lucas-Carrasco, Skevington, Gómez-Benito, Rejas, & March, 2011; Mate et al., 2012) . Additionally, given the research scope included individuals’ with no cognitive impairments (controls), dementia-specific quality of life measures were not appropriate, and the WHOQoL-BREF was selected.

Well-being

Research into well-being utilises a range of definitions and descriptions of what exactly well-being encompasses (Dodge, Daly, Huyton, & Sanders, 2012). Dodge and colleagues (2012) described well-being as a state of equilibrium which is influenced by challenges or events in life. Therefore, well-being reflects an individual’s emotional response to a situation – this includes how they experience and balance both positive and negative emotions. Well-being is often seen as a subjective state, as how a life event affects one individual may be very different to how it would impact another (Diener & Chan, 2011). Subjective well-being can causally influence how people consider their lives and evaluate aspects such as life-satisfaction – as these judgements are based on emotions and mood. When people feel happy or sad, it is often due to how they feel their life is going at that time, and how those challenges in their life match up to their resources for coping (Dodge et al., 2012).

Research indicates that subjective well-being can influence an individual’s health and longevity, with a number of factors such as physical health influencing how this is moderated (Buecker, Simacek, Ingwersen, Terwiel, & Simonsmeier, 2021; Cross, Hofschneider, Grimm, & Pressman, 2018; Diener, Pressman, Hunter, & Delgadillo-Chase, 2017). In a review Diener & Chan (2011) found that in some cases of chronic illnesses, positive affect was associated with reduced rates of mortality and increased quality of life and functional status. A myriad of factors influence individuals’ well-being, including environment, emotional style, financial stability, socioeconomic status, social support, connections and engagement (Bourassa et al., 2017; Huppert, 2009; Huppert & So, 2013; Hutnik, Smith, & Koch, 2012; Sirven & Debrand, 2008). The interactions older people have with the environment around them appear to greatly influence well-being. This has also been emphasised in previous research by Kitwood (1997), who highlighted how the environment can enhance/ detract from the well-being of cognitively-impaired individuals.

Given the many factors in maintaining the equilibrium of well-being, it is therefore surprising to note that within the literature, very few studies have focussed on the relationship between subjective well-being and MCI or Alzheimer's disease (Martyr et al., 2018; Zank & Leipold, 2001). Research into well-being has often been linked with quality of life, rather than considered as an individual measure (Kerner, Patterson, Grant, & Kaplan, 1998; Martyr et al., 2018; Vogel, Mortensen, Hasselbalch, Andersen, & Waldemar, 2006). Despite this, a number of measures exist to evaluate well-being. One of the most commonly used is the WHO Five Well-Being Index (WHO-5), which includes aspects of positive mood general interest and vitality (Bech, 2004; Heun, Bonsignore, Barkow, & Jessen, 2001; Y.-T. Wu et al., 2018).

Life satisfaction

Life satisfaction is made up of components of space for continued personal development, well-being, active social participation, control over one's life, positive elements of happiness, a purpose in life, and sense of meaning (St. John & Montgomery, 2010). Life satisfaction is a judgemental process, where individuals will evaluate their lives based on their own unique set of criteria. Pavot and Diener (1993) define life satisfaction as "a conscious cognitive judgement of one's life in which the criteria for judgement are up to the person" (Diener, Emmons, Larsen, & Griffin, 1985; Pavot & Diener, 2009). They reason that the judgement is made by the person comparing how they perceive their life to a self-imposed set of standards, and dependent on to what degree the life circumstances meet the standards, the individual will feel satisfied with their life (Pavot & Diener, 2009). These standards and what is perceived as a "good" life will vary between individuals. Although there may be some components universally considered good – such as health, financial security, and energy, the value that different individuals place on these can greatly differ. Because of this, life satisfaction is not purely about a specific component of life, but whether an individual is satisfied with their life as a whole (Diener et al., 1985; Pavot & Diener, 2009).

Life satisfaction is an important area to consider when working with older, or ill populations as it distinguishable from quality of life and well-being in a number of ways. First, while people may deny or ignore negative or positive emotions on a scale, they may be more likely to still identify undesirable or desirable factors in their lives. Additionally, life satisfaction is a measure over a longer period of time. In contrast to well-being and quality of life measures that can often focus on the present, life satisfaction gives context to the whole of an individual's life, and may help with understanding why they have the affect they are exhibiting (Pavot & Diener, 2009).

Life satisfaction in older individuals has been associated with a wide variety of factors, including health, functionality, mobility, relationships, independence and social support, and emotional balance (Abu-Bader, Rogers, & Barusch, 2003; Zank & Leipold, 2001). Not only do these factors influence someone's life satisfaction, but life satisfaction scores can also predict adverse outcomes. For example, Peitsch and colleagues (2016), found that low life satisfaction scores predicted dementia over five years. This built on previous research, which showed that life satisfaction was associated with dementia (Peitsch, Tyas, Menec, & John, 2016; St. John & Montgomery, 2010).

Typically life satisfaction is assessed using self-report measures. Although there could be difficulties with this in individuals with cognitive impairments, there is evidence that individuals with mild-to-moderate memory impairments provide reliable reports of their life satisfaction (Clare et al., 2014; Hoe, Katona, Roch, & Livingston, 2005; Woods et al., 2014). One of the most popular scales is the Satisfaction With Life Scale (Diener et al., 1985). It is a five-item self-report scale that has no specific components such as finances or health, but instead allows the participant to integrate all of their values to rate their life satisfaction. This scale has been used among MCI and dementia populations previously with success (Bárrios et al., 2013; Clare et al., 2014; Y. T. Wu et al., 2018).

Living well with MCI

It is important to consider how individuals with MCI may live well. MCI is a condition that affects an estimated up to one in five individuals over the age of 65, and is seen as a risk factor for developing dementia (Livingston et al., 2017). The diagnosis of MCI alone can impact an individual's mental health, as there is no cure, nor guarantee that those with MCI will not progress to a form of dementia. Supporting individuals to live well within the limitations of their cognitive impairment is essential, as living well usually involves staying physically active, mentally engaged with the world, and socially supported, which, as outlined earlier, helps reduce the progression of MCI to dementia or Alzheimer's disease (Bourassa et al., 2017; Erickson et al., 2019; Hughes et al., 2013; Livingston et al., 2020; Penninkilampi et al., 2018). Beyond reducing the incidence of disease, it is valuable to support older adults to enjoy their lives to the best of their abilities. We are now living longer than previously, and individuals can live decades with diagnoses such as MCI. Therefore, understanding how we can best support them to live well, especially in the context of catastrophes such as global pandemics, is essential to maintaining health as a society and ensuring that people can enjoy their later years in life.

The Impact of the Pandemic on "Living well" for Older Adults: Recent Findings

A flurry of studies on the impact of the COVID-19 pandemic have been published in the last two years. Kasar and Karaman (2021) conducted a scoping review of the impacts of early pandemic restrictions on loneliness and social isolation in older adults between December 2019 and March 2021. Their review included seven studies and found that older adults experienced increased social isolation in relation to the restrictions during the pandemic, increasing their degree of loneliness, and decreasing their perceived quality of life. In particular, they noted that those who were struggling socioeconomically, or living alone, were at greater risk of having their quality of life and loneliness detrimentally impacted (Kasar & Karaman, 2021). Alhalaseh and colleagues (2022) reported that in a cross-sectional study involving Jordanian community-dwelling older adults, loneliness on average had significantly increased amongst the 456 older adults assessed. Loneliness in this study was also significantly associated with multi-morbidity, poor perceived health and concern about contracting a COVID-19 infection. Conversely a study by Caro and colleagues (2022) looked at the impact of the COVID-19 lockdown stringency on loneliness in five European countries. Their findings suggested that social isolation and the perception of social isolation varied across ages: Older people were less likely to feel lonely but more affected by the lockdown measures, in particular from their inability to have face-to-face interactions, whereas young people reported being more lonely than older individuals (Caro, Clark, d'Ambrosio, & Vögele, 2022).

Whilst most of these studies involved quantitative methods, a longitudinal mixed-methods study by Neves and colleagues (2023) considered the qualitative reports of the impact of lockdowns on the loneliness of 32 already lonely older adults through the 2020 lockdowns in Australia. One theme that emerged was that most participants felt the lockdowns in Australia had exacerbated their loneliness. In particular, they described the loss of ways in which they managed loneliness in their lives – through group activities, volunteer work and even medical appointments was noted, as these were primarily ways they coped pre-lockdown (Neves, Colón Cabrera, Sanders, & Warren, 2023). Some participants also spoke about the sense of being more isolated due to the quiet that pervaded. Without traffic, pedestrians and casual conversations in the street, most of the participants reported struggling (Neves et al., 2023). To manage this, some reported an increased use in technology, with some moving beyond their usual means of their landline phones, and trying to use tablets/ video conferencing and social media to connect with others. However, many mentioned that these windows of connection did not feel like enough. The emotional distress associated with loneliness was reflected in many of the participant's diaries as several reported being teary and frequent sadness (Neves et al., 2023).

If the impacts of the COVID-19 lockdowns on older adults with pre-existing loneliness detrimentally affected their mood, as indicated in Neves 2023 study, it is possible that mood may have been altered also for those who did not report loneliness pre-pandemic. Several studies have looked at how the COVID-19 lockdowns impacted the mood and mental health of general populations. A number of studies looking at the psychological distress of older adults appeared to indicate that many struggled with increased distress including low mood, increased anxiety, and poorer ability to regulate emotions (Alhalaseh et al., 2022; Giebel et al., 2021; Heid, Cartwright, Wilson-Genderson, & Pruchno, 2021; Vahia, Jeste, & Reynolds, 2020; Yıldırım, 2022).

Interestingly some studies actually found the converse to be true in terms of mental health, with older adults coping better with the stresses caused by the COVID-19 pandemic and lockdowns than younger adults (Barber & Kim, 2021; Carbone et al., 2021; Losada-Baltar et al., 2022; Palgi et al., 2020). Losada and colleagues (2022) found that individuals with higher psychological distress were more likely to have fewer coping strategies, have spent more time watching the news about COVID-19, were more likely to feel like they were a burden, had less connection with friends/family and had higher expressed emotion (Losada-Baltar et al., 2022). Some of this was attributed to the reduction in age-related anxiety around health, and improved coping mechanisms and emotional regulation as individuals aged (Losada-Baltar et al., 2022; Palgi et al., 2020).

The Impact of the pandemic on “Living Well” for individuals with Cognitive Impairment

Given known impacts of social isolation and the potential negative effects of the COVID-19 lockdowns on the well-being of older adults, it is worth considering how restrictions may have impacted the functioning of older adults with existing cognitive impairments. Very recent findings suggest that the COVID-19 pandemic and its restrictions have had detrimental impacts on the cognitive functioning of some individuals with existing cognitive impairments (Manfredini, Pisano, Incoccia, & Marangolo, 2023; Vernuccio et al., 2022). The 2023 review by Manfredini and colleagues considered the impacts of the lockdown measures and COVID-19 infection on both neurologically healthy and impaired populations. Of the cognitively-impaired populations, their review found that during COVID-19 lockdowns in the short-term (first four months) four of seven studies reported a decrease in the cognitive capacity of cognitively-impaired individuals, with all three studies over a 9-to-12 month period reporting a decrease in overall cognitive status related to lockdown measures (Manfredini et al., 2023).

Having a cognitive impairment presents a potentially unique challenge for individuals during the COVID-19 lockdowns. Cognitive impairments may amplify difficulties with coping with new and changing rules, combined with reduced medical visits, social supports, and human interaction, which together may have notably impacted this population more than their same-aged peers without cognitive impairment. To date, very few studies have examined the impact of cognitive decline on individuals’ abilities to connect and cope with the lockdowns. Paolini and colleagues (2021) examined individuals with mild and moderate dementia and found the highest ratings of psychological distress at the peak of the lockdown during the first wave of the pandemic. They also found a significant association between the ratings of perceived stress during this time and cognitive reserve, such that the greater the cognitive reserve, the greater perceived stress. Paolini and colleagues inferred this to mean that the greater available cognitive reserve enabled these individuals to be more cognizant of their surroundings, and subsequently distressed by these, despite being cognitively limited (Paolini et al., 2021). From the limited studies available, it appears there is agreement that cognitive capacity decreased during the lockdown restrictions, with lack of clarity regarding whether this is natural disease progression alone or further exacerbated by the challenge of lockdown restriction (Manfredini et al., 2023). From Paolini and colleagues (2021), it appears that individuals in early stages of cognitive decline, such as MCI, may have been notably impacted by the lockdowns as they may have more awareness of the distressing events, and also be disadvantaged by restrictions more due to limitations in their ability to cope and manage their distress and cognitive decline. However, it remains unclear how the specific impact of restrictions, namely social isolation, reduced physical activities, access to community and services, have impacted this population in detail, with limited studies exploring their experience of these restrictions, and how they have coped during this pandemic.

Current Project

This thesis was proposed as a way to understand the impacts and experiences of both older adults with and without mild cognitive impairment in the first year of the pandemic in New Zealand in 2020. Given that New Zealand took a "hard and fast" approach to lockdowns, with extensive isolation restrictions, understanding how these restrictions impacted these populations and their experiences is important, as this will likely inform responses and supports moving forwards.

At the time of the proposal of this study there was limited information as to how the COVID-19 pandemic was impacting people with MCI and older adults. Even three years after the onset of the pandemic the research on the impact of these lockdowns on individuals with cognitive impairments is mostly limited to people with dementia and those living in residential facilities. Of the research on people with MCI, most is cross-sectional rather than longitudinal, and is quantitative in approach. To date, very little research has focused on how individuals with MCI experienced both the lockdowns and the easing of restrictions as well as how this impacted their ability to live well (where this includes quality of life well-being and life satisfaction). At this time it appears there is still no longitudinal research around how well-being, quality of life, and life satisfaction were impacted by the restrictions in New Zealand for older adults – both with and without MCI.

Understanding these experiences will help us better get a grasp of how we can support older adults both with and without cognitive impairments in future global catastrophes, and may give insights into how during everyday life they may be better supported by those around them. The following study has two main objectives. First it incorporates a unique opportunity to compare pre-pandemic and post-lockdown measures of peoples' well-being, life-satisfaction and quality of life, in cognitively healthy and MCI samples. This will help us understand the extent of the impact, as well as whether there were any points of difference between these groups during this experience. The second objective is to explore in more depth the experiences of these two groups during and after lockdowns, conducting semi-structured interviews and using qualitative analysis to understand their experiences.

Chapter Two: General Methodology

Context

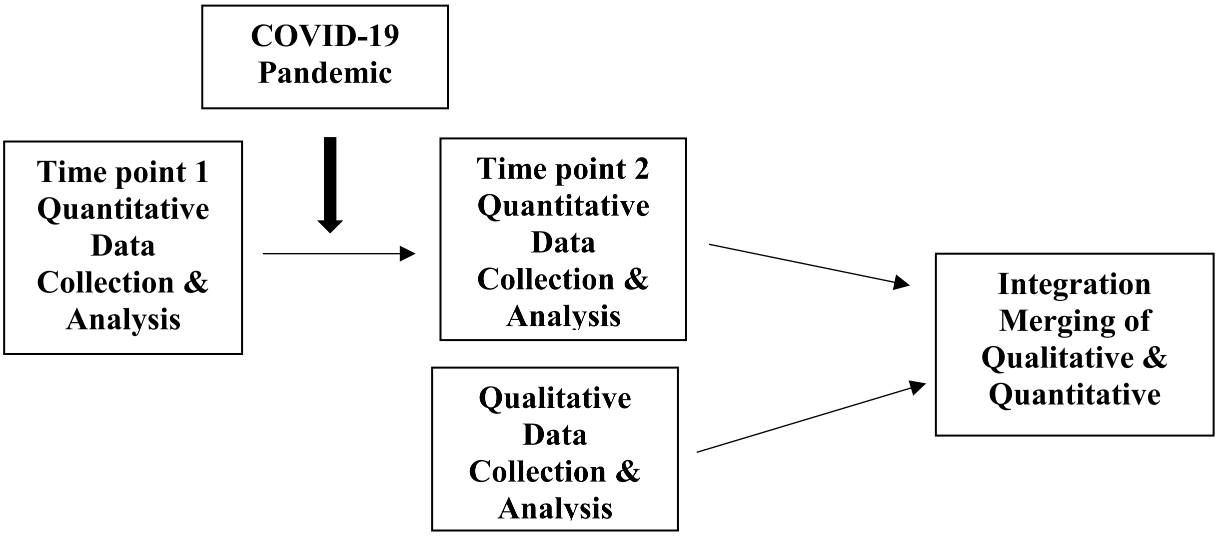
Originally, the topic of this thesis focussed on exploring the predictors of quality of life, well-being and life satisfaction in individuals with early stage Alzheimer's disease. This was part of an existing longitudinal study through the Dementia Prevention Research Clinic (DPRC). Unfortunately, the onset of the COVID-19 pandemic presented a unique confounding variable for this research, as well-being, quality of life and life satisfaction were profoundly affected by the global pandemic and the events that followed. While some data had been collected prior to the onset of the COVID-19 pandemic, the majority of the Alzheimer's disease participants were still to be seen. As a result, the subject of the research was altered to explore the impact of the COVID-19 lockdown(s) on the well-being and quality of life of individuals with Mild Cognitive Impairment (MCI), and their experiences of the lockdowns in New Zealand. Pre-COVID quantitative data had been collected for the control group and MCI group as part of an earlier study focussing on these individuals. The pre-existing quantitative data provided a unique opportunity to explore the potential impact of the COVID-19 restrictions on these populations, as most available research at that time was cross-sectional, as little pre-existing living well data existed. Therefore, for the current study, there was the opportunity to explore this needed gap, as well as provide longitudinal insights into the experience. However, it was recognised that questionnaires alone were unlikely to capture the full depth of the experience of these individuals, as historically this has been the limitation of quantitative research (Creswell & Clark, 2017; Patton, 1990). Therefore, to gain a more nuanced understanding of how participants with and without MCI experienced living well during the 2020 COVID-19, a qualitative component may be needed in addition to the re-administration of quantitative measures.

Study Design & Orientation

To best fulfil the aims of this new research project, a mixed methods approach to data collection was employed. Fundamentally, qualitative and quantitative approaches have different characteristics. Traditionally, quantitative research deals with objective measures, trends, with the generalisation of this data from larger sample sizes, whilst qualitative research looks to explore the subjective experience of the individual, adding depth, richness, and meaning through their interpretation (Creswell & Clark, 2017; Patton, 1990). However, given the intent of the current study was both to understand the impact and depth of experiences of the COVID-19 lockdowns, neither approach alone could provide the scope of understanding, hence the rationale for a mixed methods approach (Creswell & Clark, 2017). The specific approach utilised was a convergent design. This methodology is utilised frequently when comparing quantitative data with qualitative reports to get a more full understanding of a research question. It is deemed beneficial when both types of data is collected in a single visit (which was the case for the data collection at during the post-COVID time points in this study as seen below) (Creswell & Clark, 2017). A convergent design was adopted for the present study. Pre-COVID quantitative data was analysed against the data collected at the post-COVID re-administration of living well measures, which occurred at the same time as the qualitative interview as shown in Figure 1. The two components were then analysed separately with equal weight given to both. Inferential statistics were used for the quantitative analysis and inductive thematic analysis for the qualitative data.

Figure 1

Convergent Parallel Mixed Methods Study Design



Integration of the qualitative and quantitative findings occurred at the interpretation level, through the use of narrative weaving. Integration at this level is feasible if there is a common narrative allowing the qualitative and quantitative findings to be brought together on a theme-by-theme basis (Amadi, 2023; Fetters, Curry, & Creswell, 2013). The use of this approach, allows the researcher to reflect on the meaning of findings as they relate to one another whilst looking for what added value they bring as a whole, and make subsequent conclusions (Fetters & Molina-Azorin, 2017). These conclusions then may be assessed for the "fit" of the data, considering the confirmation, expansion, or discordance of the qualitative and quantitative strands (Creswell & Clark, 2017; Fetters et al., 2013; Yaqoob & Barolia, 2023). The benefit of this approach was that enabled the development of a more comprehensive picture of the phenomena being researched in a limited window of time; i.e. the experience of living well during 2020 COVID-19 lockdowns and easing of restrictions in New Zealand (Creswell & Clark, 2017; Morgan, 2014).

This study was guided by a pragmatic orientation. Pragmatism is a frequently embraced approach within mixed methods research, and is effective as an approach with convergent design, due to its "umbrella" worldview (Creswell & Clark, 2017; Dawadi, Shrestha, & Giri, 2021; Morgan, 2014).With an overarching philosophy which attempts to bridge the qualitative/quantitative research divide through the focus on the practical consequences of research, with the methods being guided by what methods best answer the research question (Dawadi et al., 2021; Feilzer, 2010). This orientation's flexible framework therefore centres the research on "what works" in the real world, with a direct connection to how the research questions, will be able to be related back to the real world in an ethical, practical way (Morgan, 2014). This methodology was useful as it allowed a person-centred approach to understanding the impacts of the global COVID-19 pandemic on measures of well-being and quality of life, as well as making space for the participant's perceptions of the experience (Creswell & Clark, 2017).

Quality of Study

In mixed methods research, there are several ways that quality can be assessed – and all come with their own challenges. This is in part due to the unique nature of mixed methods studies; with researchers adopting various orientations, and approaches, there remains no universal agreement on what constitutes quality, nor universal language agreeing on how to define it as such, and subsequently assess it (Fàbregues, Escalante-Barrios, Toraman, Guetterman, & Fetters, 2023; Fàbregues & Molina-Azorín, 2017; O'Cathain, 2008).

Within the current study, the guidelines set out by O'Cathain and colleagues (2008) was used when approaching this research. The justification, purpose and sequence of the study have been outline above. To ensure quality mixed methods research, the appropriate data and analyses techniques need to be used. In this research, the quantitative methods involved participants repeating a battery of questionnaires which encompassed life satisfaction, well-being, and living well (see chapter three). These measures were all previously administered during the well-being study, and which had been modelled on the wider IDEAL protocol established by Clare and colleagues (2014). Qualitative methods were a semi-structured interview, which was administered at the same time at the quantitative questionnaire were used for data collection.

Analysis of the quantitative data used both parametric and non-parametric testing with Statistical Package for the Social Sciences (SPSS) to assess for patterns in outcome measures, comparing the longitudinal data from the pre/post questionnaires. Qualitative analyses involved using thematic analyses to explore the interviews. Thematic analysis is a flexible method of analysis which allows the researcher to identify and report patterns within data in rich detail (Braun & Clarke, 2006). In the present study, inductive thematic analysis of the interviews helped explore impacts and experiences of the lockdowns and easing of COVID-19 restrictions in participants from the bottom-up, following the Braun and Clarke (2006) steps for thematic analysis, with hand written coding utilised, in addition to NVivo software to discover themes (see chapter four).

The individual qualitative and quantitative approaches were additionally guided by the quality standards in their own domains, as it has been commented that this still necessary for a high quality mixed methods research project (Doyle, Brady, & Byrne, 2016; Teddlie & Tashakkori, 2009). Guba and Lincoln's (1985) four cornerstones of 'trustworthiness'; credibility, transferability, dependability and confirmability were additionally employed to support the quality of the present study (Lincoln & Guba, 1985).

Credibility reflects how much the interpretations and findings accurately and truthfully represent the participants reported experiences (Merriam & Tisdell, 2015). In this study, this refers to how accurately the findings reflect participants' experiences of the impacts of the COVID-19 lockdowns and restrictions on living well. To ensure credibility, I met regularly with both supervisors during the planning process, and during the interview process, I met regularly with my secondary supervisor to debrief as she specialised in qualitative research. She reviewed my data coding against interview transcripts to ensure the codes accurately represented the data. Theme development, write-up, and interpretation was reviewed with both supervisors, to ensure that the findings and interpretations were valid, and representative of the reported views. Quantitative and qualitative elements also enabled for the integration of findings , where it could also later be assessed for the coherence of findings, and subsequently the fit considered, with confirmation reflecting greater credibility (Fetters et al., 2013).

Dependability refers to the consistency of the research process to accepted standards for particular methods and methodologies (Tolley, Ulin, Mack, Robinson, & Succop, 2016). To demonstrate this, the present study utilised well-established procedures for data collection and analysis which are outlined in these sections (chapters three and four).

Transferability refers to the extent to which the findings are relevant to both have relevance in their research field and to be applicable to others (Merriam & Tisdell, 2015). In this research, transferability refers to the data being applicable to the impacts of the 2020 COVID-19 lockdowns on the experiences of living well in older adults with and without MCI. A detailed outline of the participants' demographic information, the methodology used, and thick descriptions, including contextual information were reported. This was to enable others to question the relevance of findings within the scope of the ongoing COVID-19 pandemic and their work with these populations.

The final quality criteria outlined was confirmability. Confirmability refers to the degree to which the findings could be confirmed by others, thus are accurately derived from the data and reflect the participants experiences, rather than researchers ideas or experiences (Tolley et al., 2016). In this research, to decrease the likelihood of this type of bias, I kept a diary, observing and documenting my own role in the research process. This reflected on expectations, assumptions, emotions, observations and responses during data collection, analysis and interpretation, which was discussed with my secondary (qualitative) supervisor during regular meetings. To enhance confirmability, verbatim quotes, were also used to link interpretations directly with what participants reported.

Personal Reflection

As a young, pākeha female researcher, my own experiences in the New Zealand context of COVID-19 – and how participants may experience the interview process, and my presence was something I sought to consider through my research journey. During this time I was undertaking my final year of my clinical training, and I was particularly grateful for that, as I felt this allowed me valuable insight into interpersonal processes – which I feel helped bridge the online divide for some participants, and build rapport, in addition to being sensitive to social cues for in-person interviews, following the eased restrictions.

The experience of conducting this research whilst both living through a global pandemic, and researching the impact of said pandemic on the experiences of my participants was something which was at the forefront of my mind. The inherent influence of experience of studying a phenomena you are also experiencing highlighted the importance of how I needed to ensure that I was reflexive in my practice throughout the process of designing, interviewing, analysing and interpreting my data, as it was such a unique situation. Concerns and biases about participants potential challenges adaptation to technology, my own emotional responses to the announcements of new restrictions, whilst working clinically and conducting this research highlighted the importance of self-reflection. From the initial phases, I was maintaining a reflective journal and regularly met with my supervisors to discuss these reactions and to review my research to minimise the possibility this was influencing the ways I was interpreting my data or findings.

Chapter Three: Quantitative Study

Methodology

As noted above, the broader design of this study a convergent parallel design with a pragmatic orientation. Through the re-administration of measures of well-being, life satisfaction, quality of life, psychological distress, social connectedness and loneliness (as detailed below), this component of the research sought to address the below questions.

Aims

The two questions addressed in this chapter were:

1. Was the quality of life, well-being, and life satisfaction of individuals with MCI and older adults without cognitive impairment affected by the COVID-19 pandemic and lockdowns?

2. Were levels of psychological distress, social connectedness and loneliness in these two groups affected by the COVID-19 pandemic and lockdowns?

Recruitment

Participants were recruited through the DPRCs located in Auckland, Dunedin and Christchurch, and affiliated with the Brain Research New Zealand, a Centre of Research

Excellence. The overall aim of the longitudinal research conducted in the DPRCs is to understand and identify factors which impact the development of memory problems and likelihood of progressing to Alzheimer's disease. To be eligible for this study, individuals must be 55 years or older, be fluent in English and not be living in a residential care facility. Individuals are excluded if they have moderate/ severe dementia, another neurological condition (such as Parkinson's disease or stroke), and history of a significant traumatic brain injury, significant mental health difficulties (e.g. significant psychotic disorder, bipolar disorder) or substance use disorders.

As part of their involvement with the DPRC study, all participants had undergone a multidisciplinary assessment which included clinical assessment by a medical specialist, neuropsychological assessment, mood and lifestyle questionnaires, and structural and functional MRI. Information about functioning in daily life is also provided by a study partner. Clinical diagnosis was decided upon by consensus of a multidisciplinary team, which included a neurologist, older-age psychiatrist, neuropsychologist, and geriatrician. Participants are assessed biennially, with all procedures repeated.

DPRC participants had all agreed to be informed about other research projects related to the clinic. For this research, eligible participants were contacted by a research nurse at the DPRC and invited to take part. Eligible participants for this project were those who had previously participated in the Well-Being study that were either part of a control group of cognitively normal older adults, or individuals with amnesic MCI (McArthur, 2021).

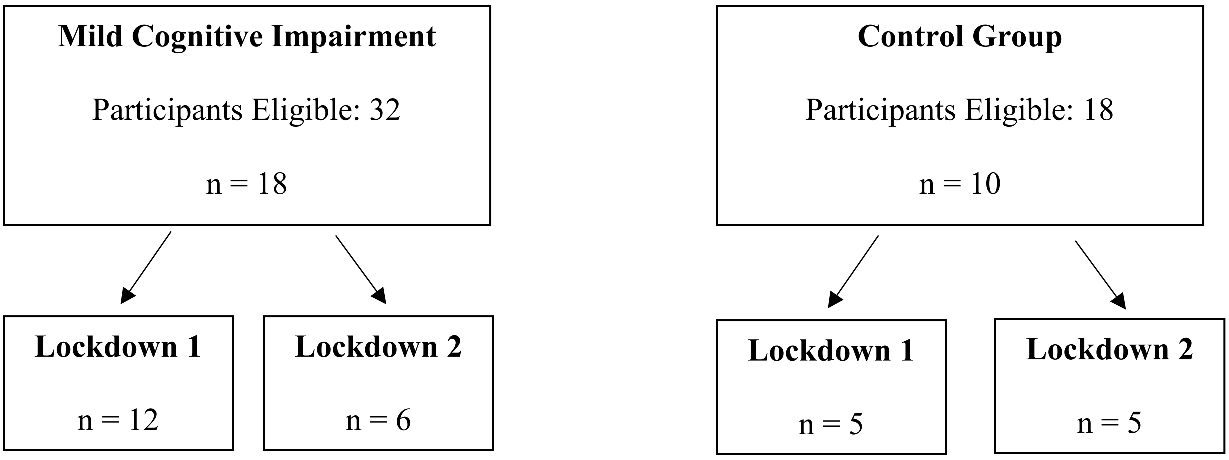
This research was approved by the University of Auckland Human Participants Ethics Committee, with an amendment approved to the original research topic (no. 020400).

Participants

A total of 32 participants with MCI and 18 neurotypical control participants were invited to participate in this study. Of these 18 MCI and 10 control individuals agreed to participate in this follow-up study of their experiences of COVID-19 lockdowns and the impacts of these on their well-being. Participants were further divided into subgroups based upon how many lockdowns they had experienced at the time of their interview, as indicated in Figure 2.

Figure 2

Subgroups of participants based on neurocognitive status and number of lockdowns experienced



Mild Cognitive Impairment (MCI) group. The MCI group comprised 18 participants; 12 had experienced one lockdown and 6 had experienced 2 lockdowns. Of the MCI group, over half were classified as having single-domain amnestic MCI (55.56%, n = 10) with the remainder (44.44%, n = 8) multi-domain amnestic MCI, having cognitive impairments affecting at least one other domain in addition to memory.

Control Group. As with the MCI group, the control group (n =10) were categorised by how many lockdowns they had experienced, split evenly with n = 5 in both groups. The demographic characteristics of the two groups are summarised in Table 1. The MCI and Control groups did not significantly differ in age, gender, education years, or ethnicity (all p-values > .05). As expected, there was a statistically significant difference between the ACE-III (Addenbrooke's Cognitive Examination-III) scores of the MCI and control groups, with the MCI group performance significantly lower (t = 6.52, p = .01).

Table 1. *Demographic characteristics of MCI and Control participants*

		MCI group (n = 18)	Control Group (n = 10)
Age	Mean (SD)	72.50 (9.59)	71.20 (7.79)
	Range	56 - 88	60 - 82
Female		11 (61.11%)	7 (70.00%)
Ethnicity	New Zealand European	13 (72.22%)	10 (100%)
	Māori	1 (5.56%)	0
	European	3 (16.67%)	0
	North American	1 (5.56%)	0
ACE-III	Mean (SD)	**87.67 (5.45)****	**97.30 (2.31)****
	Range	77 - 96	93 – 100
Education Years	Mean (SD)	15.64 (1.81)	15.00 (2.36)

Note: ** Significant difference between groups' p = .01. ACE-III = Addenbrooke's Cognitive Exam

Quantitative Procedure & Materials

Participants completed a number of questionnaire measures of living well, covering well-being, quality of life and life satisfaction twice for this research project. These repeated measures were part of a wider well-being study, which was modelled on the IDEAL protocol established by Clare and colleagues (2014) which looked at predictors of living well in individuals with dementia. Initial data was taken prior to the global COVID-19 outbreak (all prior to January 2020). Subsequently, participants then completed the same questionnaires following the March 25th Level 4 lockdown in New Zealand in 2020, or second increase in restrictions either in-person in their homes (when restrictions allowed), or using Zoom, to ensure all interviews had face-to-face connection. Thirteen participants were interviewed using Zoom, with the remaining seen in their home when restrictions allowed. Pre-COVID questionnaires for most MCI participants (n = 18) were completed by another Doctorate of Clinical Psychology candidate for the well-being study, whilst all pre-COVID controls (n = 10) and post-COVID questionnaires were completed by the author (n = 28).

Satisfaction with Life scale (SWLS) (Diener et al., 1985).

This is a five-item questionnaire which was developed to assess global life-satisfaction, as a component of subjective well-being. This scale allows participants to reflect on their present satisfaction with life in the context of their overall lifetime of experiences and standards. Participants were asked to respond to 5 statements by choosing from a 7-point Likert scale; 1 = Strongly Disagree to 7 = Strongly Agree. This was administered by the interviewer verbally reading the statements, with participants given a visual representation of the Likert scale to allow them to respond verbally or by pointing to the appropriate response. Higher scores indicated higher satisfaction with life, with a possible score range of 5 to 35. An individual's satisfaction with life scores can be qualitatively categorised; 5-9 = extremely dissatisfied, 10-14 dissatisfied, 15-19 slightly dissatisfied, 20 neutral – equally satisfied and dissatisfied, 21-25 slightly satisfied, 26-30 satisfied, and 31-35 extremely satisfied with life (Pavot & Diener, 2009).

World Health Organisation (WHO) Five Well-Being index (WHO-5) (World Health Organization, 1998).

This is a 5-item self-report questionnaire which measures subjective well-being on a 6-point Likert scale. Response options ranged from 0 = *at no time* to 5 = *all of the time*, and participants chose the most appropriate response to the five statements that were read to them. These scores were summed to produce an overall score which ranged from 0-25; higher scores indicative of favourable well-being.

The World Health Organisation Quality of Life–Brief–New Zealand version (NZWHOQOL-BREF) (Krägeloh et al., 2016).

Quality of life for participant's pre and post COVID was measured through the use of the New Zealand version of the WHOQOL-BREF. The WHOQOL-BREF is a shortened version of the WHOQOL 100, a 100-item questionnaire developed to assess quality of life. Quality of life in this context, is considered to be the perceptions an individual has about their life in the context of their culture, life, values systems and standards. The New Zealand version of the WHOQOL-BREF was developed by Krägeloh and colleagues (2016), adapted for the specific New Zealand context, through the addition of 5 items. The NZ-WHOQOL-BREF is a 31-item questionnaire which is answered using a 5-point Likert scale. The questionnaire covers physical, psychological, environmental and social relationship domains. Participants answered these questions either using pen and paper when in-person, or by indicating which answer was appropriate on the computer screen using screen sharing on Zoom. Individual's scores across these domains were averaged, so that an overall measure of quality of life could be obtained. Scores ranged from 0 – 100 with higher scores reflecting better quality of life.

Lubben Social Network Scale-Revised (LSNS-R) (Lubben, Gironda, & Lee, 2002).

This self-report scale aims to measure the quality, closeness and frequency of an individual's social connections. It is a 12-item questionnaire, which has both family and social relationship subscales. Scale items are scored from 0-5 in response to number/frequency of social contacts. Scores of 0 indicating *never* or *none [contacts],* and a score of 5 indicating *always* or *9 or more [contacts]*. Individual item scores are then summed, with possible totals ranging from 0-60 (with a maximum score of 30 for each subscale). For the New Zealand context, two items were adapted; with the term "social contacts" added to the friends subscale – as pilot testing indicated that participants had a high threshold for what they considered "friends". Additionally, "long-term partner" was added to the family subscale in addition to husband/wife, to reflect the New Zealand context. If in person, participants completed this questionnaire using pen and paper, circling the appropriate answers. For online interviews, screen sharing function of Zoom was used and participants indicated the appropriate response which was confirmed by the interviewer, and circled on a hard copy at the researchers end.

De Jong Gierveld Loneliness Scale (Gierveld & Tilburg, 2006).

The Loneliness scale is a measure of social well-being, comprising of 6-items. Participants choose from a five-point Likert scale; *Yes!, Yes, More or Less, No, No!*. Higher summed scores were indicative of greater perceived loneliness once counterbalanced scores were reversed. The original scoring instructions involve collapsing answers into two-point scores (*Yes!*, *Yes*, *More or Less* being scored one, and *No!* or *No* being scored zero). However, to capture a greater variability in participant responses this was adapted to the five-point Likert scale. Potential scores ranged from 6-30, with two embedded subscales (emotional and social loneliness), with a range of 3-15 each. When administering this item, the name of the scale was left off, to prevent participants' answers being influenced by the knowledge of what it was measuring. As with other questionnaires, when in person, participants were given a pen and paper version to answer on, whereas on Zoom, participants indicated their answers to the interviewer as they read them using the screen sharing option on Zoom.

Geriatric Depression Scale Short Form (GDS-SF) (Sheikh & Yesavage, 1986).

The GDS-SF is a 15-item questionnaire, in which participants answered yes/no to the statements presented to them, to screen for depressive symptoms. Every answer of "yes" is scored 1, with answers summed. The short form was utilised, as it has been shown to be effective at screening symptoms for the older population, utilising the items from the long form which have the greatest correlation with depressive symptoms in validation studies. The short-form is particularly useful for use with individuals who are struggling with cognitive difficulties as it does not require as long an attention span, benefitting those who may become easily fatigued. Summed scores (with counterbalanced scores reverse scored) can be sorted into qualitative ranges which indicate degree of depressive symptoms; 0-4 = normal, 5-8 = mild depression, 9-11 = moderate depression and 12-15 = severe depression (Sheikh & Yesavage, 1986).

Geriatric Anxiety Inventory (GAI) (Pachana et al., 2007).

The GAI is a 20-item self-report questionnaire which is used to screen for dimensional anxiety in an older adult population. The scale involves *Yes* or *No* responses to the statements, with items answered *Yes* given a score of 1. The 20 answers are then summed to give a final score, with higher scores indicating increased anxiety scores. Scores of 8/9 are seen as indicative of the presence of an anxiety disorder, whereas scores of 10/11 or higher are seen as indicating the presence of generalised anxiety disorder. The GAI has been shown to have sound psychometric properties, with a Cronbach's alpha of 0.93 in the psychogeriatric population, and 0.91 in cognitively normal older adults (Pachana et al., 2007).

Quantitative Data Analysis

All analyses were performed using Statistical Package for the Social Sciences (SPSS) for Windows (version 26). All questionnaires were scored by the writer and entered into a Microsoft Excel spreadsheet, using formulae to calculate scores when required. In addition to these, difference scores were calculated and added to the excel sheet for non-parametric analyses. The excel spreadsheet was confirmed through hand scoring a random subset of data to ensure any errors were identified. Additionally, it was visually inspected, and double-checked following data entry for accuracy and plausibility.

Demographic variables were analyses using t-tests or chi-square tests as required. The analyses contained two parts: parametric and non-parametric tests. Responses of all 28 participants to the quantitative questionnaires outlined above were used in these analyses. Parametric testing compared all MCI participants to all Control participants – regardless of number of lockdowns experienced. These data were analysed using split-plot ANOVAs, with Group (MCI: n = 18; Control: n = 10) as the between subjects factor, and time point (Pre COVID-19; post COVID-19 lockdown/s in 2020) as the within subjects factor. For non-parametric testing, participants were first separated by the number of lockdowns experienced; one lockdown or two. Difference scores were computed for each measure by subtracting the pre-COVID from post-COVID scores (i.e. time point 2 – time point 1). Subsequently, Mann Whitney U tests were used to compare the difference scores of the MCI (n = 12) to Control (n = 5) who had experienced one lockdown, and MCI (n = 6) against Control (n = 5) who had experienced two lockdowns.

Results

Indicators of living well

Table 2 below summarises mean scores and standard deviations for both MCI and Control participants on measures related to living well pre-COVID and post-COVID lockdowns. These assessed life satisfaction, quality of life, and well-being.

Satisfaction with life.

A split plot ANOVA with Group (MCI, control) as a between subjects factor and Time point (pre COVID-19; post COVID-19 lockdown/s in 2020) as a within subjects factor, revealed no significant main effect of Time on the Satisfaction with Life Scale (SWLS) scale, F (1,26) = 0.03, p = .87, nor a significant main effect of Group, F (1,26) = 0.65 , p = .43. There was also no significant interaction effect between Time and Group, F (1,26) = 0.16, p = .69.

Table 2. *Group means and standard deviations for Indicators of*

Group	Pre-COVID Lockdown(s)		Post-COVID Lockdown(s)	
	M	*SD*	*M*	*SD*
Satisfaction With Life Scale (SWLS)				
Control	30.20	2.15	30.40	2.91
MCI	29.33	4.34	28.83	5.83
World Health Organisation Five (WHO-5)				
WHO-5 Control	19.70	2.54	19.50	2.80
WHO-5 MCI	19.44	3.52	19.00	4.73
World Health Organisation Quality of Life – Brief (WHOQOL-BREF)				
Control	18.20	1.99	18.00	1.63
MCI	17.00	2.93	17.11	1.97

Note: MCI group n = 18, Control group n = 10

WHO-5 Well-being Index (WHO-5).

Both the MCI and Control groups reported small decreases in mean scores on the WHO-5 Well-being Index after COVID lockdown/s (see Table 2). However, there was no significant main effect of Time F (1,26) = 0.13 (1), p = .72, nor Group F (1,26) = 0.11 (1), p

= .75, nor was there any significant interaction effect between Time and Group, F (1,26) = 0.02, p = .89.

NZ WHOQOL-BREF

Although the MCI group scored lower the WHOQOL-BREF than the control group (see Table 2), again there was no significant main effect of Group, F (1,26) = 1.66 p = .21, nor a significant main effect of Time (post COVID-19 Lockdown(s) in 2020) on the participants quality of life, F (1,26) = 0.01, p = .91. There was also no significant interaction effect between Time and Group, F (1,26) = 0.16, p = .70.

Psychological Distress

Mean scores and standard deviations for both MCI and Control groups on measures related to their psychological distress, namely levels of anxiety and depression, are summarised in Table 3.

Table 3. *Group means (and standard deviations) for Measures of Psychological Distress*

Group	Pre-COVID Lockdown(s)		Post-COVID Lockdown(s)	
	M	*SD*	*M*	*SD*
Geriatric Depression Scale (GDS)				
Control	0.20	0.42	0.60	0.97
MCI	2.06	1.77	1.56	1.29
Geriatric Anxiety Inventory (GAI)				
Control	0.80	1.87	1.30	1.57
MCI	3.00	3.71	2.22	3.15

Note: MCI group n = 18, Control group n = 10

Depression

A split-plot ANOVA on Geriatric Depression (GDS) scores revealed a significant main effect of group F (1,26) = 9.31 p = .005, with the MCI participants scoring significantly higher overall than control participants. There was no significant main effect of Time, F

(1,26) = 0.04 (1) p = .84, but the interaction between Group and Time approached significance F(1,26) = 3.31, p = .08 . This reflected the increase in scores on the depression measure over time for the control participants, whilst the scores of the MCI participants decreased.

Anxiety

A split-plot ANOVA on the self-reported scores on the Generalised Anxiety Inventory (GAI) (see Table 3) found no significant effect of Time F(1,26) = 0.10, p = .75, Group F(1,26) = 2.07, p = .16, nor a significant interaction between Time and Group F(1,26) =2.17, p = .15.

Social functioning and loneliness

Social Engagement

Mean scores and standard deviations for both MCI and Control participant's self-reported social engagement as measured by the Lubben Social Network Scale (LSNS) pre COVID-19 and post COVID-19 lockdowns in 2020 are summarised in Table 4 below. Social engagement was measured across two subscales, family and friends which together comprised the total LSNS score.

For the LSNS total scores, analysis revealed no significant main effect of Time F(1,26) = 0.59, p =.45, nor a significant main effect of Group, F(1,26) = 2.74, p = .11. However, as can be seen in Table 4, the mean self-reported quality and quantity of social interactions for the Control participants decreased across time, whilst the MCI participants increased, resulting in a significant interaction between Group and Time F(1,26) = 7.53, p = .01.

Looking at the LSNS family subscale, there was no significant main effect of Time, F(1,26) = 0.48, p = .49, nor a significant main effect of Group, F(1,26) = 1.20 p = .28. However, again there was a significant interaction between Time and Group, F(1,26) = 8.73 (1), p = .007, with control participants reporting a decrease in the quality and quantity of family social interactions pre- and post-COVID lockdowns, whilst the MCI group reported an increase in this connection with family. The split-plot ANOVA on the friend subscale of the

LSNS showed no significant main effects of Time F (1,26) = 0.21, p = .65, Group F (1,26) = 2.82, p = .11, nor a significant interaction F (1,26) = 1.05 (1), p = .32.

Table 4. *Group means (and standard deviations) for Measures of Social Functioning and Loneliness*

Group	Pre-COVID Lockdown(s)		Post-COVID Lockdown(s)	
	M	*SD*	*M*	*SD*
Lubben Social Network Scale- Revised				
Total Control	46.20	3.68	43.70	6.36
MCI	38.17	9.82	42.61	8.13
Friend Control	21.70	2.95	21.30	3.89
Friend MCI	18.39	4.50	19.44	4.85
Family Control	24.50	2.51	22.40	3.53
Family MCI	19.78	7.05	23.17	4.62
De Jong Giervald Loneliness Scale (DJGLS)				
Total Control	10.80	3.71	12.00	3.43
Total MCI	11.33	3.88	12.44	3.13
Emotional Control	5.30	1.89	6.10	2.28
Emotional MCI	4.89	1.75	5.89	1.28
Social Control	5.50	2.07	5.90	1.60
Social MCI	6.44	3.01	6.56	2.98

Note: MCI group n = 18, Control group n = 10

Loneliness

For both control and MCI participants, the overall mean score on the De Jong Giervald Loneliness scale increased post-COVID-19 lockdown/s in 2020, suggesting an increased overall perceived loneliness (see Table 4). There was, however, no significant main effect of Time on the overall measure, F(1,26) = 2.94, p = .10, Group, F (1,26) = 0.16, p = .69, nor a significant interaction effect F(1,26) = 0.004, p = .95 .

The scale comprised two subscales; emotional loneliness and social loneliness. Analysis of the emotional loneliness subscale revealed a significant main effect of Time, F(1,26) = 4.61, p = .04, indicating that across time, participants experienced increased perceived loneliness. There was no significant main effect of Group, F (1,26) = 0.32, p = .57, however, nor any significant interaction, F (1,26) = 0.06, p = .81. The analysis of the social loneliness subscale showed no statistically significant main effect of Time F (1,26) = 0.55(1), p = .47, Group, F (1,26) = 0.66 (1) p = .43, nor interaction effect F (1,26) = 0.17, p = .68.

Impact of number of lockdowns experienced on indicators of living well

To explore whether the number of lockdowns experienced by an individual impacted their answers on the various measures of living well, as well as measures of psychological distress, social connections, and loneliness, first difference scores were calculated for each measure for each participant. Participants were then divided into four subgroups; Control and MCI groups who experienced one lockdown, and Control and MCI groups who experienced two lockdowns. Mann-Whitney U tests were run on the difference scores of the range of measures to determine if there were differences between the control and MCI groups following one or two lockdown period/s.

One Lockdown Experienced

Of the total 28 participants, 17 experienced one lockdown only in 2020 prior to their interview, 12 of whom were MCI participants and 5 of whom were Control participants. Results of their difference score analyses can be seen below, with the median scores, interquartile ranges and significance scores in Tables 5, 6 and 7.

Indicators of Living Well. Table 5 shows these outcomes for MCI and Control groups on measures related to living well (life satisfaction, quality of life, and well-being). A series of Mann-Whitney U tests revealed no significant differences between the difference scores of MCI and Control groups on any of these living well measures for individuals who experienced only one lockdown (all p-values > .5).

Table 5. *Median, interquartile range and Mann-Whitney significance of difference scores on measures of living well for individuals who experienced one lockdown.*

Difference Scores of Individuals who experienced one lockdown	*Median*	*Interquartile Range*	*Significance of Mann-Whitney U*
Satisfaction With Life Scale (SWLS)			
Control	1.00	4.00	0.79
MCI	1.00	10.00	
World Health Organisation Five (WHO-5)			
Control	1.00	8.00	0.43
MCI	-1.00	12.00	
World Health Organisation Quality of Life – Brief (WHOQOL-BREF)			
Control	0.00	25.0	0.18
MCI	12.50	18.8	

Note: Difference scores calculated as time point 2 (post-COVID) – time point 1 (pre-COVID). Control group n = 5, MCI group n = 12

Psychological Distress. Median difference scores, interquartile ranges and significance scores on the measures of psychological distress for MCI and Control participants who experienced one lockdown are summarised in Table 6 below. Neither measure of psychological distress showed a significant difference in the difference scores between the two groups who experienced only one lockdown (Mann-Whitney U p-values > .32).

Table 6. *Median, interquartile range and Mann-Whitney significance of difference scores on measures of psychological distress for individuals who experienced one lockdown.*

Difference Scores of Individuals who experienced one lockdown only	*Median*	*Interquartile Range*	*Significance of Mann-Whitney U*
Geriatric Depression Scale (GDS)			
Control	0.00	2.00	0.51
MCI	0.00	2.00	
Geriatric Anxiety Inventory (GAI)			
Control	0.00	2.00	0.33
MCI	0.00	2.00	

Note: Difference scores calculated as time point 2 (post-COVID) – time point 1 (pre-COVID). Control group n = 5, MCI group n = 12

Social Functioning and Loneliness. Table 7 summarises the median difference scores, interquartile ranges and significance scores on measures related to social connections and loneliness for MCI and Control participants who experienced one lockdown. A Mann-Whitney test indicated that the difference scores on the LSNS family subscale were greater for the MCI group than the Control group after one lockdown, $U = 52.50$, $p = .014$, indicating that at the post-COVID time point, MCI participants scored higher on the LSNS. In other words, for the MCI participants, post-COVID, they experienced a greater number and quality of family connections than prior to the COVID-19 lockdowns. There were no significant differences between groups for any of the other measures (all other p-values > .22).

Table 7. *Median, interquartile range and Mann-Whitney significance of difference scores on measures of social functioning and loneliness for individuals who experienced one lockdown.*

Difference Scores of Individuals who experienced one lockdown only	*Median*	*Interquartile Range*	*Significance of Mann-Whitney U*
Lubben Social Network Scale- Revised			
Total Control	-4.00	9.00	0.23
Total MCI	1.50	7.00	
Friend Control	0.00	7.00	0.88
Friend MCI	0.00	4.00	
Family Control	0.00	4.00	**0.014****
Family MCI	2.00	3.00	
De Jong Giervald Loneliness Scale			
Total Control	-1.00	9.00	0.80
Total MCI	1.00	2.00	
Emotional Control	-1.00	4.00	0.44
Emotional MCI	1.00	2.00	
Social Control	1.00	4.00	0.33
Social MCI	0.00	2.00	

Note: Difference scores calculated as time point 2 (post-COVID) – time point 1 (pre-COVID). Control group n = 5, MCI group n = 12

Two Lockdowns Experienced

Of the total 28 participants, 11 experienced two lockdowns in 2020 prior to their interview. Of these 11, 6 were MCI participants and 5 were Control participants. Results of their difference score analyses can be seen below, with the median scores, interquartile ranges and significance scores in Tables 8, 9 and 10.

Indicators of Living Well. Table 8 shows these outcomes for MCI and Control groups on measures related to living well (life satisfaction, quality of life, and well-being). There were no significant differences in the difference scores of any living well measure between MCI and Control groups of individuals who experienced two lockdowns (all p-values >.17).

Table 8. *Median, interquartile range and Mann-Whitney significance of difference scores on measures of living well for individuals who experienced two lockdowns.*

Difference Scores of Individuals who experienced two lockdowns	*Median*	*Interquartile Range*	*Significance of Mann-Whitney U*
Satisfaction With Life Scale (SWLS)			
Control	1.00	4.00	0.79
MCI	1.00	10.00	
World Health Organisation Five (WHO-5)			
Control	1.00	8.00	0.43
MCI	-1.00	12.00	
World Health Organisation Quality of Life – Brief (WHOQOL-BREF)			
Control	0.00	25.0	0.18
MCI	12.50	18.8	

Note: Difference scores calculated as time point 2 (post-COVID) – time point 1 (pre-COVID). Control group n = 5, MCI group n = 6

Psychological Distress. For measures of anxiety and depression symptoms**,** Table 9 summarises the median scores, interquartile ranges and significance scores for both MCI and Control participants. Neither of the psychological distress measures showed a significant difference between the difference scores of those groups who experienced two lockdowns.

Table 9. *Median, interquartile range and Mann-Whitney significance of difference scores on measures of psychological distress for individuals who experienced two lockdowns.*

Difference Scores of Individuals who experienced two lockdowns	*Median*	*Interquartile Range*	*Significance of Mann-Whitney U*
Geriatric Depression Scale (GDS)			
Control	0.00	2.00	0.25
MCI	0.00	4.00	
Geriatric Anxiety Inventory (GAI)			
Control	1.00	2.00	0.25
MCI	-0.50	6.00	

Note: Difference scores calculated as time point 2 (post-COVID) – time point 1 (pre-COVID). Control group n = 5, MCI group n = 6

Social Functioning and Loneliness. Measures pertaining to experiences of perceived loneliness and social connection for MCI and Control participants who experienced two lockdowns are found in Table 10. The LSNS had two components with statistically significant differences between MCI and control groups: Mann-Whitney U tests indicated that the LSNS Total differences scores were significantly larger for the MCI group than for the Control group , $U = 27.50$, $p = .017$, with a similar pattern in difference scores on the LSNS Family subscale $U = 28.00$, $p = .017$. For the friend subscale of the LSNS for individuals experiencing 2 lockdowns, the difference between MCI and Control groups was approaching significance ($U = 26.00$, $p = .052$). From these data, we can see that for those individuals who experienced two lockdowns, the MCI individuals experienced an increase in quality and quantity of interactions with their family members, and overall social networks compared to the Control group whose self-reported connections decreased.

Table 10. *Median, interquartile range and Mann-Whitney significance of difference scores on measures of social functioning and loneliness for individuals who experienced two lockdowns.*

Difference Scores of Individuals who experienced two lockdowns	*Median*	*Interquartile Range*	*Significance of Mann-Whitney U*
Lubben Social Network Scale- Revised			
Control Total	-2.00	11.00	**0.017****
MCI Total	5.50	11.00	
Friend Control	1.00	6.00	0.052
Friend MCI	4.00	5.00	
Family Control	-1.00	6.00	**0.017****
Family MCI	1.00	7.00	
De Jong Giervald Loneliness Scale (DJGLS)			
Control Total	1.00	3.00	0.93
MCI Total	0.00	8.00	
Emotional Control	1.00	2.00	0.43
Emotional MCI	0.00	4.00	
Social Control	0.00	1.00	0.79
Social MCI	0.00	4.00	

Note: Difference scores calculated as time point 2 (post-COVID) – time point 1 (pre-COVID). Control group n = 5, MCI group n = 6

Non-parametric results across two time points: Lubben's Social Network Scale

When considering these non-parametric results across both sets of analyses – those who experienced one, or two lockdowns – there were only three significant Mann Whitney U tests, all involving the Lubben's Social Network Scale. Table 11 shows the magnitude of the scores (median and interquartile ranges) at the pre and post lockdown time points, providing the detail of how their social interactions, in particular with family, changed over time. MCI participants reported an increase in their connections, regardless of whether they had experienced one or two lockdowns. In contrast, the control group experienced a decrease in their family connections in those who experienced 2 lockdowns (see Table 11).

Table 11. *Median and interquartile ranges of actual scores on Lubben Social Network Scale for significant measures*

Group	Pre-COVID Lockdown(s)		Post-COVID Lockdown(s)	
	Median	*Interquartile Range*	*Median*	*Interquartile Range*
LSNS Family (1 Lockdown only)				
Control	24.00	5.00	24.00	5.00
MCI	23.00	5.00	24.00	4.00
LSNS Family (2 Lockdowns)				
Control	24.00	3.00	21.00	8.00
MCI	20.50	13.00	24.50	11.00
LSNS Total (2 Lockdowns)				
Control	44.00	2.00	44.00	10.00
MCI	37.00	18.00	44.50	10.00

Discussion

This study investigated the impact of COVID-19 lockdowns in 2020 on measures of living well, psychological distress, social interactions and loneliness in individuals with mild cognitive impairment (MCI) and cognitively unimpaired older adults. Participants were administered questionnaires pre and post COVID-19 pandemic and subsequent lockdown(s) to help understand the effects on indicators of living well, as previous literature has reflected that "living well" can beneficially impact the lives of people with MCI and reduce the incidence of further cognitive decline. Contrary to expectations, there was no effect of the pandemic and lockdowns on life satisfaction, quality of life, or well-being for either group. Similarly, although the MCI group scored higher overall (though in the normal range) on the measure of depression, neither group was impacted by the lockdowns, and there was no impact on levels of anxiety. The main finding was a differential effect of the pandemic and lockdowns on the reported quality and quantity of connections with family for the MCI and control groups. The MCI group reported an increase in the quality and quantity of interactions with family following the pandemic and lockdowns, while the control group reported a reduction in number and quality of family connections. Both groups reported an increase in loneliness post the pandemic and lockdowns, which was driven by an increase in perceived emotional loneliness.

As some of the participants in each group were seen after one lockdown, and others were seen after two lockdowns, a series of non-parametric statistics were used to check whether there were different patterns of effects of having experienced one or two lockdowns on the two groups. Overall, the pattern of findings was similar, regardless of whether participants had experienced one or two lockdowns, with significant effects found only on the measure of social connections. The differential effects between MCI and control groups were present following both one or two lockdowns, namely increased quality and quantity of family interactions reported by the MCI group, and a reduction by the control group. After two lockdowns the MCI group also showed a trend towards reporting an increase in quality and quantity of interactions with friends, relative to the control group.

Living Well Indicators. Unexpectedly, findings from the self-report questionnaires on the living well indicators indicated that the COVID-19 pandemic and lockdown restrictions had not significantly impacted life satisfaction, well-being or quality of life of participants in either group, even though both groups reported mildly lower well-being over this period. Indeed, from the life satisfaction scores, mean group scores qualitatively sat in the satisfied range across both time points (as defined by Pavot and Diener, 2009). For many of these participants, the initial lockdown(s) in 2020 were met with a sense of gratitude in New Zealand, as it was able to avoid the catastrophic death tolls and impact on health systems seen overseas (see Chapter 3). Comparatively, New Zealand's 2020 lockdown(s) were shorter, and negative health outcomes were remarkably reduced compared to those seen internationally, with notably lower death tolls. Perhaps then, the sense of safety provided by the restrictions (and the closure of the borders) may have somewhat ameliorated many negative impacts of the restrictions that accompanied lockdowns, hence the unchanged living well indicators. The overall findings were consistent on living well measures for both MCI and control groups, regardless of the number of lockdowns they experienced in 2020. For the MCI participants, it is perhaps more surprising that despite the ambiguity of their diagnosis and the lockdown they have coped so well. Perhaps this is in part be due to the access and support participants in this study were afforded by the DPRC, who were accessible through this tumultuous time (by phone, Zoom etc.) to provide support, which may have further reduced overall impacts.

Interestingly, these findings were in contrast to those of an Australian study by Siette and colleagues (2021), who found that older Australian adults using home care services reported a significant decrease in their quality of life from March 2019 (pre-COVID-19) to May 2020 (post-COVID-19 lockdowns) in Australia. Given the similarity in New Zealand and Australia's pandemic response and population, the difference in findings regarding quality-of-life measures is interesting, however, Siette and colleague's study included only a small population of older adults without dementia. However, the findings from Siette and colleagues (2021) are similar to that of other research that measured pre/ post COVID time points of quality of life (Colucci et al., 2022). It may be that the living well measures of the current participants were not only supported through the sense of safety provided by the restrictive lockdowns, but also a sense of unity that participants noted as part of the "team of 5 million" messaging throughout the nation. As a smaller country New Zealand was able to create this more uniformly than other nations whom had differing restrictions between territories and provinces.

Psychological Distress. From the outcomes of the self-report measures of psychological distress, the MCI participants reported significantly higher depression scores than the control participants, but notably the group mean still fell comfortably in the normal range. While depression and subdromal depression symptoms are prevalent amongst individuals diagnosed with MCI in the literature, and are a risk factor for progression to dementia (Ismail et al., 2017), in this sample, levels of reported depression were not concerning pre- or post-COVID restrictions for MCI or control participants. Interestingly however, the impact of the lockdowns was trending in the opposite directions for the two groups. The MCI group reported a reduction in depressive symptoms, whilst the control group reported an increase in these, with the interaction approaching significance ($p = 0.08$). This was also consistent with reported anxiety. While the scores for both groups fell within the normal range, the control participants reported an increase in anxiety post-COVID lockdowns, whereas the MCI participants reported a reduction in their mean anxiety, although the trend was not significant. Ordinarily, increased adverse life events – which arguably the COVID-19 pandemic would be perceived as – negatively impact psychological distress in individuals with MCI, increasing anxiety and depressive symptoms (Soysal et al., 2022). However, it appears that for MCI participants in the current study, this was not the case. It is plausible that during the lockdown, MCI participants were actually less exposed to distressing situations normally experienced due to the blanket stay-at-home restrictions. The lockdown may have removed potentially distressing daily interactions where their memory is challenged and difficulties are noticeable, resulting in increased anxiety when leaving the house, and perhaps depression/fear of further decline when these difficulties were exposed.

In addition, psychological distress may have been reduced further for the MCI participants with people reaching out more during the lockdown, leading them to feel less socially isolated, and thus improving anxiety and depression symptoms. It may be that the control participants struggled further with their mood through the lockdowns as they had been more engaged with the world around them prior to the lockdowns and were more impacted by the loss of these connections, which would therefore make sense in the context of the findings regarding social connections in this study.

Social Functioning & Loneliness. Perhaps the most notable impact of the lockdowns in New Zealand was how the enforced isolation had affected participants' perceptions of their social interactions. This area was of particular concern because social isolation and loneliness can contribute to deterioration from MCI into dementia, in addition to being related to psychological and physiological health and well-being (Livingston et al., 2020). Our findings on the Lubben's Social Network Scale were unexpected: whilst control participants reported an expected overall decrease in quality and quantity of social engagements from the pre-COVID to post-COVID time points, MCI participants reported the opposite effect, noting an increase in the quality and quantity of social interactions, a differential pattern that was significant. Examining the two subscales comprising the Lubben's Social Network Scale, it appears that this effect was largely a result of responses on the family subscale. Control participants reported a decrease in the quantity and quality of social interactions with family, whereas the MCI participants shared an increase in their quality and quality of connections with family, resulting in a significant interaction. In contrast on the friend subscale, there were no demonstrable interaction between the MCI and control participant's responses, with the MCI participants reporting a slight increase in social connection with friends, whilst controls responses indicated almost no change in these connections post COVID-19 restrictions.

When looking at whether experiencing one versus two lockdowns had an effect on the pattern of responding on the Lubben's scales, despite the small numbers of participants in the groups a similar pattern across time was found – although the differences between the control and MCI groups were slightly more marked following two lockdowns. For those MCI individuals who experienced one lockdown, their responses indicated an improvement in their family connections over the lockdown period, compared to the control group. This pattern was even more pronounced amongst individuals who experienced two lockdowns, with MCI participants reporting positive improvements on the family Lubben's subscale and the control participants reporting reductions. There was also a difference in the Lubben's total scores after two lockdowns, due to the positive improvements in social connections experienced overall by the MCI group.

It may be that for MCI participants during this time, family members who were usually busy with work commitments made more time to reach out and call/engage with their family members during the COVID-19 lockdowns, and the subsequent easing of restrictions. As these individuals have MCI and are not yet functionally impaired, it may be that their family members ordinarily do not engage as much with them, and whilst the cognitively healthy control participants may initiate that engagement themselves, the MCI participants may do this less if it falls outside the routines of their day. With the unprecedented isolation and health risks posed by COVID-19, potentially family members reached out more during the pandemic, either to support them through isolation, pragmatically (groceries etc.) or to talk to them and check in due to the physical health risk posed.

Further to the shifts in social connection brought by the lockdown, loneliness was also another measure likely to be notably impacted by the isolation restrictions of the COVID-19 lockdowns. Although both control and MCI participants reported a small overall increase in perceived loneliness across the pre/post COVID-19 lockdowns, this was not significant, with a similar pattern on the social loneliness sub-scale. However, there were increases in perceived emotional loneliness in both groups following the 2020 COVID-19 lockdowns. Despite the findings on the social interaction questionnaire for the MCI group in particular, the lockdown restrictions did result in an increased sense of emotional loneliness amongst both control and MCI participants. Perhaps this increased emotional loneliness is reflective of how – despite the increased connection reported by the MCI participants – there was little face-to-face connection possible due to the restrictive measures. It has been noted elsewhere that for many, despite working to stay connected through various means – telephone, Zoom, FaceTime – the lack in-person interaction is noticeable – and this may reflect a lack of quality interaction (Brooke & Jackson, 2020; Lampraki, Hoffman, Roquet, & Jopp, 2022; Patulny & Bower, 2022; Pinquart & Sorensen, 2001). If a lack of quality interaction is present – i.e. interactions where individuals can confide in others, feel safe to connect (Pinquart & Sorensen, 2001) – then this could account for the increases in emotional loneliness seen in both MCI and control participants.

The COVID-19 pandemic presented the New Zealand with an unprecedented period of isolation through lockdown restrictions, thus the findings of this study are uniquely posed to give some insight into the impact this had on older adults, particularly those with cognitive impairment. Understanding how factors that influence living well and modify risk of progression for MCI to dementia such as social isolation and loneliness have been altered by the COVID-19 pandemic in New Zealand may support planning for future crises of this nature and guide engagement with these populations moving forwards.

Small sample sizes have the potential to overestimate effect sizes, however, it can also be more difficult to detect small effects. The availability of questionnaire responses prior to the pandemic and after, is an added strength to the design. The pattern of findings relating to social networks from parametric analyses comparing MCI and control groups, was repeated in the non-parametric analyses when both groups were divided according to whether they had experience one or two lockdowns. This adds confidence to the interpretation of these results. This study was of particular importance for the MCI population which can be overlooked in the literature, and given the rapid shift into the pandemic, it may be likely this would be replicated again for this population. This is of concern as although functionally they appear fine, these individuals cognition can deteriorate rapidly without ongoing supports, which the pandemic was likely to limit.

Chapter Four: Qualitative Study

Methodology

As noted in earlier, this research design was a convergent mixed methods, which was guided by a pragmatic orientation. This was selected as the convergent approach has to develop a more comprehensive understanding of the experiences of the COVID-19 restrictions for these participants, and how these impacted their ability to live well, more than either individual component alone could convey.

For the qualitative strand of the research, a semi-structured interview was conducted with participants. The semi-structured nature was used to support consistency across participants, due to memory concerns between MCI population and control participants, and well as to aid with prompts for definitions of terms if needed. As this study was developed from one looking at living well indicators, these questions sought to help contextualise the responses to questionnaires, and add depth to what participants were reporting, as well as gain insight into any unique challenges they faced during this period. As living well encompasses physical, mental, emotional well-being and relationships, these questions sought to explore these experiences, and provided definitions for participants where appropriate (see Appendix E for interview schedule).

Participants

Participant recruitment and participant descriptors are outlined in Chapter 3. Twenty-six of the 28 participants (16 MCI, 10 Control) completed the qualitative interview. Two MCI participants chose not to share their experiences relating to the lockdowns, preferring to complete the questionnaire measures only.

Qualitative Interview and Participants

The interview was semi-structured, with questions that were consistent across participants (see Appendix E), and built upon the aspects of living well explored in the quantitative questionnaires: well-being, quality of life and life satisfaction. These concepts were explored in the context of the individual's experience of the COVID-19 pandemic in New Zealand, in particular the lockdowns and easing of restrictions. Some of these interviews were conducted in-person (13) (when restrictions allowed), with the rest conducted using Zoom (13), on the same day the questionnaires were administered.

Participants were given an opportunity to take a break between qualitative and quantitative sections of the meeting, and offered other breaks throughout should they seem tired, or request the same. Participants were encouraged to speak about their experiences since the advent of the COVID-19 global pandemic, the lockdowns and easing of restrictions. Participants were finally given the opportunity to comment on any additional experiences of the pandemic. They were thanked and given a NZ $20 supermarket voucher as a token of gratitude for their contribution.

Thematic Analysis

The participants' reported experiences of the global COVID-19 pandemic, the subsequent lockdowns, easing of restrictions and the impacts of these on their ability to live well was analysed using a method of thematic analysis as outlined by Braun and Clarke (2006). This type of analysis is a commonly used to help separate out themes or patterns in qualitative interviews, which can lead to a rich and complex data analysis (Braun & Clarke, 2006). An inductive approach, was taken for this analysis, with all of the transcriptions analysed from the bottom-up (Braun & Clarke, 2006). The process was guided by the six steps to thematic analysis by Braun and Clarke (2006), described in detail below in the context of this study.

Step One: Data Familiarisation: In this phase of the analysis, the researcher immerses themselves in the data, reading and re-reading through the transcripts. As the writer did not transcribe the data, the audio recordings were listened to in order to check the transcriptions, with multiple re-reads completed to become familiar with the data. Repeated readings allowed the writer to become familiar with the depth and scope of the responses, with notes and ideas marked in the margins of transcriptions throughout the process (Braun & Clarke, 2006).

Step Two: Generating Codes: Following the familiarisation of the data, the precursor ideas and patterns noted in the first phase were then sorted into initial codes; brief statements which summarised each unit of data (Braun & Clarke, 2006). At this stage the goal was to keep the process as open as possible, so coding was done on a line by line basis. To maintain this I asked myself general questions throughout the process such as "what's happening here" "what's going on", "what is the experience being described". Then following the line by line coding, larger data extracts were analysed, allowing me to further refine codes and name a number of code categories. Subsequent to the generation of these initial codes, different coloured highlighters were used to systematically code and sort the data sets across participants. This enabled the recognition and grouping of repeated codes. The systematic sorting and highlighting of these codes allowed the identification of agreement across the codes, a comprehensive list was generated. Following this, the researcher met with their qualitative supervisor to review initial codes and discuss potential themes.

Step Three: Developing Initial Themes: Braun and Clarke (2006) highlight that a theme endeavours to encapsulate a pattern in responses, or a meaning within the data which relates to the research question. Following identification of the initial codes and sorting of these into broad groups of similar content, provisional themes, and any potential relationships between them were identified. Throughout this process, proposed patterns and relationships were questioned and challenged, by asking myself "what am I seeing here" and "why am I seeing this" as they emerged. The relationships identified and initial themes were then discussed with my qualitative research supervisor.

It was at this time that it was identified that there were two distinct areas of experience that could be to be differentiated emerging from within the data; the experiences and impacts of the lockdowns, and the experiences and impacts of the easing of restrictions. Following discussion with my supervisor about this it was agreed that these therefore would be separated into two proposed 'data sets' – with codes and experiences pertaining to the lockdown separated from those pertaining from those to the easing of restrictions.

This process resulted in five initial proposed themes regarding participants' experiences of COVID-19 and the Lockdowns in Aotearoa New Zealand:

- Impacts on Activities
- Anxieties and Fears for Safety
- Attitudes and Coping Strategies
- Connection with Others
- Cognitive Decline

For the second dataset, a similar process was conducted pertaining to the experience of the easing of restrictions in Aotearoa New Zealand. From this analysis, five preliminary themes were generated:

- Managing the Logistics of a Post-Lockdown World
- The Importance of Reconnection
- Emotional and Coping Responses to Eased Restrictions
- Freedom & Planning for the Future
- Cognitive Decline

Step Four: Reviewing Themes: The next phase of the process served to determine whether the potential themes captured the data set accurately and addressed the research questions. Extracts of the themes were read to ensure coherency and validity, and then the themes were compared against the interviews to ensure they fit the data (Braun & Clarke, 2006). At this stage, colour coding was again used to check accuracy of the data categorisation into these themes. These themes were then discussed and reviewed with the researcher's secondary supervisor whom specialised in qualitative research.

Once the themes were established as consistent, the transcripts were then uploaded into NVivo, where the themes were organised, and some subthemes were also identified.

Step Five: Definition and Naming of Themes: In this step, the essence of the themes were identified and the final themes. These final themes were called: Attitudes Concerning the COVID-19 Lockdown(s); Impacts on Activities during the COVID-19 Lockdown(s); Anxiety and Fear for Safety during the COVID-19 Lockdown(s); Connection with Others and the World during the COVID-19 Lockdown(s); Impacts and Concerns for Cognitive Decline in the COVID-19 Lockdown(s). These were again reviewed with and discussed with my qualitative supervisor.

This was completed for both MCI and Control groups, and it was determined that there was significant overlap, excepting for experiences relating cognitive decline. Combining MCI and Control groups, with a separate theme that encapsulated the experiences specifically pertaining to those with memory impairments. The final themes regarding participants' experiences of the lockdowns were:

1. Attitudes Concerning the COVID-19 Lockdown(s)
2. Impacts on Activities during the COVID-19 Lockdown(s)
3. Anxiety and Fear for Safety during the COVID-19 Lockdown(s)
4. Connection with Others and the World during the COVID-19 Lockdown(s)
5. Impacts and Concerns for Cognitive Decline in the COVID-19 Lockdown(s)

As noted earlier, the data from the experiences of easing of restrictions for both MCI and Control groups were analysed using the steps outlined above.

The final themes for the experiences of the easing of restrictions were:

1. Managing the Logistics of a Post-Lockdown World
2. The Emotional Experiences and Responses Following the Easing of Restrictions
3. Reconnecting Following the New Zealand Lockdown
4. Cognitive Impairments & Easing of Restrictions

Step Six: Reporting: Following the finalisation of the themes, a precise account of the themes were written up, utilising quotes to capture the story. Connections were drawn between the data and the main research questions.

Results

The qualitative results of the thematic analysis of data pertaining to the impacts of the New Zealand lockdowns and easing of restrictions on older adults both with and without MCI. The analyses explored how these events impacted participants' abilities to live well including their well-being, quality of life and life satisfaction. Within this chapter, two data sets were analysed. One captured the experiences of the COVID-19 pandemic and its subsequent lockdown restrictions in New Zealand. The second data set explored the experiences relating to the easing of restrictions for participants.

Data Set One: Experiences of COVID-19 Pandemic and Lockdowns

Using thematic analysis five main themes were identified, which capture participants' experiences through the lockdown(s), with one theme exploring the memory difficulties experienced by individuals with MCI. These themes and the associated subthemes are presented in Table 12, including the number of participants endorsing these themes.

Table 12. Experiences of the 2020 COVID-19 Pandemic and Lockdowns from Healthy & MCI older Adults – themes and subthemes

Themes (N = 5)	Subthemes
Attitudes Concerning the COVID-19 Lockdown(s) (N = 26)	Appreciation and Pride at the Handling of the Lockdown Pragmatism and Acceptance of the Restrictions Adverse Impacts of the Lockdown Consideration of the Wider Consequences
Impacts on Activities during the COVID-19 Lockdown(s) (N = 25)	Positive Impacts on the Ability to Engage in Beneficial Activities Detrimental effects on the Ability to Engage in Beneficial Activities
Anxiety and Fear for Safety during the COVID-19 Lockdown(s) (N= 24)	Anxiety and Safety for Personal Wellbeing Concerns for the Wellbeing and Safety of Others Impacts of the Actions of Others Global Impacts of the Pandemic, and Concerns for the World
Connection with Others and the World during the COVID-19 Lockdown(s) (N = 26)	Family Relationships Friends and Social Relationships Technology and its Role in Connection
Impacts and Concerns for Cognitive Decline in the COVID-19 Lockdown(s) (N = 7)	

Theme One: Attitudes Concerning the COVID-19 Lockdown(s)

Twenty-six participants shared their attitudes towards the COVID-19 lockdowns in New Zealand, reflecting on how the lockdowns had impacted them and how they had coped with these changes. Many participants spoke of feeling “lucky” and “proud” to have been in New Zealand through the first lockdown, often speaking philosophically about how they had felt their lives had been throughout. Some noted however that it had felt at times “restrictive” and that financial concerns had arisen due to the process. Four subthemes were identified: pragmatism and acceptance of the restrictions, adverse impacts of the lockdown, and consideration of the wider consequences.

Appreciation and Pride for the Handling of the Lockdown

Twelve participants (46.2%) expressed gratitude and appreciation about the first lockdown in New Zealand. Many shared feeling “lucky”, “safe” and “proud” of how the nation had come together in the lockdown. Expanding on this, some of the participants noted how the experience of living in New Zealand was somewhat surreal, watching things unfold overseas, “It was just so bizarre and we’d just never experienced anything like it… I still can’t believe that a virus is taking hold of the whole world” (P64). For many participants with the knowledge of the damage overseas (high infection and death rates), came a “grateful” feeling. For them they felt they had benefitted from living in New Zealand, with their health being protected during this period. For example, one participant said,

> I mean I was worried of course about the whole pandemic, but I felt quite optimistic that it would be alright and that it was under control and yeah the rules were very easy to follow and simple. And yeah, so I didn’t, yeah I, overall adding all things up, I think for me it was a, not a bad time at all, (P81)

Similarly, another participant commented on their feelings of pride, and the sense of community the initial lockdown held for them, commenting,

> Yes, it’s made me proud of our country. And it’s made me, 1 o’clock every day, if not at 1 o’clock I would go back and listen to Ashley Bloomfield (Director General of Health) who I thought was just amazing. And I thought Jacinda (Prime Minister) was amazing. I thought, and the woman, the Civil Defence woman … I thought she was good….Mostly I feel proud, proud to be part of the team of five million and privileged that we are basically able to live a normal life here, apart from international travel. (P15)

Another participant expanded on this, noting the stark difference between the experience of COVID-19 in New Zealand compared to how the rest of the world was coping, and managing the pandemic,

> I think it was more shocking, I think we're just so protected here. I think if I was right in the middle of it still in a country where we still had to be so careful I might feel differently. But I think we're just really lucky and feel quite safe here really, yeah, being in New Zealand. (P64)

Several participants expressed not only gratitude and pride at the way the first lockdown was handled, but appreciation at what the lockdown experience afforded them, remarking on how they felt happy for the time off, with one noting that it was nice not "rushing around and just living more in the moment" (P5). This sense of peace provided by the mandatory lockdown restrictions was commented on by a number of participants, who noted how the extra time at home had allowed them a greater opportunity to reflect and be "calm" in their daily lives. One commented,

> I think it made me more aware of my inner feelings, spiritually, you know, why was I created? And what am I doing about that? So it gave me time for more reflection, which was wonderful. Whereas before I was flat out. (P10).

Expanding on this another participant reflected on how the isolation gave them time to truly regroup and think about their own needs and desires,

> I think it's just having that time, just having 24 hours a day for you, you know. There was, you actually couldn't go out, you weren't allowed to go anywhere. So for once in your life in such a long time, after having had four children and very heavily involved in the grandchildren, I could actually think – what do I want to do today, you know… it really was nice having, not just a few days like on holiday, but weeks after weeks of doing exactly what you wanted, (P64)

With the gratitude for the initial lockdown, a few participants also spoke about their "relief" that they were not alone for the duration, reflecting that had they been alone they may have felt differently about being at home for such a period of time.

> I think because there's the two of us it makes a huge difference, you know. I think if you were in lockdown and you were on your own like my sister was, but she went to her, her daughter's and lockdown there. I think it would be very hard. But no we've been fine. (P19)

In sum, many participants shared an overall positive attitude towards their experience of the lockdowns in New Zealand in 2020, with several commenting on how not only had the lockdown provided them a space where they were able to feel calm, but also how the measures as a whole had resulted in a sense of safety and pride, when weighed against the international impacts of the pandemic.

Pragmatism and Acceptance of the Restrictions

Another common attitude about the experience of the lockdown, was a pragmatic mind-set. Ten participants (35.7%) spoke about how they felt that the first lockdown had caused little impact to their lives, and that the restrictions imposed were – in the context of things – "no big deal" and that they just "accepted" and "got on" with it. This attitude appeared to facilitate their ability to cope with the unprecedented circumstances posed by the COVID-19 pandemic. One participant reflected that they were able to manage because "in a realistic day to day it was fine because it was temporary" (P64). This matter-of-fact approach to coping with the imposed limitations and social isolation appeared to have been shared by a number of participants. As one explained,

> …you did have to talk to yourself a bit about, you know, I think you had to bring yourself up a bit and exert control over the negative… you know, say hey you're okay, you know... But that's about knowing yourself too isn't it. I mean I know I'm, you know, a happy person when I'm out doing [activities] and so you've just got to find other ways of, you know [coping]… So this really, this is no big deal to me, I'm just shrugging my shoulders and getting on with it… But you do get over yourself, you just have a stern talk [with yourself] and say get a life, this is a first world sort of problem (P36).

One mechanism to help to maintain a pragmatic outlook, appeared to be adopting a practice of acceptance of the various limitations and rules placed upon them. Some spoke of refocussing their sense of control over their life, sharing "I accepted the restrictions and had the same level of control within that situation that I always had, you know, just within the house" (P5). In doing so they were able to cope with the realities of the situation, finding it less distressing, and enabling them to "[not] feel angry about [the lockdown]" (P5). This practice which a number of participants spoke about appeared to allow them to cope by focussing on the pragmatics of the situation, and changing things within their situation that they were able to control, despite the difficulties raised by the lockdown.

> Oh, well, it did affect [my well-being] because I couldn't socialise and I couldn't, for the first four weeks, I couldn't play golf which is, you know, something that I enjoy. So, so, yes, it did, but I accepted it, that it was, and it was necessary. And so therefore, I coped with it and I didn't let it get me down and I didn't, I just, I felt like an active part of the team that was doing the right thing. So, yeah, it was just something that I had to do, that was the way it was…I just accepted it and I could see that it was the right and only thing to do and, so I took it seriously. (P15)

Overall, many New Zealanders appeared to adopt a pragmatic approach to the limitations imposed by the restrictions of the first lockdown, choosing to focus less on the things outside of their control, and instead accept and manage that which they could in their daily lives. It appeared a useful strategy for several of them, allowing them to be less distressed by their lack of freedoms, and more able to gain perspective of the benefits of the restrictions to the well-being of the nation as a whole.

Adverse Impacts of the Lockdown

Despite the number of participants expressing a pragmatic attitude and appreciation for the lockdown, several also commented on the disadvantageous elements of it. There were 10 participants (35.7%) who commented on the adverse components of the lockdowns, with half of these participants commenting in particular on the impact of the second lockdown. The concerns about being less able to "cope" should the lockdowns continue, with the fear that that distress would increase, and there may be trouble" and "disobedience" from others was commented on by several participants. In particular, the sense that the "limitations" may result in ongoing difficulties came through in reflections on both the first and second lockdowns. Of those who reflected that the initial lockdown had negatively impacted their ability to live well, many seemed to reflect difficulties with feeling "restricted" with one noting,

> I think it was restrictive, you know, because you weren't able to do some things. You know, and I suppose I'm going back to the shopping and that sort of thing, because it's a part of your life and it's nice to do your own thing. Physically I think it was, the only disadvantage, we still go to the gym and so couldn't do that. And socially I think was more restricted, and I think wouldn't want to do it for too long… (P11)

Coupled with the sense of being restricted, a few other participants also noted how with these limitations imposed by the first lockdown came "negative" feelings of "running on the spot and not getting anywhere" (P44). Participants related this sense of constraint to the reduction of opportunity to engage meaningfully in their lives – in particular socially – which in turn impacted their mood. This theme was more pronounced in those who had experienced a second lockdown – with five of the eleven participants (45.5%) who experienced two lockdowns reflecting an adverse impacts. One commented,

> This time round I'm strangely a bit weird about the whole thing. I feel, I'm surprised, it's sort of a bit thrown by the whole thing, a bit, don't know what to do with myself. …Yeah I don't know just a bit disconcerted by the whole thing and I can't settle… things that I usually enjoy I'm just not bothered. Can't be bothered watching a film, nothing takes my fancy. I can't get stuck into a book…it's a strange feeling I'm not usually like that, that sort of just can't latch on to things… I just feel generally less happy for some reason…there's nothing particular that I can put my finger on except just everything being thrown up in the air again with the COVID thing. I mean it does coincide with it so it's likely that it is affecting me a bit more this time. (P81)

Of these participants, some spoke about how despite expecting that a lockdown may occur again, they felt "disappointed" when this eventuated, and frustrated in particular towards the people who were breaking the rules – with one commenting that they felt "brassed off" (P36). The sense several shared was that with the recurrence of COVID-19 in the community came a feeling of failure, and fear of the future, with one participant commenting "[if lockdown] does happen [again] I would be very disappointed. I'm not too sure how I might handle that. No-one likes going back" (P10). Several participants shared the desire for the lockdown(s) to be "temporary" as they expressed concern about their ability to "cope well" should it be an extended period of time, or continue to recur, with one participant commenting,

> [The lockdown] probably makes me a bit more down to it in terms of mild depression, not actually that it's anything that I've ever been treated for. But I know when I'm not feeling right and I know that if I don't get rid of it after three or four days, I'm in, likely to be in trouble. (P47)

Overall, for a number of participants, the lockdowns brought adverse impacts on their abilities to cope in their daily lives. Some struggled with the sense of restriction and isolation from others, whilst others experienced anhedonia and shared fears that with a return to lockdown could lower their mood. This was particularly noted by those participants whom had experienced two lockdowns, and appeared to be related to feelings of disappointment that the initial lockdown had been unsuccessful, and frustration at people whom were unwilling to follow rules to sustain the COVID-free community.

Consideration of the Wider Consequences

A number of participants reflected a broader outlook on their experience over the COVID-19 lockdowns. Twelve participants (42.9%) spoke about their thoughts, and observations of effects beyond their own well-being. A number of participants reflected on the impacts of the lockdown on others, with some commenting on the "hardships" experienced by others, with a specific focus on the financial impacts.

Six participants (21.4%) reflected on the financial hardships that many others had experienced, with some commenting on the "lucky" position they were in as retirees, or homeowners with one noting, "I guess we're in an age group where finances don't worry us. Our kids have all got their jobs which, you know, there's a lot of stress on families where there's no jobs" (P36). Similarly, another participant spoke about these impacts on others, in particular the next generation, expressing,

> I understand that for me and retirement at my age, the impact is minimal compared with people in their 40s with mortgages and businesses to run and struggling. And for my children's generation whose life is kind of hold because, you know … All the things that they thought they might do in terms of international travel and, you know, in this stage of their lives before they settle down into a training programme or get married and have children or whatever is, you know, is kind of out of their reach. (P15)

The concern for the loss of income of others in particular was a common thread with a few participants reflecting on how they made an effort to support others, by reducing the rent on properties they leased out, or paying their employees despite no longer being able to access their services. As one participant noted,

> I kept saying we're the lucky ones our age, we don't have to go to work, we don't have mortgages and we don't have rents to pay. So we were okay in that regard ... I was very concerned about [my tenants] at first, because they'd handed in their notice at work and they were ready to shift to Nelson. And all of a sudden they had no, they couldn't go and they had no work here ... So for a week or so I was a little bit anxious about income, because I wasn't charging them rent for a good month or more … but I can't live with myself if I don't, someone's having to struggle like that. What's the point of life if you can't help people? It didn't mean we went without anything, but it meant her life was made a bit easier. (P5)

Conversely, a few participants reflected on the money that they saved by being forced to stay home, not spending on petrol and shopping as much as they had previously. Other's reflected on how the lockdown was not at all like anything they or the world had previously experienced. They spoke about the impacts of the pandemic on the world, and likened it to other difficult global circumstances, such as the Spanish Flu and the "restrictions of living through a war" (P33) in World War Two. One participant described,

> It was just so bizarre and so, we'd just never experienced anything like it. But I mean even now I still can't believe that a virus is taking hold of the whole world. And you watch things on the TV and you think oh yeah, and then you actually see in all these different countries. I just can't believe how a virus has done it. And it is so new. I mean people talked about these kind of things, but the reality of it, it was just so shocking. (P64)

Some contemplated how the world will be after the pandemic subsided, questioning how people will alter how they live, work and travel. Participant 10 shared,

> I believe it will never be the same, we will never go back to where we were prior to this epidemic. In fact the world's going to change, and we've got to accept it. I think it's taught me, and a lot of other people, we have locked ourselves into a timetable that we could not get out of. Now this epidemic has forced us to change our timetable and we've got to be very, very patient, I think, and be truthful in the sense that we're going to have to walk with a lot of other people and be patient to recover. I don't think we want to go back to where people were locked into a timetable. They have been released from that and now hopefully, and I think a lot of people will be relieved with the fact that they didn't do it on their own, everybody has to do it. And it's going to be very, very interesting to see how we recover from it and what eventuates from that recovery. (P10)

Overall, a number of participants reflected concerns beyond the immediate impacts of the lockdown and restrictions. Several shared concerns regarding the financial and situational hardships experienced by others through the lockdowns, commenting on their own relative "luck" at being secure at their later stage in life. Other participants were also able to contextualise the pandemic within their own experiences, reflecting on how other catastrophic events such as World War Two had similarly impacted the world, and how this too may influence life moving forwards.

In summary, this theme captures participant's attitudes when contemplating the experience of the COVID-19 lockdowns in New Zealand. In particular, this theme considers the idea that many whom experienced lockdown in New Zealand had attitudinal shifts about how they lived their lives during this time. Some valued the experience, expressing appreciation and pride at the shared action taken by the nation and the "team of five million", whilst a number also held a pragmatic attitude towards the pandemic restrictions. Disadvantageous components of the experience resulted in some individuals expressing how the lockdown had adversely impacted them, their mood, and ability to live as they would like during the lockdown. This theme also captured how the experience of the COVID-19 pandemic and subsequent lockdowns resulted in a number of participants contemplating the fallout of the lockdown and what consequences there may be moving forward for the nation.

Theme Two: Impacts on activities during the COVID-19 lockdown(s)

Of the participants who shared the impacts that the COVID-19 lockdown(s) in New Zealand had on their ability to live well, 25 (89.3%) shared that there were impacts on their ability to engage in activities in their daily life. Many of these individuals expressed that there were both beneficial and detrimental influences from the lockdown(s), noting that in some cases they had “more time” to do the things they enjoyed, which was “relaxing”. Others however, noted the inability to access and do things they normally would, such as exercising and socialising. From this, two subthemes were identified: positive impacts and detrimental impacts.

Positive impacts on the ability to engage in beneficial activities.

Twenty-five participants (89.3%) reported that the COVID-19 lockdown(s) brought beneficial opportunities for them to participate in activities that enabled them to live well. In particular, they commented on how the lockdown had allowed them to “relax” and had “more time” to complete activities they wanted to do or enjoy doing such as “going for walks” and gardening. Of these, eleven (44%) spoke about finding the initial 2020 lockdown “relaxing” noting how the reduction in commitments and pressure had allowed them the “space” and “time” to “slow down”. One participant commented,

> It didn’t prevent my living well at all. Probably enhanced it in a way to stop rushing around and just living more in the moment, day to day, and not projecting forward thinking about what’s to come and what’s to do next. It was more calming (P5)

Expanding on this, another reflected on how it not only allowed them to relax more, but also made more time for them to actually increase activities which improved their ability to live well, remarking,

> It was pleasant, it was relaxing. It was, gave me time to, gave me more time to do the things that I want to do, or wanted to do that have been on my list of things to do for a long time and hadn't been done. So I managed to do a lot of those and sort through things from family members that had been given to me when they died and all that sort of thing. And throw them away or offer them to other members of the family, and I felt as though I had accomplished quite a lot really by attending to those things. So yeah that was one of the best things I felt, and that was all because I decided to tidy up and clean out and stuff. I did, and I'm sure I'm not the only person that's done that sort of thing. It was very satisfying to see things go in the rubbish bin. (P37)

A number of participants' shared this experience, speaking about how the lockdown had benefitted them by allowing them time and space to do activities they enjoyed, which they felt that ordinarily they did not have time to complete. They reflected on renewed interests in hobbies, such as knitting, sewing, and gardening. In addition to the opportunity to engage in these activities, several also commented on how these had brought them a sense of accomplishment during the lockdown. One described,

> Feeling good about life is doing things, is getting things done, is filling my garden bag with weeds and pruning's in time for it to be collected. Is, you know, having my vegetable garden planted, is having my annual accounts done. Haven't achieved that yet, but have made a start. I did start on some quilting and applique during lockdown, haven't finished that, (P15).

Expanding on this, another participant shared how their lives were improved through not only increased time to engage in hobbies and activities, but also to exercise and care for themselves, reflecting,

> The park's been amazing, walking round the neighbourhood seeing all the, all the people out there and all the kids out on their bikes. I, I went to buy a bike, we got a bike for [my son] and I tried to buy a bike, but it only literally came about a week ago, it's taken months to get to the Torpedo. So I was, I really was keen to do some cycling. Yeah, and of course I have a little church group that was the other thing. I had this little prayer group, a mother's prayer group and we meet once a week on a Thursday night and, just for 45 minutes. (P42)

The increased opportunity to focus on one's health was a common thread among a number of participants, with twenty-one (84%) of them talking about how they enjoyed the increased chance to exercise, in particular going for walks, "We went for walks every day, got lovely places to walk around here, down to the water, or down to the park or, you know, that way to see one sister or that way to see the other (P81). A consequence noted by some of the participants was the benefit of not only being able to walk, but also the impact that the good weather had on their ability to do so, with one participant reflecting,

> I got out into the garden, so that was good, you know, I used to and I will have a walk around the, when I do, just around our little bay area here. So that was easy, you could get out and walk easily which was wonderful. The weather was good, you know, it's not like it was raining all the time so we had foul weather. I thought we were very lucky in that regard. So, I didn't feel hemmed in, I felt like I could actually go out and do something. I could go and get my groceries, I could go for a walk, and I could get out into the garden. (P40)

For many participants, the lockdowns appeared to afford unintended benefits to their lives. The rediscovery of hobbies, increased opportunities to relax and reflect on their own needs and well-being, and the ability to action these in the form of exercise and rest in the absence of daily demands was noted by many participants. It seems that for a number of individuals, the lockdown experience, although restrictive, had the benefit of also reducing external pressures, and enabling a sense of freedom that they otherwise were unable to experience prior to the lockdown.

Detrimental effects on the ability to engage in beneficial activities

Nineteen participants (67.9%) shared how the lockdown(s) adversely impacted their lives, limiting their abilities to engage in activities they enjoyed, and interactions with others outside of their household "bubble". Many noted that while practically they had understood the need for restrictions, the reality of what that meant on a daily basis they had not comprehended. One sharing "I found by the end of it was … I felt really hemmed in. Like oh my god, we've got to get out of here … my diary was a constant reminder of what I could've been, should've been doing." (P36).The loss of planned social engagements, regular hobbies and interactions was an expected consequence of the lockdown. However, it seemed for a number of participants the impact this had on their sense of well-being and enjoyment in their lives was unexpected. Missed human connection, isolation, and loss of a sense of community were all adverse consequences of the lockdown for these individuals.

For most participants, the lack of ability to go on outings, to religious services, and complete activities such as the gym or sports such as golf were a notable difficulty. One reflected,

> I just missed all, missed all the human contact, going out for the odd coffee or, you know, the shops didn't bother me so much, but maybe going to the movies or something, you couldn't do those sorts of things… We didn't have any church so from a spiritual, we were doing that on the television … So I got to the last day and it was, took my cup of tea in there to watch [the church service], it was like watching a movie because it was all so surreal really wasn't it, so it was really hard to sort of. Because church is all about community, it's all about people again, you know, and the people weren't there (P42)

This loss of weekly gatherings at things such as Church, or community groups was something a number of participants shared, reflecting at how often in these lost activities, came a sense of isolation and loss of freedom in their lives. For many it seemed that these planned activities were the primary source of social contact in their lives, and often one of a few sources of enjoyment. The loss of these activities appeared to detrimentally impact participants ability to 'live well', with one noting how "[the lockdown] did affect [their quality of life] in that because of some things that I wasn't able to continue to participate in or to do … it did leave some gaps in terms of things that I would have liked to be able to do to, to continue to enjoy life as it was" (P44). Depleted opportunities to mentally engage with the world through social interaction and new experiences was something several participants spoke about. One participant who was alone within their apartment in a retirement complex commented on their isolation following the loss of these activities, sharing,

> Church was stopped altogether … There is a discussion group on Tuesdays, we read the writings of people and that kind of thing. That was stopped and church was stopped… I always do Tai Chi. So really I have the fitness things still built in, but of course the classes closed yeah…All the talks and that kind of thing were gone yeah. And we get a lot of interesting speakers…apart from not seeing my family and the freedom to go to things like the art gallery and anything that's going on in the City, that kind of thing I missed. So I guess that was a freedom that I lost. (P33)

Not only did it seem to be common for there to be detrimental impacts on social connection and freedom with the loss of meaningful activities, but a number of participants noted how their physical health too had declined. A number of participants mentioned missing social sports they played for their health, such as golf, and swimming. With one commenting that the lack of physical activities available was "inhibiting because of the normal exercise which I normally do, especially trying to get my leg back [following an injury] to the way it used to be, and I felt a little bit I missed out on some of the stuff that I do" (P5) . Indeed, for a number of participants, the walks afforded to New Zealanders daily were insufficient to maintain their health, or were in fact detrimental due to injuries. With one participant sharing,

> Physical well-being, I don't think [the lockdown] was all that good for. There was one downside in terms of physical well-being and that's that I couldn't do the activities I normally do, like going to the swimming pool and doing aqua jogging there. And going to the gym and doing some exercises there. And I tried cycling a little stationary cycle I've got out here, but it made my ankles really, really sore and I couldn't do that. And walking is not good because I'm kind of, I've got to have a knee replacement and ankle, arthritis in my ankles, so walking is not a particularly good exercise for me anyway…I really had no way of doing the exercise that turned out satisfactorily. And I think I kind of, I think that was to the detriment of my health really. (P82)

The adverse impacts that losing activities due to the lockdown restrictions was commented on by over half of the participants in this study. Whilst many reflected on the loss of social interactions, mental stimulation and the impairment of their physical health, several other participants also spoke of the uncertainty that the first, and later second lockdown, had brought to their ability to plan future activities for themselves – in particular travel. Several shared how they had cancelled future travel plans with one noting "There's one or two things I wanted to do, I wanted to go over to the West Coast, I've got relations over there, but I haven't been," (P18). It seemed for several participants, travel was something they in particular enjoyed, and the loss of this had notably impacted their lives. One participant spoke of the detriment to their quality of life due restrictions limiting their ability to travel and plan for the future, sharing,

> To cut down the opportunity to travel because we, you know, in our lives we've done a lot of travelling. You know, I've lived overseas for a couple of years in UK, a couple of years in South Africa. And, you know, none of those things could be done during the, the virus period. So, so yeah so they, they did affect overall quality of life, the life that we used to have (P44)

The second lockdown, for those whom experienced it, appeared to have renewed these frustrations and uncertainties about the future. With some participants commenting on how they were again having to cancel plans and trips, and were now even more reluctant to plan anything in the future, with one sharing,

> Once again you’re crossing things out of your diary… yeah, it’s just slowed down again hasn’t it. Like what do we do today? We wake up and don’t have to rush out of bed…I guess the only thing it is like you booked things and you think I wonder if we’ll be doing that, you know. Can’t help feeling that a little bit. Like we booked a big trip in April to the Chatham Islands… But once again, nothing I can do about it so don’t spend too much time, you can’t do anything about it…You only worry about things you can do something about and then you have to worry about it to nut out what you’re going to do. And I can’t stop things happening like that [lockdowns], but it brought it home to me, well actually what you think you might be able to do in a month’s time and what you can do might be two different things. And I think we got a little bit complacent about that. It’s nice to feel free. It’s part of the freedom is knowing you can book ahead,” (P36).

In sum, the lockdowns in New Zealand in 2020 had a number of different impacts on participant’s abilities to engage in activities which they valued in their lives. Some reflected on the positive impacts; relaxation time, time to engage in hobbies and physical activities. However, others noted some adverse impacts to their lives, including the loss of social connection, impediments to physical activity and loss of future plans.

Theme Three: Anxiety and Fear for Safety during the COVID-19 Lockdown(s)

Of the participants interviewed, twenty-four (85.7%) reported having safety concerns during the COVID-19 lockdown(s). The nature of these concerns varied, encompassing worries for the safety of themselves and the wider world, with some noting the how “scary” it was watching things build up, with the sense of being “overwhelmed” with the pandemic. Others noted how global pandemic had made them begin to feel anxious for how the world was to recover, sharing an “anxiety” for the future. From these interviews, four subthemes emerged; concerns for their own safety and well-being, fears for the health of others, global concerns and their experiences of the actions of others.

Anxiety for their Personal Well-being and Safety

Sixteen individuals (57.1%) expressed concerns for their personal safety and well-being during the lockdown(s). Many expressed feeling “stressed” or “worried” for their health, discussing the measures they took to protect themselves and minimise their risk of infection, with one reflecting on how they felt “worried about the course of the whole pandemic…I'm feeling, quite a wee bit anxious about things” (P81). Despite a number noting how “grateful” they were to be in New Zealand, they still reflected their concerns, with one commenting,

> I seem to have over-catastrophised all year… so of course everything you're watching you're thinking the worst case scenario. So that's kind of what it's been like for me this year, just been very strange. And of course there's no end to it…I have got a little bit stressed through the whole, the whole year with the whole combination of things and yeah, it's been, so that's been quite hard to deal…I think it just raised my stress levels, yeah and anxiety certainly. (P42)

Additionally, in those essential workers (people expected to work during the strict lockdown period) among the participants, anxiety was also present, in particular with relation to their exposure to the virus at work, with one sharing,

> Probably the only thing is a little bit of anxiety at work because I was going to (birth) deliveries in theatre and there was, we had to prepare for the risk of the aerosolised [virus] in theatre... That was a bit anxiety inducing, wondering if we were going [to] come across it… I guess just, just the slight stress thing related to are we going to get a case today. We were all a bit nervous about that at work…Every day it's like phew I've made it through to, without coming across COVID-19. And just being extra vigilant about social distancing, you know, being very careful about that. So just, yeah probably, maybe slightly stressful because of making sure we weren't putting ourselves at risk by getting too close to people. (P76)

A few participants expressed how these anxieties were coupled with their thoughts about being at "higher risk" of catching or becoming seriously unwell with COVID-19 citing past illnesses such as pneumonia. One noted,

> I was sort of aware that, you know, at 71 with historic chest cough type drama, that I would probably be a good candidate to get it and go down with it… I mean, yeah, yeah, I think, you know, I have a fear of dying or death or illness, it's [COVID-19] just probably it'll be sort of thing [to make me ill], (P47)

The participants' fears for their own safety appeared to be coupled with increased efforts to minimise risk to themselves, through isolation, hygiene practices, and designating shoppers in their households. One reflected,

> …it made you much more careful with your personal habits, you know, like the handwashing and wearing a mask. I found that a bit strange to begin with but you realise everybody else is doing it and it's the most practical thing. And it's quite frightening I think to realise how, how quickly it can be passed on from one person to another. I mean it's a constant thing, it's in the news all the time you know. You can't get away from it. … I do think that when you are at home all the time you tend to start looking at your health a bit more. You start thinking oh, sort of worrying thinking I hope that's all right, I can't get to a doctor and that sort of thing, you know. (P10)

Similarly, another participant spoke of how they tried to reduce risk to their home, by disinfecting things brought home from the supermarket, noting,

> But during the lockdown I was, I was the designated shopper, but the Pak 'N Save here was very good. Anybody with a Gold Card just went straight in and you didn't have to queue so that was quite good. And I sort of wiped everything down with methylated spirits, it was in a packet when I got home and the same with the mail and the Herald. So I tried to do everything that could be done to keep us both healthy. (P39)

For a number of participants, the fear for their own safety and well-being during the lockdown was a paramount concern, sharing their fears of infection and its consequences, particularly as "higher risk" individuals due to age and comorbidities. Within this they shared the measures they had taken to reduce the chance of infection, isolating, cleaning and minimising exposure.

Concerns for the Well-being and Safety of Others

Twelve participants (42.9%) expressed fears for the safety and well-being of others during the COVID-19 lockdown. Many participants shared that they were "worried" about their friends and family who live separate from them, in particular overseas, with a number noting how "stressful" it was to be apart. Concerns for the welfare of others – both their health and livelihood became apparent, with one participant sharing,

> I think I worried a little bit more about the family that were not with us and how they were going because they were all in Auckland…And our granddaughter had to come back unexpectedly sooner than she was intended. And she was, so she was unable to complete her ski course in Canada…And then came back to going straight into lockdown, she's 18, so that, she was a bit of a worry because she's had some issues around her eating habits and, you know, some of her aspects of life that she's been dealing with. So we were a little bit worried about that… I say, just that slight anxiety for my family and the hope that everything would be alright for them. (P40)

Similarly, another participant spoke about how their fears for the safety of their family had impacted their own health, as well as concerns for their families' income and livelihood. Participant 42 shared,

> I do have family in the UK so that was a huge worry, because they were all. Two, one of my sisters and brother-in-law got the COVID…So very stressful listening to their lives over there every two or three days on the phone… And then of course [my son] had to go back to the US, that’s obviously stress, there's a lot of stress. So, you know, so about six or eight weeks ago, how long has he been home now, I started to get palpitations… So, you know, worried about him going back to the, back to the US with the COVID and how he was going to cope with all of that. (P42)

In addition to concerns for the physical and mental well-being of others, some participants also spoke about reduced income and job security was affecting others well-being. One participant spoke of her worries for friends, saying she “was very concerned about them at first, that’s right, because they’d handed in their notice at work and they were ready to shift to Nelson. And all of a sudden they couldn’t go and they had no work here”. Further to this, Participant 80 commented

> It has been hard on our kids and grandchildren. We’ve got, the oldest boy lives up here and the other one’s in Queenstown, so yeah, he had to take a bit of a pounding in his jobs he’s got, in what he runs [restaurant businesses]. (P80)

Overall, a number of participant’s anxieties centred beyond their own immediate well-being, and focussed instead on the safety and security of those around them. They shared how they were worried the health of family and friends, in addition to the potential financial implications of an extended lockdown on these individuals.

Impacts of the Actions of Others

Ten participants (35.7%) spoke of their feelings about how others behaviour had impacted them during the lockdown. Some reflected on their anger at the behaviour of others, in particular those that “disobeyed” rules or created stressful situations such as exposing others. Others lamented the logistical difficulties created by the lockdown, noting that they “wouldn’t want to go backwards into [lockdown] again” (P61) as it had been difficult to navigate access to services whilst managing their own exposure risks. One participant reflected on how people seemed unwilling to keep to their bubbles, sharing an experience which had upset them during the lockdown as an example,

> I saw people not doing the right thing. Swimming out to the 200-metre mark, you know, and paddle boarding and walking in very odd-looking bubble groups… a group of cyclists went for a ride around the coast road. And then on the way back, one of the group collapsed and had a heart attack and a cardiac arrest and was resuscitated.... afterwards, [we] found that the son of the man who collapsed who was with him and did CPR on him had just arrived back from the United States in the week before. So, what was he out doing riding when he should've been staying at home? (P15)

Beyond the difficulties with people disobeying social distancing guidelines, and lockdown rules, a few participants also reflected on how it was difficult at times in lockdown to get what they needed due to others taking advantage of services created for older or immunocompromised individuals. One remarked,

> I suppose one of the, just going back to one of the frustrations that I had just temporarily forgotten about was trying to do online shopping with Countdown. For crying out loud, I'm supposed to be one of their 'at risk' customers and I should be able to place an online order. But do you think I could get them to accept me as an at risk customer for an online order? It was absolutely pathetic. So through the whole time, we never got one internet-based, you know, shopping deal out of Countdown at all. (P47)

The frustrations towards the behaviour of others were also apparent in some of those participants whom experienced a second lockdown, with a few commenting on their anger with people "breaking out [of quarantine hotels]" (P15) and "carrying on with a blatant disregard for safety" (P47). One participant reflected that whilst they had expected another potential lockdown, they were concerned about the venom that other New Zealander's were expressing at its likely implementation. They noted,

> … it just makes me sad that people get angry and get nasty. I just don't get that, I don't get it you know…it seems to be the nature of humans. Some people just lash out don't they, when they're frightened. When they're frightened. That's, you know, that's the reality of it, its fear…I don't think there should be, bring on, like I mean the trouble is far for some people brings on disobedience and all those things. That's quite annoying when you're trying to do the right thing mostly, yeah. But that's humans. (P36)

Overall, for a number of participants, some of their distress was less about their own immediate health concerns, but rather the risk posed by people breaking the lockdown rules. The perceived risk posed by these individuals in reintroducing the virus into the community, and thus potentially impacting their health and well-being was commented on by several participants. Additionally, they shared the fear of returning to lockdowns, noting and the lack of supports available to them during this time, and the difficulties accessing food deliveries and healthcare supports.

Global Impacts of the Pandemic, and Concerns for the World

Ten participants (35.7%) shared how the lockdown had brought them concerns about the wider world, and the consequences of the pandemic and concurrent events. Some reflected on their worries about global politics, specifically “Trump” and the “divisive” (P81) nature of what was occurring in America. A number reflected on how they felt the news was quite negative and anxiety provoking. Some individuals related this news to their fears for the future of the world after the pandemic, and what the fallout may be – sharing how similar epidemics had impacted the world historically.

Concerns about global politics was a commonly shared amongst participants when reflecting on their experience of the lockdown(s) in New Zealand, with one participant noting “the world’s in a hell of a state at the moment. We lack good leadership in my opinion.” (P10). Expanding on this, one participant shared,

> ..it’s made me think about a whole lot of things to do with the wider community because of, it seems to me that all the news that you're reading about makes you feel that all the things you’ve been quite complacent about and felt were going okay are really quite fragile . In the sense that, you know, there are divides to political systems and the feeling that they could go in directions that are really disturbing in terms of values and things like that. I mean a lot of the things that are happening in the United States that are really divisive and sort of threatening to democracy, you feel as though we’re kind of lucky not to be in that state. But we’re also not entirely immune to the same forces that are happening. So I suppose a feeling that life is slightly more precarious. (P82)

The concern about the impact of Trump (president of the United Stated of America at the time of interviews/ pandemic onset) was commented on by several participants, with participants sharing concerns not only about his leadership, but also the impacts it was having on the American population as a whole, sharing,

> How moronic Trump is and his, his, just everything that he does it’s all about him ... I mean they're having, what they're up to over 150,000 people dead and [Trump] doesn’t seem to be concerned that his inactivity has contributed to these people dying, and he doesn’t even seem to care. And then putting out false information in relation to what you can do, like injecting yourself with detergent, you know, that’s just indescribably stupid … I fear for all those people, all those millions of people, millions of people that are unemployed there. And they're giving them aid, but very slowly in terms of, you know, cheques to money to keep them going. But some people are, are not getting it quickly and they're not getting enough. And of course it’s always those that are more needy that are suffering the most and it’s, it is concerning, it’s very concerning. (P39)

The ongoing social effects of leadership responses to the pandemic, and inequalities in the wake of the COVID pandemic were something observed by several participants, who reflected on how whilst the United States appeared the worst affected, other countries too were suffering. The fear and concern at the state of affairs outside of New Zealand’s relatively safe and isolated experience of the pandemic was most noted on, with one participant noting,

> It's, that would be a little anxiety I guess with what’s going on at, in New York, you know, with the riots. There seems to be almost a civil war set-up between the Trumpists and the non-Trumpists ... And that worries me a bit. I feel their situation is far worse than ours. And so many European countries, yes, especially the poorer ones. Your heart aches for them and you can do nothing except give money to charities that you trust … during COVID, you know, because it was showing pictures of European countries, that were having hundreds of coffins stored somewhere because, you know, they couldn’t get graves dug enough quickly enough. And of course in some countries it was a question of space too. They would probably go into a pit kind of thing, which touched me very deeply. (P33)

The concerns about how various nations were handling the pandemic, as well as how the individuals were suffering was shared among a number of participants. They spoke about their concern for what the fallout would be for the world following the COVID-19 lockdown(s) and global shutdowns, with one participant noting “we don’t know the long-term effects of it, that’s one of the worries” (P18). Similarly, another individual shared,

> So it’s, it’s harder times coming now, I've been expecting it to happen, but they're saying there's not going to be a crash. They reckon that the accountants they say, oh no it’s all the financial people it’s going to be good once we get over this hump in the road if you like with Coronavirus, you know. And I hope they're right, but we’ll see. (P7)

Some participants reflected on how the COVID-19 pandemic felt similar to other historical events, such as World War II, Ebola and the 1918 Flu Epidemic. They contemplated how the fallout from these events impacted the world, as well as the difficulties experienced during them, in particular the lives that were lost. Reflecting on this one participant observed how the impact of COVID-19 was so much greater due to is widespread effects, noting,

> In the 1918 flu epidemic and [I] thought how dreadful it was, you know, with 90 people in Mt Eden died…And they would have the, they'd be all lined up in their little caskets at, for the railway station to go out to Waikamete. Each day. And that was really pretty awful, but I think this is worse because it's, it's [COVID-19] affected so many more people hasn’t it… now when I look ahead I think well I don’t know when things will ever come right until we get some sort of vaccines. Yes I, I feel we’re going to have the, we’ll have to watch out for quite a few years I think don’t you ... It's not as if it's something that's turned on and turned off again…I think yes, we are just all going to have to adjust to, be careful. (P85)

Another participant expressed similar concerns, reflecting on the ongoing impacts on societies following a widespread epidemic, and noting the tendencies of these events to cause collapses to civilisations. They wondered as did other participants, how modern society would fare moving forward, sharing “but I don’t know whether it’ll absolutely collapse around the world in a very short time, but who knows… I mean we’re only a few months into this, so goodness only knows really what could happen in the rest of my life.” (P39).

Overall, in this theme, participants described how the lockdowns in Aotearoa New Zealand in 2020 impacted their mood, in particular their concerns for themselves, others and the wider world. Many shared how the lockdown had brought about “worries” and “stress” for their own safety and well-being, and that of those around them. In particular, a number shared how they worried for others overseas dealing with the pandemic, and the political situations which were detrimentally impacting peoples’ health and safety. A number of participants shared their frustrations at the behaviour of others, in particular those who experienced a second lockdown in New Zealand, commenting on the negative impacts of this on themselves and others.

Theme Four: Connection with Others and the World during the COVID-19 Lockdown(s)

Of the participants interviewed, all (twenty-six) shared how they experienced connection with other people in their lives, during the isolating period of the lockdown(s) in 2020. Participants spoke of their ability to engage with and maintain relationships with their family and friends. They shared how technology had been somewhat helpful, having “Zoom meet ups” with family, friends, and clubs. Many noted the challenges of staying connected with those outside of their bubble, and how they often “missed” these individuals, commenting on how things “were not the same” on Zoom. However, some individuals shared how the lockdown also afforded them to better connect with those in their homes. A number commented on how, having a partner or another person in their home had been important to them, as if they had been on their own, they felt the experience would have been “different”. From these interviews, three subthemes emerged: connection with family, social relationships, and the impact of technology on their ability to connect.

Family Relationships

Connection with family came through as an important subtheme in the experience of the 2020 lockdown(s), with 25 (96.2%) sharing how their relationships with family shifted and were maintained through the isolation of the lockdown. These participants reflected on how their relationships with their family altered, with some sharing that the increased time together in bubbles was “nice”, noting that they were grateful to have partners / others in their bubbles as they “wouldn’t want to be alone”. Others spoke about how the lockdown appeared to have increased their families’ efforts to connect with them, with some doing supermarket shopping for them, or calling to check in more. However, for many, the absence of family from their homes was a challenge, as they missed their children and grandchildren. One participant explained,

> I have got four children, three of whom are in the Wellington area, and grandchildren, and that was quite difficult not seeing them after being used to seeing them. We’re a very close family and we do normally see each other regularly, and I babysit my grandkids every week. So you know, initially it was a bit of a novelty but as that time got on I did really miss them. (P64)

The absence of family members was especially tough for those that appeared to have regular contact and connection with them in their lives. However, this isolation from family was not felt by all participants, with some sharing that they had actually felt more connected to family members. These individuals shared that they appreciated the chance to spend time with their family without the burden of appointments and workplace expectations. One shared,

> At home everyone was hanging out together and it was quite fun and nice to spend some time, because my boys are grown up really and they're all doing their own thing usually. And nice to spend time with my husband, nice to just not just be rushing past each other all the time… I think it was good for our relationships in our family, yeah. Good for my husband and to spend a good amount of time. And, you know, we're sort of at a whole new phase of our lives now and it was nice to sort of notice that and think oh okay what now sort of thing. And it was good. (P81)

Nor was the effort to maintain their family relationships one sided, with some participants sharing how their children/ grandchildren appeared to make an increased effort to reach out during the isolation, with one commenting,

> I think ones got more time, so in some cases it's been quite good and I have found with my, I've got one daughter, she's more tended to ring up to see how we were and that sort of thing. So probably become a bit more caring. I mean that's there anyway but maybe more aware of it, put it that way. And family, I mean I know they are caring but they get on with their lives too. But they've been just a bit more aware of where we're at sort of thing, yeah. Or sort of had time to think about it probably (laugh), yeah. (P11)

Alternatively some participants shared the detrimental impacts of the lockdowns on their family relationships. Some noted that their families had been unable to support one another through difficult circumstances which occurred during the lockdown, due to the isolation and restrictions. One shared the challenges for her children, as they struggled to manage their work whilst trying to support their children with online schooling,

> Our daughter was trying to work at home, and she's got a young dyspraxic son who had just started Form 1, you know, in a boy's college so the expectation was pretty high. Despite the fact everyone tells you 'no, it doesn't matter' parents feel it when they get constant [negative] notes from teachers… Because she was trying to work with two children. Those people have got a horrible situation really going on. (P36)

With the challenges of managing working and schooling from home in isolation, there were also challenges to supporting their families at times of loss. One participant recounted that they had been unable to grieve with and support their family through a loss in the lockdown, noting the detrimental impact this had on them all,

> He was in England my Dad, so I couldn't go over. If it had been in normal circumstances I could've actually been with him. He had an accident and he was alive for a week, and I could've sat with him for that week. And I could've been there when he died, and I could've been there for the funeral, and I could've been there sorting the house and sorting my Mum out. So everything of that, that was my biggest kind of what I couldn't do because of Covid …I think that's always going to be my overwhelming memory that I couldn't go to England, I couldn't do all of that, yeah. It's a funny thing but that's sort of very much is forefront in my mind when I think about Covid and lockdown and everything. (P64)

For those participants who experienced a second lockdown, six of the nine (66.7%) shared their frustrations at their inability to connect with their family. A few noted how the lockdown was again causing pressure on their family unit; particularly children and grandchildren. A few participants noted they had to expand their bubble to support others, with one sharing,

> We've had, I've got one son with two littlies and we've had them over, looking after them because both parents are working from home ... So we've tried to pick up that a bit, you know, because it's quite important for them, you know, and for the children really … we've got another daughter with two teenagers and caught up with them on the weekend. And you know, we just it's nice, yeah. They're all working from home too, the family…And the kids are, you know, the teenagers are all sort of doing their schoolwork, you know, but for them it's hard because they haven't got that social contact with their friends. You know, which is important I think for teenagers to have that peer contact. (P11)

It seemed that in addition to the difficulties supporting one another in the isolation of the second lockdown, that for a number of participants, connection was also more challenging the second time around. Several participants shared that were less inclined to reach out to their family by phone, or connect with them on video calls, noting the lack of "novelty" this time around, with one commenting,

> …partly I just, I've got nothing to say, you know, I just don't feel like I want to, I haven't rung anyone actually. I've texted people, oh my sister though I speak to her every now and then, but I don't want to ring up and have a big chat. I feel really sort of a bit sort of, you know. I think I said, I've written it down actually, ring people today, you know, like make myself do that because it's, you know, it's a bit mopey to not… it [Zoom calls] was all a bit of a novelty and it was fun to try and do all three of us our four of us talking at once on the thing. But this time I think we're all just, oh

> we've done that, it's not exciting anymore. And everyone's busy, you know. Yeah as you say we didn't do, we did have that [holiday] break in the last lot. Well even though we were all doing bits of work it wasn't, it was easier to be social I guess. And easier to go for walks and bang into people, not bang into people, social distance near people and have a chat and that sort of thing. (P81)

For many participants the restrictions of the lockdown appeared to have both beneficial and detrimental impacts. For some, the freedom from daily life allowed them more time to spend with family in their households, or to reconnect virtually with those whom they did not live with. This effort to maintain connection also appeared to be reciprocal, with a number of participants noting that their family were making more of an effort to reach out. However, for many others, the isolation of the lockdown made it difficult to stay engaged with family – especially amongst those whom experienced two lockdowns. The inability to be able to be with family and support each other at distressing times, and the lack of "humanness" that virtual options provided was a notable detriment during this time for many.

Friends and Social Relationships

Twenty-five participants (96.2%) shared experiences related to the impacts the lockdown had on their relationships with friends and social acquaintances. Some individuals shared their sense that their quality of life had been detrimentally impacted by the "isolating" experience of the lockdown, sharing how they missed their friends and their community activities. Conversely, some shared their observations that the lockdown appeared to bring a renewed sense of community, with people seemingly more "friendly" during the lockdowns, and "reaching out" more.

A number of participants experienced the isolation from their friends and social groups as difficult, with one noting "peoples company, I probably missed that more than anything" (P18), with others noting that despite being able to video call people that this was "not the same" (P81) as seeing them in person. Expanding on this, another participant shared,

> …the only part of the well-being [that was impacted] was possibly the socialising and not seeing people. And that's quite an important part, particularly as you get older, to make sure you mix with people…So I broke the rules a bit because I've got a friend who lives about 2km from here, so we'd go and, I'd go and talk to her sort of thing, you know. And there was another one down the road. So I tended to try and make the effort to see these people but keeping away, you know, keeping a space…Level 4 would be [the most difficult] because it'd take away all that social, you know, my husband and I also play indoor bowls and that's another social thing we do. And I

> belong to a Probus group which, you know, that's all been shut down. So I think, yeah, it would be the, that social contact would be hardest I think, yeah. (P11)

The loss of social connections through activities such as church, or social groups was commonly touched upon by a number of participants, in particular people missing religious services, and social organisations they were part of such as Rotary, tramping, and exercise groups. Further to this, one participant reflected on how they felt the lockdown experience had impacted their well-being, due to their isolation from social interactions and friends,

> Our religious services were interrupted, so we were getting them through the computer, which wasn't the same as meeting people within the church…The lockdown, yeah, that hamstringed me a little bit. We had to keep to a bubble. Well, I love going out and meeting people. You know, and to the college and meeting the kids. Kids have been my life. All that disappeared, just in a manner of someone making a statement up the beehive. Yeah, that was hard to take … I think it affected [my well-being] mostly by not being able to get out and meet other people. (P10).

Conversely, some participants reflected that they had seen some improvements socially in their communities, sharing how others seemed friendlier, and more likely to reach out. A few participants explained, as "at risk" individuals, their community stepped up and did their supermarket shopping "we didn't have to drive to go and to get our shopping. We had someone else who would go into [the city] and it would be probably 27[minutes], it's probably 50k away. So someone did that because we were over 70 and they were just nice to us" (P26). As well as experiencing increased friendliness in their neighbourhoods, participants found some friends were reaching out to call them more, with one participant commenting,

> I spoke to friends on the phone quite a lot, and the days passed very quickly somehow. I was never at a loss for something to do, there was always plenty to do…So yeah, so it was, I find a lot of my friends said the same to me, they quite enjoyed it. I enjoyed the peace and quiet in the street. Every time you walked along a main road there were birds, lots of Tui's around. It's lovely to see family groups, and we spoke a lot to people around at a distance. People passing by, family groups, yeah, lots of chatting to them and saying hello going on. It was a nice feeling, community somehow. (P5)

For those participants who experienced a second lockdown, participants noted that there were less "Zoom drinkies" (Zoom calls with friends where they would have wine/ beer and catch up), this time around. Some felt this may have been due to it being a shorter lockdown than the previous, whilst others noted the lack of "time" and "novelty" the second time around. Of those whom experienced two lockdowns, a few also noted the need to make an effort to engage with others and "contact those who aren't contacting [them]" (P81). One recounted,

> I think for people on their own it's really important to find, you know, make an effort to. Because otherwise, yeah, they don't see people…I'm doing more walking, and just making a point of keeping up with the people that, you know, friends and family within cooee and, you know, going over and sort of seeing them but having that space which is quite good…I don't feel terribly restricted. As I said, I'm not being involved in work, I'm not having that social angle. And the other groups I belong to, I can't have that. So it is restrictive but more socially than anything I think, yeah. (P11)

In summary, all but one participant commented on how the lockdown had impacted their social relationships. Many noted the isolation they felt during the weeks confined to their homes, commenting on the loss of community and connection without these interactions and the challenges of staying in touch with others. However, despite this, several participants commented on how with the nation united in the experience of lockdown, they felt there was an increased warmth to the community around them. Several shared how people looked out for one another – doing grocery collections, and calling to check in – whilst other noted the increased friendliness in the streets and passers-by. For those participants whom experienced a second lockdown, it seemed that the effects of the isolation were more present, noting a greater difficulty in connection, and being motivated to communicate with those outside their bubbles. A number noted how the loss of social connections had impacted their sense of well-being and quality of life as they lived through the restrictions.

Technology and its Role in Connection

When considering the theme of connection in this research, the importance of technology emerged as a subtheme, with 21 participants (80.8%) sharing that technology facilitated their ability to connect during the lockdown. Many participants reflected that barring physical contact and face-to-face interactions, their families shifted to online mediums such as Zoom, WhatsApp, FaceTime and Skype. A number of participants shared how they valued this form of contact, however, several noted that this was "not the same" as in-person interaction.

The boon offered by technology in the lockdown was something remarked on by a number of participants, whom shared how it allowed them to connect with family and friends in other cities, and countries. One individual commented on how it had made a "huge difference to people's lives, and without the internet, probably a lot of people would be pretty lonely." (P23). The impact of the social isolation of lockdown for some individuals appears to have been somewhat ameliorated through the utilisation of technology. One participant shared,

> I didn't get lonely, I kept in touch with my daughters and we did Facebook video chats, you know, three of us together and so that was fine…I connected with people. Our women's golf group put a WhatsApp group together and I had to turn the notifications off because it was just pinging constantly, you know? I'd open my phone and there'd be 30 messages and, you know, it was just chat. But they shared really funny things. So there was an opportunity to laugh out loud and then to share those on with other people and get a, you know, a positive response…I got to know some people better because, because there was this sort of digital chat. I don't think, I haven't lost any friends as a result. I've lost a bit of contact, but then other people have made a special effort to get in touch again and to, you know, invite me to go and do things. (P15)

The ability to keep in touch with friends, family and social groups was echoed by another participant, who shared how they felt connected throughout the lockdown thanks to her ability to use technology, reflecting that,

> With our synagogue we had Zoom meetings. We couldn't do it on the actually on the Sabbath, on the Friday before the Sabbath came in we'd had Zoom meetings. A lot of people attended and we could have music, which you don't normally have, and the songs we sang accompanying them. And it was really lovely, we all enjoyed that. And Saturday night, they used to Zoom in when we, there's a little ceremony to say goodbye to the Sabbath, and did that…It was absolutely fine because I could communicate with friends and that on Skype or WhatsApp. I communicated with family overseas. I didn't feel socially isolated at all … But I recognise that I was the fortunate one compared to my friends who are on their own, so I didn't feel isolated at all. (P5)

The sense of good fortune at being able to use and communicate through online mediums came through in a number of participants who were either previously using, or able to adapt to use technology during the lockdown. However, for others, the switch to online forms of connection was difficult, and even if they were able to adapt, it was oftentimes something that had to be relearned with every use. For example, one individual shared,

> Teaching people how to use the buttons. And then I, Wednesday afternoon I had a coffee with a couple of oldies. And one of them said [Participants name] I've forgotten how to do it. I said that's fine, we're going to teach you again, you know. I mean they're 83, they're allowed to forget how to do it. But you know, she twigged. I mean isn't it amazing, I mean they're amazing. Because it's quite, it's not easy, you know, and they just, you know, go to the top of your screen, do this, do that, go to the left, do this. And they go oh yeah, that's right, we remember. (P36)

Another challenge that a few participants spoke about was the sense that whilst technology helped to give some sense of connection, there were limitations to what it could provide. One individual shared that whilst they had used technology to connect, they had missed the humanity of face to face to connection, expressing,

> Zoom, yeah, we've been on Zoom with people in Auckland but that's about it, but that's not the same as meeting them and that's the problem with the world. Technology's wonderful but it can be abused. So that would be the main thing there, not being able to visit family and friends…Speaking on a cellphone or speaking on Zoom or speaking on any electronic piece of equipment means nothing to me. I like to see people, shake their hand and say, hey mate, how are you? So this is great, it saves a lot of money, which is big news in your game, but it is no, what's the word, it's in competition to that personal relationship. (P10)

In summary, individuals shared in this theme how the lockdown experience had altered their ability to connect with friends and family. Many expressed that the isolation had impacted their ability to connect with friends and family, limiting their social connections. Specifically, they felt the loss of "human" connection that comes with face-to-face interactions. Many participants expressed that they had used technology to try and bridge the gap of isolation in the lockdown, noting this had been beneficial, however, "not the same" as physical proximity. Despite the challenges with social isolation in the lockdown, some individuals also shared how they felt the lockdown had improved some connections in their community, noting that people had seemed friendlier, both in the community, and within their own families.

Theme Five: Impacts and Concerns for Cognitive Decline in the COVID-19 Lockdown(s)

Of the participants interviewed, seven (26.9%) expressed concerns with their memory functioning during the isolating period of the lockdown(s) in 2020. All of these individuals belonged to the Mild Cognitive Impairment group of the study, meaning that of the 16 MCI participants interviewed for the qualitative component, 43.8% expressed memory concerns. For the individuals with MCI, their experience of the lockdowns may have additionally influenced their well-being through the changes in their cognitive functioning through this time period, and for nearly half of them, this was something that they expressed having impacted them during this time. Participants shared that their mood had been impacted by the lockdown, with a few expressing frustration, and anxiety. A number shared how they had developed coping strategies to manage their memory concerns, in particular the challenges presented by the lockdown, commenting that they had used photos, diaries and whiteboards to “focus”. On the other hand, several individuals shared how the lockdown had in fact felt beneficial for them regarding their memory difficulties, allowing them to spend time with their partners and families.

Several participants spoke about how at times during the lockdown, they had felt changes in their mood, with some expressing frustration, and lowered mood in relation to their memory difficulties, which some felt were exacerbated by the lockdown. One participant shared their experience of memory difficulties noting,

> That has been quite a struggle, related back to the memory issues, the dementia-related issues. Very frustrating because, because of the memory issues, if not remembering things, not remembering perhaps places and things as much as I used to be able to. So that has been very frustrating. So I do take anti, anti-depressants. So I first started taking them about, oh in fact it's almost two years ago … lockdown I think that has caused me to have more down periods and, you know, linked in with my own mild depression and cognitive issues, then yeah it hasn’t, it hasn’t been a good time from that point of view… Oh it makes me feel miserable at times. Don’t feel I want to do anything … I've always been an organiser, I've always, you know, been captain, president and whatever of clubs and, and business things so on and I can't really do that anymore. Well I'm not happy to try and do that anymore because I know I won’t be able to perform the way I used to and so that's a frustration. (P44)

This participant’s frustration with how their memory impairments are were impacting their everyday life was echoed by other participants, with one sharing the difficulties of completing tasks and completing hobbies,

> Because there’s lots of things I can’t do now that I did before, you know, when I bake a cake I think, oh did I remember to put baking powder in? You know, or have I just done that? Silly things like that. Well those are the frustrating things in my life. (P61)

The ways in which they adapted to manage their cognitive difficulties was a common thread to many of the MCI participant's experiences, with several sharing how they used aides such as diaries, notice boards and taking photographs. In particular during the COVID lockdowns, with the scanning requirements, a few spoke about how they managed this, with one commenting,

> Yeah I mean I'm actually scanning [QR codes] everywhere I go, I'm keeping a diary that's the other thing I'm doing. Everywhere, every day I'm writing down where I've been every single minute of the day in great detail. Because the, because the, the scanning things aren't very good, you know. You might be lucky if you get one out of three or four shops that it works… I can't remember things, you know, I couldn't tell you what I did last Saturday or Sunday, or even yesterday half the time … if somebody said to you what did you do on Monday I think mm, I have to look at the diary or the phone or the [photos]. And that's why I take a lot of photographs when I'm out and about so, because it's a kind of a, it's almost a diary for me. So if I had to go back I could see where I've done things. I don't know it's just probably part of the age thing and then memory, a bit of memory loss, yeah. (P42)

Whilst some participants spoke of the difficulties of lockdown, others shared how the lockdown had afforded them some benefits, including increased time with their family, as well as improving their well-being by getting a "break" from the pressures of their lives, and their fears of forgetting things in their daily lives. One shared,

> I think it was a, positively. Because I, you know, I have got memory problems and it's really, it makes me quite anxious at work, as I think it's getting slightly worse. Everyone says oh no we're all the same, but I feel like I'm always on guard for having, did I forget something, what's that person's name, did I not talk to that person yesterday or did I, yeah. So it was kind of a, a little rest for me, yeah. I could sort of not be, not be constantly kind of slightly anxious about things, yeah. (P81)

The increased time with family was echoed by another individual, who shared how the lockdown experience and isolation that came with this, afforded them the benefits of focussing on the things that were important in their life. This participant shared,

> So we had a lot of time together as a result which was beneficial to me, particularly as my memory issues have got a lot worse since last year... I now feel that I have got, mainly because of the memory issues, where my memory's, for names and lots of other things has got really bad. But I can still live as you know, a fairly normal life, I have been able to adjust that much to it. And so, COVID has been good in some ways, it enabled me to concentrate on doing certain things…I suppose in some ways COVID may have helped a little by making me focus on things. (P44)

Overall, this theme explored how those participants with MCI experienced their cognitive difficulties in the context of the lockdown in Aotearoa New Zealand in 2020. They spoke about both the benefits and drawbacks for them in the context of the lockdown, reflecting on how their memory difficulties had impacted their experience. Several shared how the lockdown had negatively impacted their mood, exacerbating their “low” points and “frustration” due to the social isolation and restrictions. To manage these experiences, a number of individuals shared how they managed their memory concerns, reporting using diaries, noticeboards and photos to keep track of their plans and daily actions. Interestingly, a number of MCI participants also shared how the lockdown had been beneficial to them with regard to their cognitive difficulties, sharing how they were more able to take a “break” from the stresses of their normal lives as restrictions prevented most activities. One individual shared how the lockdown had been beneficial as she hadn’t felt her usual anxiety, and need to be “on guard” to forgetting things like people’s names. The lockdown experience of the participants with MCI only differed from that of cognitively normal individuals with regard to how their memory concerns had influenced their experience.

Overall Summary – Experiences of COVID-19 Lockdown(s) in New Zealand

These five themes capture and describe the experiences of individuals with and without MCI during the 2020 lockdown(s) in New Zealand. The first theme revealed the attitudinal shifts of participants following the experience of the COVID-19 lockdowns in New Zealand. A number expressed pride and gratitude at the handling of the lockdown, sharing their pragmatic attitudes towards the restrictions. Some also reflected on the disadvantageous aspects of the lockdown, noting the negative impacts on their mood and lives during this time, with concerns about the future fallout. The second theme considered the impact the lockdowns had on participant’s ability to engage with activities in their daily lives, revealing both the positive impacts (relaxation and leisure time increases) and detrimental ones (loss of social connection, ability to exercise and future plans).

From experiences of the lockdowns, the third theme explored the impacts on the mood of participants. Many expressed concerns for safety, of themselves, others and the world, whilst also reflecting on the increased stress and anxieties that COVID-19 had brought into their lives. The fourth theme revealed that for many participants experienced challenges with connection during the isolating period of the lockdown, noting challenges connecting with friends and family, although some shared benefits of reduced external demands allowing for increased quality time with others, utilising technology to ameliorate the challenges of isolation.

The fifth theme explored the unique experience of individuals with MCI, and how they experienced their memory difficulties in the context of the lockdown restrictions. Several noted how restrictions and loss of access to their regular routines had lowered their mood, whilst a number also noted the need to implement strategies to ensure they complied with rules and could remember where they had been – should they test positive and have to isolate. Interestingly, this theme also revealed that for some with MCI, there were perceived benefits, as they had a reprieve from their usual daily demands, and with this came a improvement in mood.

Data Set Two: Experiences of the Easing of Restrictions

The following presents the results of the thematic analysis relating to the experiences of the easing of the New Zealand lockdown restrictions on older adults both with and without MCI. The analyses explored how this process impacted participants' abilities to live well including their well-being, quality of life and life satisfaction. Four main themes were identified, which capture participants' experiences through the easing of restrictions(s), with one theme exploring the memory difficulties experienced by individuals with MCI. These themes and the associated subthemes are presented below, with Table 13 illustrating these and the number of participants endorsing these themes.

Table 13. Experiences of the easing of restrictions following the New Zealand 2020 COVID-19 Lockdown(s) from Healthy & MCI older Adults – themes and subthemes

Themes (N = 4)	Subthemes
Managing the Logistics of a Post-Lockdown New Zealand (N = 24)	Transition to the “new normal” Planning and Travelling Post-Lockdown Adjustments and Safety Concerns Societal Changes
The emotional experiences and internal responses of easing of restrictions (N = 21)	Challenging Emotional Responses Positive Emotional responses
Reconnecting Following the New Zealand Lockdown (N = 26)	Appreciation of Social Connections Reuniting with Family and Friends
Cognitive Impairments and the Experience of Easing of Restrictions (N = 5)	

Theme One: Managing the Logistics of a Post-Lockdown New Zealand

Twenty-four participants (85.7%) shared the ways they had navigated the easing of restrictions in New Zealand, reflecting on how the lockdowns had impacted them and how they had coped with these changes. Many participants spoke of the adjustment to the return to a lockdown-free world, commenting on how “busy” things had quickly become again, with them sharing the different adjustments they had made due to fear of infection, and those they noticed in the world beyond their bubbles. Three subthemes were identified: Transition to the ‘new normal’, Safety Concerns and Adjustments, and Societal Changes.

Transition to the "new normal"

Twenty-two participants (78.6%) reported that following the easing of restrictions, they had experienced a transitional period as the country moved from full-lockdown to the other COVID-19 levels. The return from the novelty of isolation for a number of participants appeared to be a shock as things became "busy" again as the restriction levels eased, with one commenting,

> …it was just that transition I think from being, having quite calm, peaceful, relaxing days with no stress into just getting back to normal life… Yeah they [post-lockdown days] have been alright, I just have to organise my days a bit better…So nothing really major just a bit of a shock probably. (P37)

However, with the eased restrictions, several participants commented on the challenges beyond the initial shock, both in a practical and emotional sense. Some shared difficulties going out for meals, or returning to find challenges such as shop closures, shut downs, or limited access made available at places such a gyms and restaurants. One individual reflected,

> You can't just suddenly pick up from where you were three or four months ago to suddenly sort of act as though nothing's happened in the meantime and get back to where you were. It's never quite going to be like that. So it has left a, a bump along the way which will always still be there. But you gradually, we're gradually making a bit of progress towards where we used to be. So yeah it's not going to be easy and it's not going to be quick. It's a process which is going to take a bit of time. (P 44)

For those participants returning to work, some shared that the return to a busy schedule had actually reduced their abilities to care for themselves and do things they enjoyed, and increased demands were placed on them from outside of their "bubbles", with one commenting,

> Well it changed my quality of life in terms of I didn't have as much time and therefore, you know, it's a bit of an excuse, but I didn't exercise as much. So I'm not say that it lessened my quality of life it just changed the nature of it if you like… you know, work's work. I like my job, I do, but it's hard to feel like yay every day. But it was, it's fine, yeah. So yeah back to reality basically. (P81)

Despite the challenges of the "new normal" many participants shared their hopefulness at the eased restrictions, and what learnings from lockdown they hoped to take forward from lockdowns. One noted how they hoped that perhaps they had learned “it's not necessary to do so many things in a day sometimes and it doesn’t matter if you don’t do them all.” (P37). Similarly, another participant expanded on their enjoyment of the eased restrictions, and the positive impacts it had on their well-being following the lockdowns, commenting,

> One of the things about my life is that I find it hard to say no. So that if someone asks me to do something then I find it really hard to say no I don’t want to do that, or I've got something else to do. Now during the lockdown there was none of that, now there is much more of that and you have to make decisions. So once again it’s made me more aware of the decision-making points and of whether in fact it is better to say no to something at certain times…And which are the values which make me, make it better for me to say yes to some things, but absolutely not needful to say yes to other things. So yeah, I mean that’s a positive, a process of examining your values and thinking, well I've gone without doing all these things for a while, why am I doing them now. And making more distinction between whether you really want to or whether you're doing the response to a request, or that kind of thing. So I suppose you're getting more control over your life in some ways by having really pushed all of it for a time (P82)

Overall, many participants reflected on the challenges and learnings that they had taken as New Zealand transitioned from lockdown to the lower alert levels within New Zealand. For a number of participants, the transition after so much time in isolation was a challenge, as was the adjustment to the limitations of the remaining restrictions, and losses of businesses/access to facilities following the lockdown. Several participants also reflected on what learnings they were incorporating into their daily lives following the lockdown, noting the desire to make time for themselves, well-being and the importance of saying no to many demands being placed on them.

Planning & Travelling Post-Lockdown

Seventeen participants (60.7%) noted that with the easing of lockdown, they began to try to plan and travel within the limitations of COVID-19 restrictions. Many spoke of a sense of “freedom” once lockdown had ended. For some, lockdown ending was met with a sense of reluctance to plan any travel despite being able to do so, in part due to uncertainties of the pandemic and the potential of infection. For others, the reduction in restrictions had the alternative effect, making them feel encouraged to travel within the restrictions and plan for the future. The freedom and excitement many participants felt at being able to move outside their “bubbles” and connect with a world outside their home was a common theme, with one participant commenting,

> We’re quite happy to have done the restrictions and it’s nice now to be able to go out. In fact I just, we were talking today at the accountants we might be looking at taking a holiday down the South Island or down past Hastings, because it’s, there's only a couple of areas I haven’t been, we haven’t been to in New Zealand. We’ve been right round, but there's only one area, that’s from Napier-Hastings down that coast to Wellington, that’s the only bit we haven’t done really …We've done the rest so we’re just thinking might do something like that and call in at Gisborne, not Gisborne, Hastings, because I've got a friend lives down there which I've never seen for years. So we could always call him and see him, take him for a beer and something like that, just catch up. (P7)

However, despite many participants experiencing enjoyment of the newfound freedom, there were also numerous participants who struggled with the remaining restrictions, with one noting,

> Well even now there are restrictions in the sense that one of the great pleasures of my life is travel or the contemplation of travel or that sort of thing. And that’s just right off the agenda. So in a way it’s a source of, it’s a, it’s a bit of a deprivation in a way where you think you can't plan. (P82)

Similarly, another participant expanded on this sentiment, noting their difficulties with the uncertainties that the restrictions still in place had created for them, and their concerns with planning for the future given the COVID-19 still was prevalent around the world, sharing,

> I don’t have the desire to, to travel, go and travel overseas because COVID is still rampant in all sorts of places. We’d love to go to Australia as, you know, we used to do frequently to see [my partners] two girls living over there. But it's still probably a long way off from being able to do it. So we can't really plan those, those sorts of things anymore…I don’t feel the real freedom to do and do things, and to a certain extent I don’t necessarily want to because of my own issues and ageing process (P44)

In sum, many participants reflected on the freedom which had come with the ending of the lockdown(s) in New Zealand. For a number, this made space to again plan to travel within the nation, and reconnect with people outside of their household bubble, which was met with excitement and anticipation. However for others, the uncertainty surrounding the pandemic – with the potential for further outbreaks and infection – had the opposite effect.

Several participants shared a reluctance to plan, instead choosing to avoid the disappointment and uncertainty until the future of the nation and global state of the pandemic was further resolved.

Adjustments and Safety Concerns

Ten participants (35.7%) noted that with the easing of restrictions came increased concerns about their own/others safety, and shared the adjustments they made to their post-lockdown lives to minimise the risk of contracting COVID-19 as people were afforded increased freedoms to travel and move about New Zealand. For some individuals it was about limiting their own exposure through the use of masks and cleaning surfaces. As one participant shared,

> We've been able to go into town or go other places we weren't, you know, that we weren't able to do before. And to begin with I took a meth's cloth so once we got off the bus we wiped our hands and made sure [their partner] wiped [their] hands. And if we went anywhere and touched a lift button or a crossing the road button, we had the methylated spirits cloth. (P39)

For other participants, it was not only about minimising their exposure through using protective equipment and cleaning, but it was also about modifying their behaviours, "being sensible" around others and in their activities once restrictions had eased. One participant shared,

> I'm very conscious that I have to be a bit more careful around, well probably everybody really, although my children, grandchildren did come to stay in the holidays with sniffly noses. But yeah just that type of thing I'm more aware of some of my friends who are vulnerable and have low immunity that if I'm not feeling well I really shouldn't go anywhere near them. So that's something I am aware of now, whereas maybe last year I might have just gone along to an activity. And yes, when perhaps I had a sore throat and which I don't do now. (P37)

Similarly, other participants shared how societal changes to ameliorate safety concerns (i.e. limiting attendance at events, protective barriers, online shopping, booking requirements for access to hobbies) had impacted their ability to engage in their old activities, with a number reporting limited engagement with things such as church, or the gym due to safety concerns, for example, one participant shared,

> Saturdays are our religious services, only 100 are allowed to turn up and you've got to phone up every week in order to get ahead of the list. Well we can't be bothered doing that, so we say a Hail Mary for them and that's it. So I'm missing that, and that's difficult because I've been doing that for 60 years, you know? Being told not to do it by someone who's probably not even of the same faith, but there we are, it's for the greater good. It comes back to that. If what you do is going to help other people, that's paramount in my book. (P10)

Overall, for a number of participants, with the easing of lockdown restrictions came an elevated level of anxiety about their own safety in the community. For these individuals, they spoke about how they adapted to the changes, sharing the increased measures they used – masks and cleaning equipment – to minimise the risk of infection. Beyond this, several participants also spoke how in the lower alert levels, the safety measures still in place – social distancing, attendance limits – had limited their ability to reengage with their usual lives and activities.

Societal Changes

Ten participants (35.7%) spoke about how not only they had noticed the individual adjustments they and those around them had made following the lockdowns, but also how society had altered within the country. These participants reflected on the impacts of the lockdowns on society, and shared their perspectives on what the repercussions may look like over the coming years, noting how Pandemic had been able to "change your life so much" (P64) in a short span of time. Some participants spoke about the loss of businesses and impacts on systems within the country, and how this impacted their well-being, with one sharing,

> Well it [their well-being] is better, but there's still a lot of things which are still frustrating that, you know, you can't necessarily go back and do things yourself. I mean just simple things, it's totally abstract, but I mean it's like banking. That, you know, the banks are no longer open all the time and lots of branches have closed and so they want everything done online etc ... I still feel for some people, mainly the old people who are so used to those things that they can no longer do, and they can't handle the technology of being able to do online banking and those sorts of things … And of course also lots of small businesses are no longer there, I mean they've had to close. So, so it's all changed out there, they're not there, not the same. And I mean you still go to McDonalds or whatever, that's okay, that hasn't changed much, but yeah, lots of other things have changed. (P44)

The closures of businesses, movement to virtual appointments, reduced access to in-person medical support and meetings were some of the noticeable changes commented on by participants. For example, one participant shared their difficulties with accessing their healthcare noting they now tended to "get prescription top ups online" and get the occasional "reply to an email" (P47) from their doctors, in lieu of regular appointments. However, several individuals also considered the bigger picture in terms of how the lockdowns had likely impacted society as a whole, and the culture within New Zealand, with one participant elaborating,

> The only thing that I'm aware of, the fact that we will never return to where we were before this pandemic. The whole concept, the whole structure of the world has changed and I don't think there's any good in working towards the status quo, you know, the going back to where we were … But the lifestyle of people in New Zealand is going to change. No longer trips overseas, no longer trips down to Queenstown skiing, for most. Some of the very wealthy ones will probably get in their chopper and go down, but see that lifestyle that they've been locked into, people have gone overseas every year ... We haven't thought about what's going to happen next year or the year after and it's going to take three or four years before we return to a totally different norm. (P10)

In sum, the transition from the lockdown in New Zealand to lower alert levels and eased restrictions was commented on by many participants, who shared how they experienced this "adjustment". Several shared how they learned to transition to the "new normal" adapting both celebrating the learnings they were taking with them from lockdown, whilst also adjusting to closures of businesses, and the remaining restrictions. Several spoke of both the joy at the freedom to travel, and also the reluctance to plan anything – given the state of uncertainty the nation as still in. Within the eased restrictions, several participants spoke of the adjustments they had made to maintain their safety, reflecting on their individual use of masks and cleaning, but also the community changes with limitations on numbers attending events and minimised access to certain activities. Beyond these adjustments, several participants also noted how the impact of the pandemic and lockdown would have on society as a whole moving forward, considering the long term fallout of the effects of COVID on New Zealand.

Theme Two: The emotional experiences and internal responses of easing of restrictions

Twenty-one participants (75%) shared their emotional responses to the easing of restrictions in New Zealand. Many shared a sense of joy and gratitude, whilst for others, the reduction brought increased stress and anxiety with the move back to increased freedoms, and consequently, exposure opportunities. Two subthemes were identified: Challenging Emotional Experiences, Positive Emotional Experiences.

Challenging Emotional Experiences

Fifteen participants (53.6%) reported experiencing negative emotional responses to the easing of restrictions, sharing that the increased stress and anxiety which they reported had detrimental impacts on their well-being and quality of life. For several, the reduction in levels, and easing of restrictions brought a spike of anxiety initially with one noting they were always “keeping a close eye” (P64) on reported cases for fear of contracting the virus. With the exiting of the lockdown, many felt that the as the threat of exposure to COVID-19 increased, with one participant sharing,

> I enjoyed it [the lockdown] and actually felt more anxious coming out of it than I did during it… You know, were we really ready to contact trace and a little bit of frustrating at mixed messages. So, you know, to start with, they weren’t testing everybody who wanted to be tested … you could only get tested if you had symptoms and you had a history of contact with someone…Well, it created a bit more anxiety for [me], initially, until it became clear that we are safe. And as long as our border is not breached (P15)

For several participants, the anxiety and “worry about how and when someone or yourself might get [COVID]” (P26), they linked to the fear of not only increased exposure, but the return of restrictions and potential consequences. Specifically, many were concerned about increased deaths and medical overwhelm for the nation, should COVID-19 become more widespread again, with Participant 7 sharing,

> I'll be even happier when everybody can do what they want, but I suppose in the back of my mind I want, the one thing that I'm frightened of the, they release the restrictions too soon and it comes back again like it has in Sydney and Victoria. And I don't want that's, that would be the thing I think about most, I don't want that to happen … I mean there's some countries, Brazil, India, even China's got the hang of it I think now, because it came back again. But the likes of India there's got to be, could be millions die there, and in Africa and like, the likes of Brazil, the poor, poorer countries in South America. It's a bit of a worry that, so that why we've got to keep the doors shut I think and just let the people that have to come back, come back. (P7)

Whilst for a number of participants, the challenging emotional responses were related to their fear of contracting COVID-19, for others their negative emotions were related to what they lost upon returning to increased freedoms, with several reflecting on how they were now busier with work and commitments, and did not have the luxury of the time that the lockdowns had afforded them. One participant shared,

> I just probably felt the lack of time to do stuff that I was able to do during lockdown and I could take all day to do it if I wanted to… It [return to work] was a bit stressful some days, but that's pretty normal. I mean it's, it's just because sometimes I try and do more things in a day than I probably should, which is, that's normal as well. (P37)

Overall, just over half the participants shared experiencing challenging emotions in response to the eased restrictions of New Zealand lockdown. For a number, the reduced restrictions brought increased anxieties and stresses, related to the increased potential to contract the virus, and fear of returning to restrictions. For others, the return to freedom also brought with it increased demands and stresses of daily life, as people once again had to return to their busier lives.

Positive Emotional Experiences

Eighteen participants (64.3%) reported experiencing positive emotional responses to the easing of restrictions. Of these, many reported increased quality of life and mental well-being which they linked to feeling very grateful for the increased freedoms, one noting it was "nice to have [freedom] back" (P36), reporting feeling more satisfied, happy and sense of relief at the lack of community transmission/ lessening of numbers of infection. As one participant shared,

> But yeah, there's no doubt now, and really as soon as you knew it wasn't in the community you just felt so different, so completely different. Yeah, so much more relaxed. And obviously we're in the age bracket where it's, you know, not great. So we'd obviously be a bit more aware of not wanting to get it if we can possibly help it, yeah...I think we're very lucky and I would feel quite different if it was in the community, quite different, yeah…as far as my well-being, my mental well-being, my physical well-being and everything, I'd have to say I'm really lucky. Right now it's good, yeah, very good. (P64)

In addition to the relief of reduced infection in the community, others shared how they enjoyed the return to activities, with many relishing the ability to experience things other than their bubbles. Several participants reflected on the positive experiences that the easing of restrictions had afforded them, including resuming their previous hobbies. One commented,

> I had choices then, it was up to me to make the choices. So after the first week or so when I got really busy I kept saying well this is my choice (laugh). But I like to have choices and I like to be in control, but I didn't feel too restricted in lockdown, but I felt that I can choose what I do now (laugh) without any restrictions…Even though I say I didn't feel it I was rushing to have (laugh), invite people to Friday night dinners. It was good to do that again. So it felt good to have people over and to be sharing meals together. I enjoyed that. (P5)

Of the positive emotional responses felt by many participants, one commentary that came through was the gratitude and appreciation for the easing of restrictions, and perceived success of the lockdowns and measures in place. Participants reflected on their thankfulness for the compliance of the nation and the ability of New Zealand to have avoided the significant overseas death tolls, with one commenting "I was just glad that people weren't ill and weren't dying."(P5). One participant shared their relief at the relative safety of New Zealand, noting "you read about what's happening in the rest of the world and you think my gosh we're really, really lucky" (P82). Expanding on this sentiment, another commented,

> So I think you definitely do take things a little less for granted and appreciate things more a little bit, you know, that kind of thing. I think so, because of it. I think we've been very lucky…Honestly, I think if you were interviewing people in England and America, or Australia even, it'd be quite different. Yeah, I think people's mental well-being in those places is going to be quite different. I think we're very lucky. (P64)

Overall, most participants reflected on both the challenging and positive emotional responses that came with the eased restrictions in New Zealand. For some, they were grateful and relieved at the lack of restrictions, and the ability to move back into the wider world. Some shared the joy at the freedom to return to things they enjoyed, such as socialising and reconnecting with hobbies. Whereas other participants shared that they instead were increasingly stressed by the demands of their workloads, and fearful of contracting the virus given the increased movements of people in the community, and exposure this brought.

Theme Three: Reconnecting Following the New Zealand Lockdown

Twenty-six participants (92.9%) spoke about their experiences of reuniting with people beyond those with whom they spent the lockdown. A number of participants talked about finally seeing friends and family again, and how reconnection could be challenging following the isolation of lockdown, and the value they placed on the ability to be social in the aftermath of the COVID-19 lockdowns in New Zealand. From these, three subthemes were identified; the importance of social connection, reuniting with family and friends, and difficulties in reconnection.

The Appreciation of Social Connections

Thirteen participants (46.4%) spoke about a renewed sense of enjoyment reconnecting with others once restrictions had eased, with several commenting on the impact this had on their well-being, noting the improvement and importance of being able to socialise with others again and "talk with people without having to worry about how much space is between you" (P23). One participant shared,

> That was more normal for me, once that lockdown was lifted, yeah, yeah. More normal for me to be out there meeting people, youngsters and things. Yeah, that's been my life really, so take those away, I become a hermit. No, we were born to mix with people, yeah, we're social beings. And someone's telling us not to be social, well that's tough … My well-being is spot on, very good. More relaxed probably with the lockdown, able to get out and speak, talk to people. I spoke to a couple of people when I was walking today, which I wouldn't have done, just waved to them in the lockdown. But apart from that, yeah, today I had a good chat with them. (P10)

This sense that humans are in need of social connection to have a life worth living was shared among several participants, with one noting that humans are "social creatures by nature" (P36). Some elaborated on this noting that the purely technological contacts available during the lockdown were not sufficient connection, reporting that they had enjoyed the physical touch allowed following the reduction in restrictions. One participant shared,

> Well I'm glad to be able to meet and mingle with other people in a relaxed sort of way and not have to keep at a distance. And I mean it's, I think it, it is really important to be able to hug your friends when you see them and to feel relaxed about it. And after having been through the opposite, that idea that you have to be, keep your distance and keep yourself and other people safe all the time, it's nice to be able to relax… after a while people started relaxing and going back to their normal way of behaving, but you kind of realised how important that interaction is. (P82)

Overall, the appreciation of social connection and how the eased restrictions facilitated the return of these were commented on by a number of participants. They reflected on feeling happier and more content now they were able to again socialise, hug, and connect with people outside of their household bubbles. Several shared that they felt it was important to be able to physically touch and reconnect with people, noting the social nature of humans had been limited during the lockdown, even with technology to help bridge the divide, so it was beneficial to be able to gather in person again.

Reuniting with Friends and Family

Twenty three (82.1%) participants described improved ability to access and connect with friends and family in a more meaningful way once COVID restrictions had eased. Many of these participants commented on how the resumption of face-to-face social interactions with minimal restrictions had a positive effect on their lives, with one saying,

> Well now I realise I'm, my quality of life is hugely improved because I can meet friends, I can, you know, do my swimming classes. You don't have to worry about social distancing as much and I'm still a bit careful, but it is a lot better (P76)

Whilst the overall benefit of being able to reconnect with others outside their "bubbles" was shared by many participants, the specific appreciation of spending in-person time with friends and family was commented on in particular. Participants reflected on simple pleasures of being "back to normal" (P23), sharing meals and activities with friends and family, and being able to reconnect, with one sharing,

> We get out and about and go and see other people. You know, I think it was the first week after that we went and saw some friends we hadn't seen for five or six week's sort of style. Yeah, went to their place one afternoon and ended up staying for dinner and that sort of thing. Then they came over here and we went out for lunch so that's nice to be able to do again instead of just sitting at home and yakking…Yeah, just lots of different people three or four days of the week and then seeing family. We still haven't got to see all the family, but we'll get there. (P60)

The experience of reconnecting with friends and family after the extended time in isolation for participants was something they were grateful for, with one noting how now they were inclined to " cling to each other more and we make more of our friendship" (P85) following the easing of restrictions.

Difficulties Reconnecting with Others

For ten participants (35.7%), with eased restrictions came some difficulties in reconnecting with people around them following the lockdowns. For some the difficulties came with the remaining restrictions to overseas travel or within residential care facilities, whilst for others it the continued presence of COVID-19 made it difficult to reconnect with others, due to self-imposed limitations around the safety concerns of re-joining others. A few participants shared the difficulties of reconnecting with people in rest homes in New Zealand, with one participant sharing,

> She [the grandmother] was totally well looked after, but clearly wasn't getting the stimulation she needed from the regular family visits…I don't know how long that went on for, two months maybe. It was quite a long time before you got back into the nursing homes. So they might have kept them all healthy physically, but it must be, I bet there'd be a lot of mental health issues in your nursing homes with not seeing anybody. (P42)

For other participants, the overseas restrictions around travel limited their abilities to return to support family and visit friends, with one noting that it would "be crazy to go over, that's probably the hardest thing has been that, not being able to go overseas" (P64). The difficulties reconnecting with others for some also appeared not just to stem from the ongoing mandated restrictions, but also from internal concerns about COVID-19 exposure, and the consequences of the lockdowns. One participant commented "We probably caught up with people less [following the easing of restrictions], you know…it was probably less social but we could go out," (P36).

Overall, nearly all participants commented on the experience of reconnection with others following the lockdowns in New Zealand. Most participants met this easing of restrictions with happiness and gratitude to be able to meet up with others again face-to-face, sharing meals with family and friends, and the positive impacts this had on their well-being. However, some participants noted that despite improvements to social connections, there were some difficulties in reconnecting despite the easing of restrictions, with limitations on travelling, in healthcare facilities and overall reluctance to expose themselves to illness.

Theme Four: Cognitive Impairments & Easing of Restrictions

Five participants (17.9%) spoke about how their cognitive difficulties impacted them following the easing of restrictions in New Zealand. All of these participants were those whom had a diagnosis of MCI, thus of the MCI group 31.3% reported struggling with memory-related difficulties post-lockdown. For some participants, the difficulties were around feeling more limited in what they could do comfortably following the isolation and restriction of the lockdowns, whilst for others, the easing of restrictions also allowed them to resume interacting with the world in ways they felt benefitted them. One participant noted the detrimental impact of the lockdown on their cognitive abilities, and noted that they were glad restrictions had eased, so they could return to activities which supported their memory, commenting,

> I don't feel like going on longer drives anymore, whereas I used to drive everywhere. Up and down, Wellington to Auckland, etc. etc. and no problem. Whereas now I definitely don't have a desire to go on long drives, partly because it's taking me to less familiar territory. You know, areas that I might have known in the past, but if I get there now I really don't necessarily recognise them all as they used to be. So I don't necessarily have a great desire to go back to some places. But it's hard to define that, that whether it's actually COVID that caused that. It's certainly helped a lot from that point of view in terms, well it's not helped, hindered me more than what I probably would have been otherwise… Particularly, again because of the memory, actually getting back to places that I was trying to remember, to actually get there and see them makes a big difference. And yeah it is, it is a lot more interesting and satisfying to be able to do those things. (P44)

For other participants, they felt the difficulties with their memory had become more pronounced through the lockdown, and shared that with the easing of restrictions this had become noticeable as they began to interact with a wider group of people again. One shared their experience of returning to a role they had held for a long time, reporting,

> I'm acutely aware that life may play another couple of cards for me. And where that, what that means. But I'm, I've made a point of deciding that I'm not going to allow that to define who I am and what I do. But as long as I can chair meetings or chair international meetings, and most of the time remember the names of the people who are sitting in front of me, which some of the times I can't. And I ought to because I've worked with them for 10 years and it's really embarrassing when you can't. As long as I can function without impairment to what I am doing I will keep doing it. It's when

> they don’t have their names down the bottom [on Zoom] or they put something crazy that is the problem. (P91)

Overall, the easing of restrictions for participants with cognitive impairments were met with both gratitude at the ability to return to the world and exercise their minds, and also concerns if participants perceived their memory to have deteriorated, and was subsequently limiting their ability to live well in the world following the lockdown.

Overall Summary – Easing of Restrictions

These four themes capture and describe the experiences of individuals with and without MCI following the 2020 lockdown(s) in New Zealand. For many, as documented in the first theme, the experience of the easing of restrictions came with a sense of adapting to the “new normal”, and considerations of how the lockdowns had both impacted themselves and the world around them. They shared a range of experiences varying from the individual happiness at their newfound freedoms, and concerns about the long term impacts on society and international repercussions of the pandemic. The second theme revealed that with the newfound freedom came a wide scope of emotional responses for participants, ranging from joy and gratitude at being able to reconnect with family and friends, to increased anxiety and distress at the increased risk of infection, and return to increased daily demands from workplaces and outside commitments. The third theme explored the experience of reconnection for the participants, where most shared the happiness at being able to gather face-to-face again with others, and share meals and make in-person connections. Despite these, however, some did note limitations on their abilities to reconnect, with the remaining restrictions limiting access to healthcare, travel and the fear of exposure still lingering. The fourth theme revealed that the participants with memory impairments had felt more limited in their abilities following the lockdowns. They shared how for some MCI participants, eased restrictions had brought an awareness of a decline in their cognition, and with this, an anxiety of being unable to continue to perform in roles, or continue to do tasks they used to enjoy due to challenges with their memory. This reluctance to engage in activities they used to enjoy, and withdrawal from these following the easing of restrictions was unique amongst the MCI participants, who perceived their cognitive impairment as being the limiting factor in their abilities.

Discussion

This chapter examined how 26 participants in this study (16 with mild cognitive impairment, 10 cognitively healthy) experienced the COVID-19 lockdowns and easing of restrictions in 2020 in New Zealand. Semi-structured qualitative interviews sought to give insight into how it felt for participants experiencing the pandemic, providing depth to the experience beyond the quantitative data outlined in the previous chapter. This study examined the ability of these groups to live well during this time, and their perceptions of how influencing factors such as social isolation had impacted them, as it has been shown in the literature that if someone's ability to live well is maintained it can reduce the incidence of further cognitive decline. Participants reflected on the emotional impacts, the ways their relationships and connections with others were affected, and how they coped and navigated the unprecedented events of 2020.

Experiences of COVID-19 Pandemic and Lockdowns Attitudes Concerning the COVID-19 Lockdown(s)

Participants in this study shared how they found themselves adapting their ways of thinking and coping in response to the pandemic and lockdown(s). COVID-19 presented an unprecedented threat for the population, in particular older adults, so it is to be expected that during this time their attitudes and thinking patterns were influenced. Individuals adapting the way they think in the wake of distressing events was consistent with the finding of other studies in the COVID-19 pandemic (Fouques, Castro, Mouret, Julien-Sweerts, & Romo, 2021). It appears some participants from the current research found that during the lockdown, they adapted to the confinement by adopting attitudes of "pride" and "gratitude" related to how the country had responded to the pandemic. New Zealand's "hard and fast" approach, was commented on internationally, and within the participants, this pride appeared to be related to how this was perceived overseas, in addition to how the country all "came together" to adhere to the restrictions and guidelines put in place. This sense of community and safety that was fostered by this united approach may in part be why these participants were able to reflect on this restricted and isolating period with some sense of positivity, rather than focussing on the more detrimental aspects of restrictions, similar to that hypothesised by Luchetti et al. (2020).

Several participants spoke of finding benefit from the lockdown, referencing a reassessment of their life-priorities and values. They reflected on learning to "slow down" and rediscovering the importance of "doing things for themselves" which ordinarily would become overlooked in the demands of their daily lives. Whilst not a unique lockdown experience, with other studies reporting similar experiences of "new opportunities" overseas (Taylor, Lafarge, Cahill, Milani, & Görzig, 2022), it may be that the combination of safety in the absence high death tolls, and reduced daily demands, created a space for enabled people to reset to their own needs and desires, resulting in their attitudes of gratitude and happiness at the lockdown.

Despite some positive attitudes, many participants spoke of experiencing the restrictions as impeding their lives. Attitudes relating to coping with this for some seemed either through a generally pragmatic 'acceptance" approach, or having to actively manage their frustrations through exerting some sense of control within the bounds of the lockdown. Acceptance is a practice that is taught in many forms of therapy, meditation and mindfulness, and focusses on helping individuals manage distress at circumstances beyond their control though acknowledging the negative reality and cognitively adapting to the experience to make the best of it (Nakamura & Orth, 2005). This seems similar to the attitudes adopted by these participants. The mind-set of acknowledging that they could not change or control the national situation, and refocussing on trying to control what they could "within the house" appeared beneficial to their ability to cope through the uncertainties that came with the COVID-19 pandemic.

Some participants however, appeared to struggle more during the lockdown period, sharing more cynical outlooks on the experience, and in particular the potential future fallout, reflecting a less adaptive mind-set to the situation. This more negatively biased attitude may reflect that a loss of ability to engage in life meaningfully (i.e. social connections, engage in enjoyed hobbies) can detrimentally affect people's mental and physical health (Sepúlveda-Loyola et al., 2020). It seems that this sense of frustration and pessimism was most prevalent amongst those participants whom experienced a second lockdown. Perhaps for these individuals, the second lockdown may have resulted in a sense of disillusionment around New Zealand being able to withstand COVID-19 indefinitely. Following the elimination of COVID-19 from New Zealand after the first lockdown, there was a widespread sense of security, as the nation returned to pre-COVID functioning, without need for any precautions such as mask-wearing, something relatively unseen elsewhere in the world at that time. This is consistent with the frustrations participants shared about not liking “going back” into lockdown and their concerns about being able to cope should this occur again.

The second lockdown in New Zealand in 2020 did not have the same sense of unity as the first, as different parts of the nation were in different alert levels: Auckland in Level 3 lockdown, and the rest in Level 2 – with relative freedoms (Ministry of Health, 2022). Given this, it may be that some of the more pessimistic attitudes in this research reflect this experience, as many participants came from the Auckland arm of the Dementia Prevention Research Clinic’s. The combination of returned restrictions, isolation from the rest of the nation, and loss of hope that New Zealand would be able to remain COVID-19 free may have contributed to the outward pessimism and fear for the future from these individuals. This is consistent with other literature which noted that after numerous bouts of restrictions, the attitudes of people about the future became were more negative/ hopeless at times with their psychological well-being noted as declining (Johnston & Oliva, 2021; Taylor et al., 2022).

Impacts on Activities during the COVID-19 Lockdown(s)

With the restrictions in place during the lockdowns, access to normal leisure activities for many participants was altered. Some participants in the current study reported the lockdown had beneficial impacts on their ability to engage in activities that otherwise they would not have time or capacity to explore, including gardening, knitting, reading, and self-care tasks such as exercise through walks or at-home workouts. Increased engagement in similar leisure activities have been during the COVID-19 pandemic have been associated with improvements to mental health and well-being of individuals during this period (Chtourou et al., 2020; Cruyt et al., 2021; Morse, Fine, & Friedlander, 2021). Additionally, it has been well documented that physical activity social and mental engagement are important at maintaining cognitive health, and preventing cognitive decline in individuals with MCI and predisposed to developing dementia (Livingston et al., 2020). Therefore, for those individuals whom otherwise struggled to engage in these activities due to the demands of their daily lives, this may have benefitted their well-being through this period of isolation, by freeing up the time in their schedules to engage in habits otherwise outside of their normal routine.

However, for many participants, the closing of recreational spaces, banning of social groups and activities resulted in the loss of most of their avenues through which they maintain their health and well-being. The loss of the social interactions at these gatherings appears to have left them feeling increasingly isolated, and deprived of the mental stimulation they normally would get from these encounters. This is consistent with findings that through quarantine and restriction phases of lockdowns internationally, people's inability to engage with others in shared leisure activities, exercise and hobbies has been detrimental to their mental health and well-being (Cruyt et al., 2021; Goethals et al., 2020; Morse et al., 2021).

Additionally, the loss of access to groups, classes and sports likely led to a decline in the physical health of some participants. Several shared that they found themselves exercising less during the lockdown period in the absence of their usual sports and activities, with some commenting that without being able to access gyms or pools they were unable to exercise due to their age and physical health restraints. Sports not only provide a social connection, but the impact of exercise has also been well documented as playing an important role in an individual's ability to live well. Adequate exercise can impact mood, cognitive functioning and overall physical health in a number of beneficial ways, so the loss of this for participants during the lockdown likely was detrimental to their health. Of concern too is the impact the loss of these activities may have had subsequent to the lockdown, as participants may have been reluctant to return to these activities or sports following long absences, either for health concerns (too unfit, fear of infection) or also the loss of this from their regular routine making it difficult to regain.

Anxiety and Fear for Safety during the COVID-19 Lockdown(s)

A concern for many participants was the fear of being "high risk" adults who may contract COVID-19. As older adults, they were well aware that they were more likely to have negative health outcomes; more severe cases of COVID, and a higher risk of mortality, should they become infected. This fear of contracting the illness for many participants resulted in what they expressed to be higher perceived levels of anxiety and stress around their health and exposure. This led many to try to minimise their risk through a number of avenues including increased hygiene practices, preventative isolation and hypervigilance around potential exposure from groceries or deliveries. These adaptive behaviours appeared to be something that many participants adopted to help manage their anxieties around their health risks during the lockdown, and several expressed that they felt relatively "safe" during this time as a result of these. This is consistent with the findings of Lim and colleagues (2021) who found in that the engagement in protective health behaviours during COVID-19 predicted lower anxiety among the older adult population in Singapore, and was associated with greater resilience.

A more pressing concern shared by some participants was the safety of others. In 2020 New Zealand had relatively low COVID-19 cases with limited hospitalisations and deaths, whilst internationally there were significant losses of life and overwhelm of health systems (Baker, Wilson, et al., 2020; Zavattaro et al., 2021). During this study many participants expressed distress at the potential risk to family overseas, both health related and in general (e.g. economic fallout). The threat to life from COVID-19 at this time in the absence of adequate treatment or vaccination was substantial, as was the amount of misinformation regarding treatment and preventative measures, some of which were being endorsed by public figures including the then-president Donald Trump (Hatcher, 2020). Fears for others safety, and the distress caused through observing the deaths, economic difficulties, and inability to support others potentially impacted these participants. It may be that being unable to do more than observe and communicate remotely led these individuals to feel increasingly distressed for others, and potentially guilty at their own relative safety within the confines of New Zealand. Some participants spoke of donating to charities to try to support the relief efforts overseas, potentially as this was one of the few ways they felt they could 'help' those who were less safe than themselves.

Connection with Others and the World during the COVID-19 Lockdown(s)

A common thread internationally was the sense of disconnection during the COVID-19 pandemic of 2020. This was echoed in the current study, with participants reporting feeling isolated from friends and family alike during the lockdown and struggling to maintain these relationships in the absence of physical interactions. Whilst many participants reflected on this being a challenge, they appeared able to tolerate this through the knowledge that it was for the short-term, and that it was a national "team of five million" effort, with the sense of unity being commented upon. Some individuals observed that there seemed a greater sense of community, with people being generally friendlier during the first lockdown – more likely to greet each other in the street for example. It may have been that in the absence of the daily demands, plus relative disconnection from their usual relationships, people reached out more to those around them – checking in on neighbours, and supporting the communities they lived in as they were forced to spend more time within the confines of their homes. This is consistent with a New Zealand study by Smith and colleagues (2022) whom reported that

New Zealand neighbourhoods were experienced during lockdowns as more “friendly and kind” by children, noting more community and neighbourly engagement within the bounds of lockdown restrictions.

To adapt to the isolation, individuals in this study shared how they used technology, such as FaceTime, Zoom and WhatsApp to engage socially with friends and family. This seems consistent with what occurred internationally, with online platforms and technology being used by family, friends, businesses and health organisations to engage with people to minimise the impact of the isolation created by COVID-19 stay-at-home measures (Neves et al., 2023; Patulny & Bower, 2022; Taylor et al., 2022). Participants in this study did note that whilst not the same as genuine human face-to-face connection, it did help to mitigate the loneliness. It may be that as a supportive process it can be helpful to maintain connection as a stop-gap measure, although does not seem to replace the need for genuine human interaction and physical connection (Dahlberg, 2021; Taylor et al., 2022; Xie et al., 2020).

Indeed, there was a notable shift in intensity of feeling around the disconnection from friends and family amongst participants whom experienced a second lockdown. Participants shared the sense of increased pressure on family members who were struggling to manage daily life, in addition to the observation that people were less inclined to reach out in the second lockdown, leaving them feeling more isolated. Some shared the observation that with the second lockdown it was less “novel” both to be at home, and also less motivating to utilise technology to meet up, struggling to find that same sense of an overall “community” that appeared to be present in the initial lockdown. This may be in part due to the different levels of lockdown across New Zealand at the time, or that there was a sense of hopelessness in returning to COVID-19 in the community after initially eliminating it within New Zealand in 2020. Loneliness and isolation is a significant risk factor to well-being, life satisfaction and quality of life, so it is of concern that the second lockdown in particular brought with it such increased reports of isolation which seemed to be less ameliorated by the use of technology amongst older adults. If lockdowns were ongoing and enduring this would be potentially a significant risk factor for the both physical health factors as well as for cognitive decline amongst those participants with MCI, as loneliness and social isolation are known to contributors to dementia risk (Livingston et al., 2020).

Interestingly, some MCI participants shared feeling more connected to family during lockdown than pre-lockdown. It may be that due to their MCI, participants at times may be struggling but being functionally “able”, therefore their family and friends may not always reach out as much in part due to their own busy schedules, but also due to perceived “wellness” of these individuals. However, with the threat of COVID-19, these participants were categorised as “high-risk” due to their age, and potentially other health concerns, so it may be that in addition to family having more available time, family and friends reached out more to check in due to the perceived risk to their health during the lockdown period – leaving these individuals feeling more connected.

Impacts and Concerns for Cognitive Decline in the COVID-19 Lockdown(s)

For participants with MCI, many shared the concern that due to the lockdowns isolation, they were unable to get the cognitive stimulation from their daily lives they normally would through interacting with others, and engaging in tasks and activities that challenged them. This led to them sharing their fears that they their cognitive abilities had declined. It has been well documented that social connection, and engagement through leisure activities are beneficial in preventing cognitive decline to dementia amongst at-risk populations (Livingston et al., 2020). Researchers had also shared these concerns that the isolation caused by the of the stay-at-home measures through the COVID-19 pandemic may have detrimentally impacted the cognitive function of these individuals by limiting access to ordinarily protective coping mechanisms in their daily lives (Sepúlveda-Loyola et al., 2020). In the current study participants noted that following the lockdown they had noticed difficulties in some tasks that previously were commonplace for them – such as driving through town, or anxiety at meetings with groups of people where they had to remember names.

It may be that moving forward, considerations as to how to better keep these participants cognitively engaged through these crises, through technology and perhaps other planned supportive engagement may be beneficial. Preventative action to maintain their cognitive well-being though social engagement seems a simple process to utilise, as it could significantly improve their health outcomes – and from this study – those participants whom felt more connected to their families during the period of lockdown reported enjoying the benefits of having time to spend with them when usually their families are otherwise occupied.

MCI participants also shared that during the lockdown, they had the unique challenge of having to manage their memory concerns within the context of new rules and regulations of isolation. Several shared that they had to adapt new coping strategies to manage their memory concerns during this time – for example taking photos of everywhere they went so they could report back should they test positive for COVID-19; as was required at the time for contact tracing. These sorts of barriers within New Zealand were in some ways overlooked, as there were often rapid changes to rules which posed a challenge to individuals with memory impairments – something which should be considered moving forward when managing these responses. Internationally, it seems there was little consensus on how to support people with memory impairments to adapt to the significant shift in circumstances which came with lockdown, with some literature noting the challenges this posed to caregivers for those with MCI and dementia, and the increased stresses placed on these individuals to maintain the safety of their cognitively impaired loved ones in the absence of societal supports (Tsapanou et al., 2020).

Managing the Logistics of a Post-Lockdown World

The 2020 COVID-19 pandemic was an unprecedented event for the current generation. The impacts the global shutdowns and stay-at-home measures had are still being felt at present, with economic repercussions and healthcare shortages still in effect. In New Zealand in 2020 the transition from the lockdown to eased restrictions was different from other nations, as following the initial lockdown, the nation had eliminated COVID-19 from the community. In the current study, some participant’s shared that despite this, they struggled at times with the transition out of lockdown, noting the challenges with access to services such as healthcare with new processes being online, and some services/ shops no longer being available. The shift of services to online was widely seen across in the wake of the COVID-19 pandemic (Patulny & Bower, 2022; Seifert, Cotten, & Xie, 2021). Many organisations moved services to online modalities, with some offering online consultations and triaging primarily instead of in-person appointments. It seems for some older adults, this shift to online may have resulted in a sense of inaccessibility to services, with people feeling less able to gain supports needed in the face of challenges with technology, if they felt this was something they were not confident in using (Dahlberg, 2021; Kotwal et al., 2021; Seifert et al., 2021; Xie et al., 2020).

For some participants it was not access alone that made the eased restrictions challenging, but also a heightened sense of threat to their safety. Many shared that they increased their hygiene behaviours during these periods – wiping surfaces, and avoiding places for fear of contracting the virus as ‘high risk’ individuals. This heightened sense of risk also prevented them reengaging in previously enjoyed activities such as Church or sports, where they felt there were either too many challenges to access it (e.g. booking systems online), limitations on attendance or inadequate hygiene measures in place. These barriers are of concern, as they prevent people reengaging in activities that provide a sense of physical and mental engagement which helps them live well; and for those with cognitive impairments may help stave off further cognitive decline.

The Emotional Experiences and Responses Following the Easing of Restrictions

As expected, for many, the uncertainty of the COVID-19 pandemic brought emotional turmoil and mental distress. Interestingly, in the current study, participants reported finding the reduction in restrictions as being more distressing than the experience of the lockdown itself. They appeared to attribute this to feeling more exposed post-lockdown to COVID-19 – especially following the second lockdown where it was no longer eliminated from the community population. Anxiety at returning to the world following the lockdown as “high risk” individuals is understandable, as these populations were more likely to experience negative health outcomes from a COVID-19 infection (Kang & Jung, 2020). This increased distress and fear for some participants may have contributed to them avoiding returning to the world and reengaging in previously enjoyed activities for fear of their own safety, for at this time there was no vaccination for COVID-19 and New Zealand’s health system was still increasingly overwhelmed.

Beyond the anxieties for their own safety, some participants shared that the reduction of restrictions also brought with it the return of increased demands on their time from work and societal expectations, which left them feeling overwhelmed with little space for themselves or their own desires. For instance, one participant spoke of how upon the return to work, it felt as if the expectation was that all the work missed during the lockdown was to be caught up on in addition to their regular workload, subsequently increasing their distress.

Some participants also shared a sense of pride and gratitude following the first lockdown when New Zealand eliminated COVID-19 in the community. The sense of achievement that as a nation, New Zealand had completed the lockdown together, achieved the goal of COVID-zero (no community cases) and had avoided large death tolls as seen overseas came through from those who were interviewed following the first lockdown.

Reconnecting Following the Lockdown

An overarching theme for many participants was the joy and desire to reconnect with friends and family following the isolation of the lockdown(s). Many shared how being able to reconnect with others, and spend time in person without fearing for their safety was beneficial to their well-being with some noting that humans were "social creatures by nature" so the experience of being unable to connect during the lockdown was particularly challenging. As social connection is important to well-being and quality of life, this ability to reconnect following the lockdowns; experiencing physical touch and "genuine" human interaction rather than via technology appeared was presented by a number of participants as greatly improving their lives. This is congruent with literature, which noted that eased restrictions were met with gratitude and relief at being able to reconnect with family and friends following the isolation of stay-at-home measures (Dahlberg, 2021; Patulny & Bower, 2022).

Unfortunately, residual challenges in reconnecting following the barriers placed by the quarantine measures remained. Some difficulties appeared practical – remaining travel restrictions, health limitations – whilst others seemed more intangible, with participants sharing the sense of difficulty in getting back into their old relationships and reaching out to acquaintances/ friends in the way they had previously – more of a psychological barrier rather than a physical or practical one. This reluctance to reengage in the way they had previously, and tendency to remain insulated within their home is a phenomenon that has been observed elsewhere following the COVID-19 pandemic, with people struggling to leave their homes to reconnect (Patulny & Bower, 2022). It may be that the uncertainty of the lockdown has shifted how people perceive one another, in that now, the threat comes from those whom normally would bring comfort and connection, instead now being the source of anxiety and potential infection, leading people – especially those deemed 'high risk' – to struggle to re-emerge into the world. Alternatively, it may be that individuals whom were already more predisposed to be socially isolated; those struggling with illness, were less socially connected or had less access to social resources through friends and technology, were more limited in their ability to regain these relationships following the lockdowns (Patulny & Bower, 2022).

Cognitive Impairments & Easing of Restrictions

In the current study, MCI participants shared unique anxieties related to returning to the world – specifically, related to concerns around their cognitive abilities having deteriorated over the lockdown. Participants shared concerns that they now would struggle to utilise skills that previously had used on a daily basis (e.g. remembering names or locations when driving). These fears appeared to lead to a loss of confidence, with participants being less inclined to try and utilise these skills following the eased restrictions as a result. Overseas studies during the COVID-19 pandemic indeed found that a number of factors had led to a cognitive decline in individuals with MCI and predisposed to dementia, including social isolation and lack of cognitive stimulation – usually gained through engagement in leisure activities, physical activity and social connections – all of which were limited by the COVID-19 lockdowns for many participants (Di Santo, Franchini, Filiputti, Martone, & Sannino, 2020; Livingston et al., 2020).

For those participants feeling confident to reconnect with the world, and resume their usual activities and lives, they shared a sense of relief that they can now return to engaging their minds in a way they felt supports maintaining their memory (i.e. connecting with friends and re-engaging with hobbies). The need to continue to work to adapt ways to reach out to these individuals is something that this research has highlighted. From what participants described it appears they felt unable to adequately maintain their usual level of mental stimulation through the COVID-19 lockdowns. Challenging their minds, combined with social connection and physical activity, all contribute to a sense of living well, it seems important to consider how supports can be structured to ensure isolation does not limit their ability to live well, and retain their own mental well-being.

Chapter Five: General Discussion

This mixed-methods study examined the impacts of the New Zealand lockdowns during the COVID-19 pandemic and easing of restrictions on older adults both with and without MCI. In particular it sought to develop an understanding of how these events impacted the ability of cognitively healthy and MCI affected older adults to live well, by considering the ways in which the pandemic impacted the well-being, quality of life, and life satisfaction of these individuals. It also examined some of the determinants of living well, namely social relationships and loneliness. Finally a general aim of this research was to identify ways in which global catastrophes like this impact older adults – both with and without cognitive impairment – in order to provide insights into how we can better support these populations during future public health emergencies, and in their daily lives.

Through the use of narrative weaving of both the quantitative and qualitative findings, this chapter integrated the findings of this research together on a theme-by-theme basis to provide more in-depth understandings of these experiences, and to hopefully inform further research moving forward.

Living Well Indicators

'Living well' is a term that refers to "the best achievable state of health that encompasses all dimensions of physical, mental, and social well-being" (Clare et al., 2014; Harris & Wallace, 2012). Given the global pandemic, and extensive restrictions in place, it would be expected that the COVID-19 lockdowns in New Zealand would have influenced the perception of participants as to their ability to live well. Unexpectedly, however, findings from the self-report questionnaires indicated that the COVID-19 pandemic and lockdown restrictions had not significantly impacted life satisfaction, well-being or quality of life of participants in either group, even though both groups reported mildly lower well-being over this period. Whilst questionnaire responses did not indicate a noticeable decline in ability to live well, participants nevertheless did report feeling restrictions had limited them in some ways. They noted how the restrictions had "left some gaps" in their ability to live their lives as they wished. Participants commented on the limited ability to engage in meaningful activities such as religious services, exercise as they wished (e.g. aqua jogging, golf), and share time with loved ones around them had left some of them feeling "hemmed in".

However, many participants shared that despite their perceived limitations on their activities and interactions during the lockdown restrictions, they were still “grateful” and “proud” of what the nation had achieved. Indeed, in the theme regarding attitudes related to the lockdown, almost half of the participants expressed this sentiment, sharing their appreciation of being safe within the restrictions of New Zealand and the “team of five million”. The sense of being united in the approach to the lockdown may have in part ameliorated any impact on living well indicators in the questionnaires, as it may have increased a sense of community resilience among participants, as inferred by Luchetti and colleagues (2020) in their study of loneliness in the COVID-19 pandemic. Additionally, in interviews, participants also shared that whilst limiting, the restrictions had afforded them unexpected benefits – such as increased time to engage in self-care tasks such as reading, walking, and also the space to re-prioritise their values, with a number commenting on learning to “slow down” as a result of the forced time away from external commitments. Our findings that indicators of living well were relatively stable following COVID-19 restrictions differ from Siette and colleagues (2021), who found a decrease in the quality of life of their Australian participants. However, the benefits reported by the participants in this study regarding time and space to reprioritise one’s own needs were consistent with those reported by (Taylor et al., 2022), who noted participants in their United Kingdom study used the lockdowns to reassess personal values, and engage in opportunities of self-development.

Loneliness & Social Connections

Social connection was greatly impacted by the COVID-19 pandemic stay-at-home and lockdown measures in 2020. Limitations on freedoms of movement, and instructions to remain home, socially distance, and the closing of all non-essential services within New Zealand was an unprecedented action taken by the government in order to prevent a significant COVID-19 outbreak and overwhelming of the healthcare system. These actions prevented people from being able to visit family, friends and interact socially outside of their homes as they normally would, impacting their ability to connect, increasing perceived loneliness and social isolation. It brought with it many novel experiences, with people attempting to interact the best they could though technological means, and socialise between their “bubbles”, however, in New Zealand, as had been seen internationally, these restrictions had flow on effects for the experiences of loneliness and connection amongst older adults.

In the current study, participants shared that with the restrictions came contrasting impacts on their social connections. From the questionnaire data and analyses, the MCI participants indicated an increased sense of perceived social connection with their family compared to their ratings before the pandemic, consistent with the qualitative interviews in which some participants shared that the lockdowns brought them more time to spend reconnecting with their families. Reprioritising their time with family, in the absence of external demands from workplaces and the outside world appeared to reinvigorate some relationships and sense of belonging for these participants. During this period these MCI participants may have felt more connected through the reported supports they received from family, or that family made more effort to reach out following their own reprioritisation of values in the wake of the lockdowns. However, despite the significant increases in family connection reported by MCI individuals, this was not reported by the control participants, who reported a reduction of social connection with family, particularly those who had experienced two lockdowns. This was supported by reports from participants who shared how during the lockdowns they had found the absence of family difficult – especially those who shared that prior to lockdown they had been regularly in face-to-face contact with family members.

Notably both groups reported an increase in perceived loneliness from pre-COVID to post-COVID time points, driven by a significant increase in emotional loneliness. These quantitative results are consistent with some participants noting the challenges of supporting one another through lockdown, for example – when one participant lost their father, being unable to grieve with and support their mother in person. The difficulties in managing loneliness when isolated from loved ones through the stay-at-home measures throughout the COVID-19 pandemic has been well documented (Johnston & Oliva, 2021; Kotwal et al., 2021; Neves et al., 2023). One way in which many tried to mitigate the impact of isolation appeared to be through the use of technology; using video calling, messenger applications and phone calls to keep in contact with people outside of their household bubbles. Participants in the present study commented on how they were grateful for this ability to connect with others, sharing the benefits of being able to stay engaged with others, but noted a sense that it was "not enough" and lacked the sense of "community" that accompanied in-person connections and interactions. This reduced quality of technological connections may be why the participants experienced a significant increase in emotional loneliness across time points, as it appears that despite technology helping minimise the impact of isolation from the lockdown restrictions, it was not sufficient to completely meet the needs of many for face-to-face interactions. The sense that technology – whilst useful – is insufficient at entirely protecting against the detrimental effects of isolation restrictions has been commented on in international literature, with some studies finding participants continue to feel emotionally and socially isolated, with a reduction in the quality of interactions using online mediums (McKenna-Plumley, Graham-Wisener, Berry, & Groarke, 2021; Patulny & Bower, 2022; Taylor et al., 2022). Patulny and Bower observed that the shift to online engagement may differentially impact those who struggled to adapt to the movement of connection to online forums – for example older adults who did not have skills, access or support to make the transition. This too was noted by some participants in the present study who commented on their own struggles to either adapt to, or support others with the use of technology that was implemented during the lockdowns. In the current study, this potentially increased older adults sense of isolation, as others may have maintained connections leaving them feeling marginalised or isolated from friend/family groups – consistent with international findings (McKenna-Plumley et al., 2021; Patulny & Bower, 2022). In addition to social connections, many services shifted to digital mediums to continue operation during the pandemic, including churches, banking and healthcare. This mode of operation appears to have mostly continued following the reduction of stay-at-home measures. This potentially may have led to older adults to feeling increasingly isolated if they struggle to use technology to access these supports. The experience of participants in this study (and overseas), namely that whilst technology was helpful, it was not the same as in-person connection, suggests that for future public health emergencies we need to re-evaluate how we keep older adults connected. Relying on technology alone is insufficient, even though it may be a useful supplement (McKenna-Plumley et al., 2021; Patulny & Bower, 2022).

Social isolation and loneliness has been shown to contribute to cognitive decline in older adults, particularly for individuals with MCI (Livingston et al., 2020). It is important to consider the ongoing impact of this social isolation and loneliness caused by the lockdowns, and the potential lingering effect due to challenges reconnecting despite restrictions easing – as found in this study. Many businesses have remained online, with technology still being heavily used in healthcare and organisational settings instead of in-person appointments, which may continue to contribute to a sense of isolation amongst older adults who may feel they are unable to access supports and services they need. Telehealth in particular has become an increasingly popular since the pandemic, due to the accessibility, cost-efficiency and safety it offers patient populations (J. E. Chang et al., 2021; Haimi & Gesser-Edelsburg, 2022). Whilst providing a beneficial bridge during the pandemic, the findings from the current study suggests that the wider implications of digital mediums as a mainstay for healthcare must be considered for older adults. If access is a challenge, subsequent feelings of isolation, and avoidance of healthcare may occur. This may potentially have long lasting health implications for this population if they feel unable to access supports that they need, both for their physical and cognitive well-being.

For individuals with MCI, it is especially important to ensure they feel socially connected, to minimise the chances of cognitive decline. During the lockdown, participants reported an increased connection with their families, which was significant shift from pre-COVID measures. Given this, it should then be considered how this can be maintained with the return to a more "normal" world – as it may be that as families become busier these individuals may feel more isolated moving forwards. Additionally, as not all services and leisure activities reopened following lockdowns, and many individuals have expressed challenges in reconnecting with others in the post-lockdown world, it may be that post-lockdown is the time where more social isolation and loneliness develops for this group, rather than during the pandemic and lockdowns. MCI participants shared their own sense of limitations at returning to their lives previously, noting the struggle to remember people's names, reconnecting and driving places and socialising in the world subsequent to the time in isolation. As individuals who have potentially struggled in maintaining social connections in the past, yet need these to help reduce risk of cognitive decline, it seems of importance to consider how we can support this population to feel more engaged with their community and less lonely moving forwards.

Psychological Distress

The COVID-19 pandemic presented a threat to the psychological well-being of the world's population in a recently unprecedented manner. The level of illness, loss of life, and the measures taken to contain the virus and minimise the loss of life led to significant impacts internationally, and subsequently have had a notable impact on the psychological well-being of many individuals around the world. With lockdown measures in place to manage the pandemic, concerns about how the impact of isolation, threat to safety and well-being were being coped with psychologically became a focus in the literature. Difficulties with low mood, increased anxiety and struggles with regulating emotion have been noted internationally since the beginning of the pandemic (Alhalaseh et al., 2022; Giebel et al., 2021; Heid et al., 2021). Participants in the current study were arguably already subject to increased stress as they were categorised as “high risk” and “vulnerable”, being over 65-years old and thus more likely to have higher mortality if infected with COVID-19 (Kang & Jung, 2020). Therefore, it is unsurprising that the restrictions were met with reports of increased anxiety about their health from 57.1% of participants, with concern about becoming ill, and negative outcomes of infection. However, in contrast to this, from the analyses, despite the reported anxiety from participants, there were no clinically significant scores of anxiety or depression among either MCI or control groups. This may be in part due to other reports from participants of the positive emotional experiences related to the lockdowns, noting a sense of “safety” and “gratitude” during restrictions and a happiness and sense of “success” following the easing of restrictions and elimination of the virus.

The threat of the COVID-19 illness, and death, whether for themselves or others was pervasive amongst all participants, with many sharing how they coped through adapting hygiene practices, adopting “acceptance” mind-sets and trying to connect with family through technological means. These adaptive behaviours appeared to be something that many participants adopted to help manage their anxieties around their health risks during the lockdown, and several expressed that they felt relatively “safe” during this time as a result of these. This is consistent with the findings of Lim and colleagues (2021) who found that the engagement in protective health behaviours during COVID-19 predicted lower anxiety among the older adult population in Singapore, and was associated with greater resilience. Indeed, some shared that despite the threat of infection, the pandemic also brought a space to reconsider their priorities in life, as the mandated sat-at-home measures meant less outside demands allowing participants to explore their own interests, with many rekindling old hobbies, and spending time exercising which previously they had reported having little time to do. It may be that this space may account for the reported (though not clinically significant) improvement across time seen in the MCI participant’s anxiety and depression scores.

Cognitive Decline

For those participants with MCI, the specific challenges they shared of their experiences during the COVD-19 lockdown(s) related to their cognitive impairments were linked to their concerns that not only would the isolation detrimentally impact their ability to maintain their cognitive capacity, but that they also would struggle to adapt to the changes as a result of the pandemic. Specifically, participants shared their challenges in coping with and remembering where they had been during the lockdown. Additionally they talked of their struggles at reintegrating with society following the easing of restrictions, citing their memory difficulties as impeding their autonomy when interacting with others and moving around in the world following so much time isolated. Although participants reported cognitive decline, there was no independent information available as to whether there had been an objective decrease in their cognitive abilities at a greater rate than would be expected. However, these reported challenges were consistent with the concerns raised about how extended isolation may impact individuals with cognitive impairment, as it has been noted in the literature to be detrimental to maintaining cognitive well-being and identified as a risk factor for development of dementia (Livingston et al., 2020; Patulny & Bower, 2022). It appears that despite MCI participants reporting increases in social connection with family, they still perceived their own memory difficulties as a barrier to returning to the world following eased restrictions. Therefore, consideration must be given as to how best to re-engage these individuals with the world, so that they feel comfortable returning to activities and social interactions that they previously engaged with prior to the COVID-19 lockdowns, to maintain their current cognitive health, and support them to live well moving forwards.

Limitations

The mixed-methods design used in this research provided the opportunity for a more in-depth understanding of the impact of the COVID-19 lockdowns. However, one limitation of the current study was its small sample size for quantitative analysis, thus impacting the ability to generalise these findings to a wider population. Small sample sizes have the potential to overestimate effect sizes, however, it can also be more difficult to detect real differences. The availability of questionnaire responses prior to the pandemic and after is a strength in this design. The pattern of findings relating to social networks from parametric analyses comparing MCI and control groups, was repeated in the non-parametric analyses when both groups were divided according to whether they had experienced one or two lockdowns. This adds confidence to the interpretation of these results. Additionally, the benefit of having the qualitative interviews to add context and more nuanced responses, which were congruent with the statistical analyses, strengthens the confidence overall in the findings.

Qualitative research within this study provided insight and depth of understanding to the experience of participants during the pandemic in 2020. Rich data excerpts, allowed this to be balanced well with the weaving of narrative to converge interpreted of how their lives had changed during this period. With the interview having being more semi-structured in nature to support the consistency across populations however, it potentially limited opportunities to further explore a wider view of the experience through a less structured interview approach.

Another potential limitation is that participants in this study were selected through their participation in the longitudinal DPRC, which may reflect a selection bias. MCI and control participants involved in the DPRC were reviewed annually with a clinical and neuropsychological assessment, and have MRI's every second year. They are well versed on understanding what MCI is and how to manage risk factors which may reduce the chance of progression to dementia (e.g. staying physically active, keeping socially connected), which may have some protective effect, particularly for the MCI participants. It may be that these individuals were more able to cope during the COVID-19 lockdowns as they already were engaging in some of these behaviours to minimise cognitive decline through their understanding of these being modifiable risk factors for MCI progression to dementia. These participants also had high levels of education, potentially affording them access to a wider array of coping resources and reflecting another selection bias through their participation in the DPRC. Additionally, these participants may have been better able to cope with the challenges of lockdown by already having the knowledge of how to manage unpredictable situations –as afforded by a diagnosis of MCI – with the support of the DPRC. Participants were actively supported by the DPRC through the pandemic which reached out through electronic and phone communications, a level of support likely not available to the general population.

Clinical Implications and Future Research Directions

Understanding how neurologically healthy and cognitively-impaired older adults were impacted by the COVID-19 restrictions will help inform the supports needed for them as we re-emerge following the pandemic, and provide insights into how we can better support these populations during future public health emergencies. Three years on, and the fallout from the COVID-19 lockdowns continues. Medical systems are still overwhelmed, the global economy is struggling, and we continue to rapidly move to a digital society with the potential to cause isolation and deprivation for older adults everywhere. COVID-19 lockdowns in New Zealand appeared to have been a mixed experience for older adults, both with and without cognitive impairments. Some benefits were seen in the renewed sense of unity and safety brought by the nationwide lockdown, however, social isolation remained a continued challenge throughout.

Despite efforts made to use technology to ameliorate this it seems that even if technologically-adept this was not sufficient to compensate for the lack of face-to-face interaction. It has been well documented that humans need social connection to bridge loneliness and feel good about their lives and maintain cognitive health (Livingston et al., 2020; Patulny & Bower, 2022). This is of particular importance for people at risk of cognitive decline to dementia. Therefore, understanding that social connection, and psychological well-being were not supported sufficiently through the lockdown, nor during the easing of restrictions – is notable as it may be that these individuals with MCI are potentially being overlooked by the current systems in place, and more efforts need to be made to ensure that they are better supported and not isolated from their communities.

Continued isolation from their communities, through disconnection from leisure activities, and social engagements that give them meaning in their lives will likely increase anxiety and depression symptoms, if they fail to reconnect following the easing of restrictions. It is has been noted previously that diagnosis with an illness such as MCI does not prevent an individual from living well. Indeed, the focus should not be on what they lack but rather how their lives can be lived well with their condition, and to consider how we as a society can support that in the context of things such as the COVID-19 pandemic.

The pandemic was an unprecedented event, where rapid decisions to save lives had to be made, and little time was available for New Zealand to adapt our approach to consider how populations such as these could be supported through isolation. However, now, perhaps we should be considering how we can re-engage older adults in their communities and support them to live well – both within and outside of these restrictions, at the same time as developing plans for future public health emergencies. Older adults (even those adept with using technology) still reported struggling to connect with the outside world. Therefore, exceptions to how we connect with and communicate with older adults perhaps should be considered in these situations – with options for in-person communication and appointments, especially for healthcare appointments, should be considered, as a way to maintain these connections and keep older adults engaged. It may also be important to consider how to keep older adults socially-connected in these situations without risking their health, or relying upon technology alone to bridge the gap of connection. Given this, future research into to how best to reengage individuals who feel socially isolated and lonely following the lockdowns would be highly beneficial. For older adults there likely are a limited number of ways in which they can reconnect with their community and also make new friends and social support, so considering the barriers in place from the lockdowns is essential to supporting them to re-engage.

It would be important for research to consider how healthcare providers and services can adjust how they interact with these individuals to give them social engagement and support whilst maximizing their autonomy and sense of connection within the community. It would also be beneficial to understand how it is that older adults cognitively adapted and managed and regulated their emotions through the COVID lockdowns. In particular, those with MCI, as it may be that those who have already adapted to the uncertainty and challenge of living with a chronic health condition were better able to cope with the distress brought by the COVID-19 pandemic and restrictions. If this is the case that could be useful in developing ways to help support older adults in situations such as the COVID-19 lockdowns, or even when they are diagnosed with chronic health conditions. In the long term supporting these individuals to cope and adapt to these situations better benefits both their own ability to live well, but also would reduce the burden on healthcare if it reduced the rate of individuals progressing to dementia through keeping them socially engaged, physically active and thriving in their lives.

Conclusion

This study provided an exploration into the experiences of older adults with and without MCI during and following the COVID-19 lockdowns of 2020 in New Zealand. It revealed that the MCI population in fact coped better with some of the distressing conditions of the lockdown than the neurologically healthy population. Additionally, it provided insight into how both groups managed their ability to live well, manage psychological distress, and social isolation during lockdown and the transition back into reduced restrictions. The only unique challenge for the MCI population was how they managed their memory difficulties throughout the ever-changing environment whilst still coping with the isolation brought by the lockdown restrictions. Participants overall appeared to have had a mixed response to the restrictions, with their ability to live well not impacted as greatly may have been expected. However, social isolation and loneliness did emerge as a challenge for participants, both throughout and emerging from the lockdowns. This study highlighted the need for better ways to support meaningful connection with older adults through isolation and beyond, as this may facilitate them to better cope and thrive in challenging environments such as the COVID-19 lockdowns.

Appendix A: Advertisement

School of Psychology
Faculty of Sciences
School Reception
Level 2, 23 Symonds Street
Auckland Central
09 3737599 ext. 88413

Research invitation: Follow-up Study on Well-be
Quality of Life – COVID-19

We invite all people from the Dementia Prevention Research Clinic who recently took part in a study investigating **well-being** and **quality of life** to take part in a **follow-up study looking at the effects of COVID-19 and lockdown on the well-being and quality of life for people with and without memory difficulties**.

What is involved?

- Approximately 1-2 hours of your time, either by zoom or in person at your home or the University of Auckland, wherever you prefer.
- You will be asked some questions about your experiences and to complete some questionnaires
- With your permission, a family member will be asked to complete a 30 minute questionnaire in person or over the phone.
- You will **receive a $20 supermarket voucher.**

Why are we doing this research?

We want to understand your experience of the COVID-19 pandemic, the lockdown period and how you feel now that restrictions have eased. We are particularly interesting in your experiences regarding your quality of life and well-being in this time.

If you wish to participate, or would like more information, please contact:

Jane Govender (DPRC Clinical Research Coordinator)
Phone: 09 923 6579 **OR** **Email:** dprc@uoa.auckland.ac.nz

Lynette Tippett (Principal Investigator)
Telephone: 09 923 8551
Email: l.tippett@auckland.ac.nz

Pip Grierson (Graduate student)
Email: pgri725@aucklanduni.ac.nz

Appendix B: Participant Information Sheet (MCI)

School of Psychology
Faculty of Sciences
School Reception
Level 2, 23 Symonds
Street, Auckland Central
09 3737599 ext. 88413

The University of Auckland
Private Bag 92019
Auckland 1142
New Zealand

Participant Information Sheet

Well-being and quality of life in individuals with Mild Cognitive Impairment in the context of COVID-19

You are invited to take part in a research project investigating well-being and quality of life for people with memory difficulties. The project is being carried out by Associate Professor Lynette Tippett, and Pippa Grierson who is a doctoral student and trainee Clinical Psychologist within the School of Psychology at the University of Auckland.

It is important to read this document carefully so that you can make an informed decision about whether you would like to participate. Feel free to ask any questions.

What is the purpose of this study?

This is a follow-up study building on your previous participation in the well-being and quality of life study. Given the context of the COVID-19 pandemic in 2020, we are interested understanding the experiences of individuals with difficulties in this time, in the context of their well-being and quality of life.

The overall aim of this study is to understand how individuals' experienced their well-being and quality of life during this period, and how this was experienced compared to pre-COVID. We are also interested into what experiences influenced well-being and quality of life during this time.

Why do we need to do this study?

New Zealand's population is aging, and with this an increasing number of people are living with memory problems, Mild Cognitive Impairment and Alzheimer's disease. Despite the challenges that aging and memory impairments may bring, many people report high levels of well-being and a good quality of life.

However, the experience of the pandemic was unprecedented, therefore understanding how this has affected well-being is incredibly important. We hope that by understanding what maximises people's well-being, interventions can be developed to improve the quality of life and well-being of all people with memory difficulties.

Why are we asking you to be involved in this study?

You are invited to participate in this research because you have previously participated in the Well-being and Quality of Life Study, as well as the longitudinal study at the Dementia Prevention Research Clinic.

What is involved?

If you choose to participate, I would like, with your permission, to interview you about your experiences of COVID-19, the lockdown, and the easing of restrictions. Specifically about your well-being and quality of life over this time. This interview will take approximately 1-2 hours and will take place over a Zoom meeting or over the phone, whichever you prefer.

With your permission, the audio will be recorded, and then will be transcribed by a professional transcriber who will sign a confidentiality agreement you are identifiable through this recording.

What are the expected benefits?

Your participation will contribute to a better understanding of what improves well-being and quality of life for people with memory difficulties. You may also enjoy the interview process and the opportunity to recount your experience of COVID-19 with me.

If you are interested, you may request a summary of findings from the study. Participation will not cost you anything and you will receive a $20 supermarket voucher at the end of your interview.

What are the potential risks and discomforts?

It is not anticipated that you will experience any risks or discomfort. It is possible that during the session you will become a little tired. We will include as many breaks as you need. It is also possible you could feel distressed when talking about the experiences of COVID-19. If this happens we will take a break and discontinue the interview if you would prefer.

Your rights as a participant

Participation in this study is entirely voluntary. If you choose to participate, you can change your mind at any time without giving a reason and without any negative consequences. After your participation is completed should you change your mind about us using your results, you can request that your data be withdrawn for a period of up to two months. Whether or not you participate, it will not affect your relationship with the researchers in any way. You will be given a copy of this document to keep.

Confidentiality, anonymity and data storage

Any information which can identify you as a participant will be stored in a secure locked location and used with utmost confidentiality. Your name will only appear on the Consent Form, which will be coded with a unique identification number, assigned by Pippa Grierson. Only this number will be linked with your data. The Consent Form will only be seen by yourself and the investigators. No information will be shared with any third party, including your nominated family member.

All data will be anonymised. Electronic data will be stored on a password protected University of Auckland computer, backed up by a server. Paper copies of tasks will be stored separately from Consent Forms, in a locked location in the University of Auckland Human Sciences Building. Data will be kept for a minimum period of six years to allow for publication and future re-analysis, after which it will be securely destroyed. Research publications and conference presentations based on the study results will not contain any information that can personally identify you. If you agree, your anonymised data may be used in future studies.

Research contact details

We appreciate the time you have taken to read this invitation. If you have any queries, please contact either **Pip Grierson** by

email: pgri725@aucklanduni.ac.nz

You may also contact the supervisor of the study:

Associate Professor Lynette Tippett,
School of Psychology,
The University of Auckland, Private Bag 92019, Auckland 1142.
Telephone: (09) 373 7599 extension 88551
Email: l.tippett@auckland.ac.nz

You may also contact **the Head of the School of Psychology, Suzanne Purdy** The University of Auckland, Private Bag 92019, Auckland 1142;

Email: sc.purdy@auckland.ac.nz

For any concerns regarding ethical issues you may contact:

The Chair,

The University of Auckland Human Participants Ethics Committee,

The University of Auckland, Research Office, Private Bag 92019, Auckland 1142,

Ph.: (09) 373-7599 Ext. 83711 Email: ro-ethics@auckland.ac.nz

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON ________, FOR A PERIOD OF 3 YEARS. Reference number:

Appendix C: Participant Information Sheet (Control)

School of Psychology
Faculty of Sciences
School Reception
Level 2, 23 Symonds Street,
Auckland Central
09 3737599 ext. 88413

The University of
Auckland
Private Bag 92019
Auckland 1142
New Zealand

Participant Information Sheet
(Healthy control)

Well-being and quality of life in individuals with Mild Cognitive Impairment in the context of COVID-19

You are invited to take part in a research project investigating well-being and quality of life for people with memory difficulties. The project is being carried out by Associate Professor Lynette Tippett, and Pippa Grierson who is a doctoral student and trainee Clinical Psychologist within the School of Psychology at the University of Auckland.

It is important to read this document carefully so that you can make an informed decision about whether you would like to participate. Feel free to ask any questions.

What is the purpose of this study?

This is a follow-up study building on your previous participation in the well-being and quality of life study. Given the context of the COVID-19 pandemic in 2020, we are interested understanding the experiences of individuals with difficulties in this time, in the context of their well-being and quality of life.

The overall aim of this study is to understand how individuals' experienced their well-being and quality of life during this period, and how this was experienced compared to pre-COVID. We are also interested into what experiences influenced well-being and quality of life during this time.

Why do we need to do this study?

New Zealand's population is aging, and with this an increasing number of people are living with memory problems, Mild Cognitive Impairment and Alzheimer's disease. Despite the challenges that aging and memory impairments may bring, many people report high levels of well-being and a good quality of life.

However, the experience of the pandemic was unprecedented, therefore understanding how this has affected well-being is incredibly important. We hope that by understanding what maximises people's well-being, interventions can be developed to improve the quality of life and well-being of all people with memory difficulties.

Why are we asking you to be involved in this study?

You are invited to participate in this research because you have participated **as a healthy control participant** in the previous Well-being and Quality of Life Study, and in the longitudinal study at the Dementia Prevention Research Clinic. It is important to include people who do not have memory impairments as well as those who do so we can compare the two groups to help establish what things contribute to well-being and quality of life specifically for people with memory impairments.

What is involved?

If you choose to participate, I would like, with your permission, to interview you about your experiences of COVID-19, the lockdown, and the easing of restrictions. Specifically about your well-being and quality of life over this time. This interview will take approximately 1-2 hours and will take place over a Zoom meeting or over the phone, whichever you prefer.

With your permission, the audio will be recorded, and then will be transcribed by a professional transcriber who will sign a confidentiality agreement you are identifiable through this recording.

What are the expected benefits?

Your participation will contribute to a better understanding of what improves well-being and quality of life for people with memory difficulties. You may also enjoy the interview process and the opportunity to recount your experience of COVID-19 with me.

If you are interested, you may request a summary of findings from the study. Participation will not cost you anything and you will receive a $20 supermarket voucher at the end of your interview.

What are the potential risks and discomforts?

It is not anticipated that you will experience any risks or discomfort. It is possible that during the session you will become a little tired. We will include as many breaks as you need. It is also possible you could feel distressed when talking about the experiences of COVID-19. If this happens we will take a break and discontinue the interview if you would prefer.

Your rights as a participant

Participation in this study is entirely voluntary. If you choose to participate, you can change your mind at any time without giving a reason and without any negative consequences. After your participation is completed should you change your mind about us using your results, you can request that your data be withdrawn for a period of up to two months.

Whether or not you participate, it will not affect your relationship with the researchers in any way. You will be given a copy of this document to keep.

Confidentiality, anonymity and data storage

Any information which can identify you as a participant will be stored in a secure locked location and used with utmost confidentiality. Your name will only appear on the Consent Form, which will be coded with a unique identification number, assigned by Pippa Grierson. Only this number will be linked with your data. The Consent Form will only be seen by yourself and the investigators. No information will be shared with any third party, including your nominated family member.

All data will be anonymised. Electronic data will be stored on a password protected University of Auckland computer, backed up by a server. Paper copies of tasks will be stored separately from Consent Forms, in a locked location in the University of Auckland Human Sciences Building. Data will be kept for a minimum period of six years to allow for publication and future re-analysis, after which it will be securely destroyed. Research publications and conference presentations based on the study results will not contain any information that can personally identify you. If you agree, your anonymised data may be used in future studies.

Research contact details

We appreciate the time you have taken to read this invitation. If you have any queries, please contact either **Pip Grierson** by

email: pgri725@aucklanduni.ac.nz

You may also contact the supervisor of the study:

Associate Professor Lynette Tippett,
School of Psychology,
The University of Auckland, Private Bag 92019, Auckland 1142.
Telephone: (09) 373 7599 extension 88551
Email: l.tippett@auckland.ac.nz

You may also contact **the Head of the School of Psychology, Suzanne Purdy** The University of Auckland, Private Bag 92019, Auckland 1142;

Email: sc.purdy@auckland.ac.nz

For any concerns regarding ethical issues you may contact:

The Chair,

The University of Auckland Human Participants Ethics Committee,

The University of Auckland, Research Office, Private Bag 92019, Auckland 1142,

Ph.: (09) 373-7599 Ext. 83711 Email: ro-ethics@auckland.ac.nz

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON ________, FOR A PERIOD OF 3 YEARS. Reference number:

Appendix D: Consent Form

School of Psychology
Faculty of Science
School Reception
Level 2, Building 302 Science Centre
23 Symonds Street
Auckland Central

Private Bag 92019
Auckland 1142
New Zealand

Consent Form

Participant

Well-being and quality of life in individuals with Mild Cognitive Impairment – A follow up in the context of COVID-19

THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS

Researchers: Pippa Grierson and Associate Professor Lynette Tippett

I have read and understood the accompanying Participant Information Sheet, which explains this research project and my role as a participant. I have had the opportunity to ask questions and to use family/whanau support or a friend to help ask questions, and have had them answered satisfactorily. I have had the opportunity to understand the study.

In particular I understand that:

- My participation is voluntary (my choice) and that I have the right to withdraw at any time, and am free to withdraw my data within 2 months of completing the study. If I choose to withdraw this will in no way affect my future and continuing health care.
- I will be asked to complete a range of questionnaires, and sharing my experiences of COVID-19, the lockdown and how I am now experiencing the eased restrictions. This will take approximately 1-2 hours.
- The session can be completed over Zoom or over the phone - whichever I prefer.
- I understand that my participation is confidential and that no material which could identify me will be used in any reports on this study.
- I understand that my data will be stored anonymously and securely for a minimum period of 6 years, after which it will be destroyed.
- I will be asked to nominate a close family member/spouse/significant person, but I understand that I am not obliged to do so.
- Should I nominate a family member for involvement in this study I understand that no information will be shared with my nominated study partner and vice versa (if applicable)
- I chose to nominate a family member/spouse/significant other. **YES/NO**

Name of family member/spouse/significant person ________________________________

- I agree that parts of the interview audio will be audio-recorded by the interviewer and this audio will be transcribed by a professional transcriber who will sign a confidentiality agreement in case I am identifiable through this recording.
  YES/NO
- I wish to receive a copy of the results of the study **YES/NO**

I voluntarily agree to take part in this research.

Signed: ____________________ Name: ___________________________________

Date: _______________ Phone number: __________________________________

Email address

APPROVED BY THE UNIVERSITY OF AUCKLAND
HUMAN PARTICIPANTS ETHICS COMMITTEE ON NOVEMBER
20th 2017 FOR A PERIOD OF 3 YEARS. Reference number:
020400

(Researcher use only)
Informant number:

Appendix E: Interview Schedule

Interview Schedule

A while ago you took part in a study looking at the Well-being and Quality of life which was run through the DPRC. This involved either Laurel or myself coming to your home and having you fill out some questionnaires, as well as you sharing with us your life story.

Given what has been happening this year with the Pandemic, we thought it may be a good time to follow up and see how you have been in the context of COVID-19 and the lockdown. Specifically, how your well-being and quality of life has fared during this time.

Primarily we were looking to understand how individuals have felt about their well-being and quality of life over the lockdown, and how they feel now as we are easing restrictions in New Zealand.

So I will be first asking you some general questions about COVID-19, your experience of the lockdown, and how you are currently. Then after this I have a few short questionnaires for you to fill out – some of which you may have seen before.

During the past few months some people may have had positive experiences and other more negative experiences. I just want to hear how these times have been for you- good, bad or in between.

This may take approximately one hour or so to complete. Do you have any questions?

Qualitative

How has COVID-19 affected you?

If we say well-being means the things that keep people to feeling good about their lives - How do you feel COVID-19 has affected your well-being?

- Physical Well-being
- Mental Well-being
- What feelings has COIVD-19 brought up for you

If we say quality of life is how good you feel about your life considering your culture, values, independence, life goals, relationships, health and environment.

How was the experience of the lockdown in relation to your quality of life?

And now that we are easing restrictions – how are you experiencing your quality of life?

- How satisfied with your life have you felt during the lockdown? And now that we are easing restrictions? How satisfied are you with your life? (can you elaborate?)

- How did the lockdown influence your ability to live well? (the best achievable state of health that encompasses all dimensions of physical, mental and social well-being)

- Now that we are easing restrictions – how is that influencing your ability to live well?

- How have you experienced control over your life during the lockdown? And now?

- How have you experienced the social isolation of the lockdown? And now?

- What effects has the lockdown had on your relationships?
    - Intimate?
    - Family?
    - Social?

- What things do you think are important for you to feel good about your life?

Quantitative

1. Satisfaction with Life Scale

I am going to read you some statements with which you may agree or disagree. Using the scale here, pick the number that best fits how much you agree with the statement.

1 = Strongly Disagree
2 = Disagree
3 = Slightly Disagree
4 = Neither Agree or Disagree
5 = Slightly Agree
6 = Agree
7 = Strongly Agree

______1. In most ways my life is close to my ideal.

______2. The conditions of my life are excellent.

______3. I am satisfied with life.

______4. So far I have gotten the important things I want in life.

______5. If I could live my life over, I would change almost nothing

2. WHO (Five) Well-Being Index (1998 version)

For the next five, please pick the number that best fits for how you have been feeling over the last two weeks.

All of the time 5	Most of the time 4	More than half of the time 3	Less than half of the time 2	Some of the time 1	At no time 0

Over the last two weeks:

_______1. I have felt cheerful and in good spirits

_______2. I have felt calm and relaxed

_______3. I have felt active and vigorous

_______4. I woke up feeling fresh and rested

_______5. My daily life has been filled with things that interest me

3. Lubben Social Network Scale – Revised

Now I'm going to get you to answer some questions about the kind of interactions you have with friends or social contacts and family.

If you would like, you can read the questions yourself and just circle your answer or I can read it through with you and we can do it together.

Prompt: If the participant asks about what constitutes a friend say: A friend is whatever you think a friend is.

FAMILY: Considering the people to whom you are related by birth, marriage (or long term partner), adoption, etc…

		None	One	Two	Three or four	Five through eight	Nine or more
	How many relatives do you see or hear from at least once a month?	0	1	2	3	4	5

		Less than monthly	Monthly	A few times a month	Weekly	A few times a week	Daily
	How often do you see or hear from the relative with whom you have the most contact?	0	1	2	3	4	5

		None	One	Two	Three or four	Five through eight	Nine or more
	How many relatives do you feel at ease with that you can talk about private matters?	0	1	2	3	4	5

	How many relatives do you feel close to such that you could call on them for help?	0	1	2	3	4	5

		Never	Seldom	Some-times	Often	Very Often	Always
	When one of your relatives has an important decision to make, how often do they talk to you about it?	0	1	2	3	4	5
	How often is one of your relatives available for you to talk to when you have an important decision to make?	0	1	2	3	4	5

FRIENDSHIPS: Considering all of your friends or social contacts including those who live in your neighbourhood…

		None	One	Two	Three or four	Five through eight	Nine or more
	How many of your friends or social contacts do you see or hear from at least once a month?	0	1	2	3	4	5

		Less than monthly	Monthly	A few times a month	Weekly	A few times a week	Daily
	How often do you see or hear from the friend or social contact with whom you have the most contact?	0	1	2	3	4	5

		None	One	Two	Three or four	Five through eight	Nine or more
	How many friends or social contacts do you feel at ease with that you can talk about private matters?	0	1	2	3	4	5
0	How many friends or social contacts do you feel close to such that you could call on them for help?	0	1	2	3	4	5

		Never	Seldom	Some-times	Often	Very Often	Always
1	When one of your friends or social contacts has an important decision to make, how often do they talk to you about it?	0	1	2	3	4	5
2	How often is one of your friends or social contacts available for you to talk to when you have an important decision to make?	0	1	2	3	4	5

4. Six item De Jong Gierveld Scale

For the next six statements, please circle the answer which best fits your situation, the way you feel now.

		Yes!	Yes	More or less	No	No!

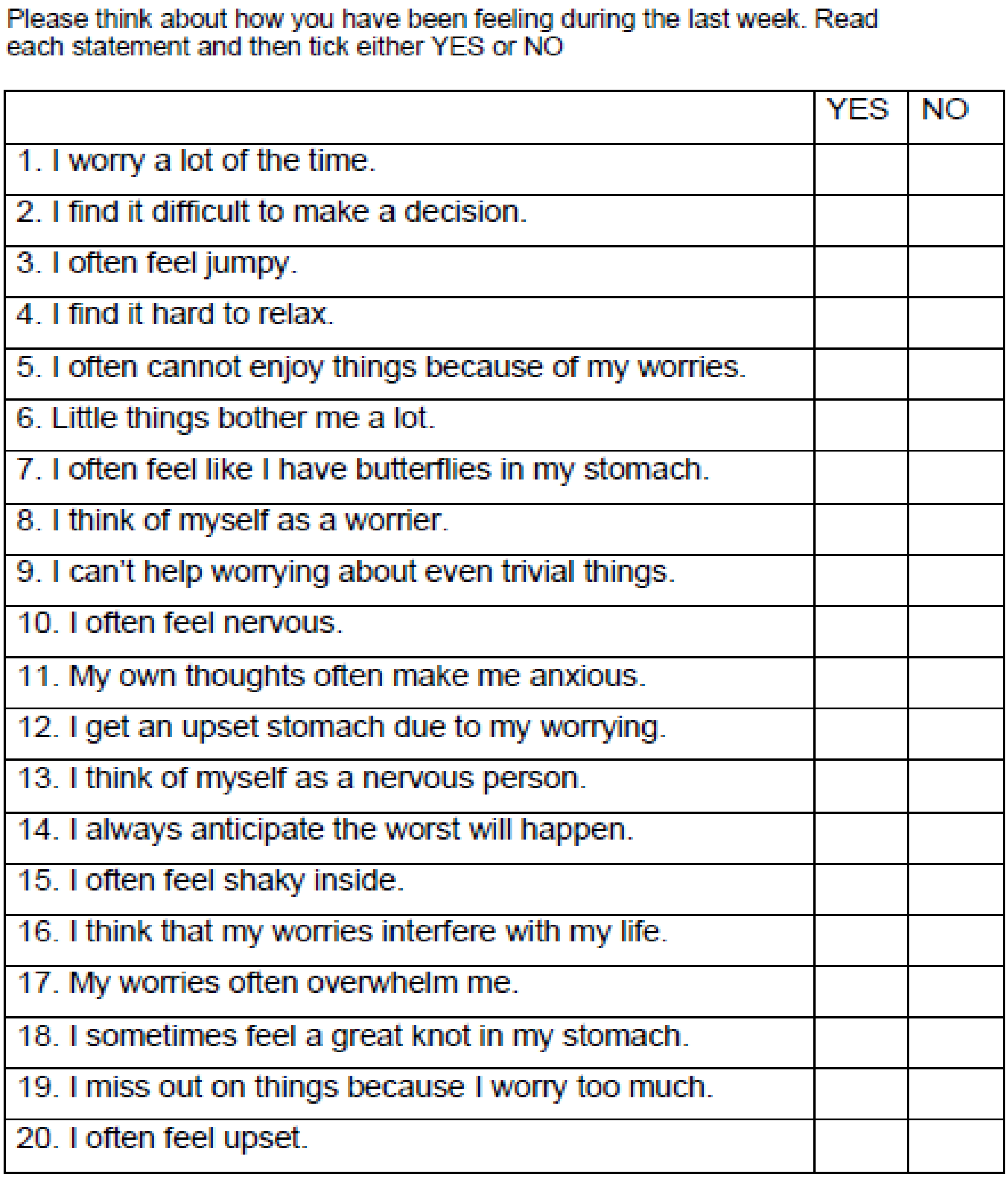
	I experience a general sense of emptiness.	5	4	3	2	1
	There are plenty of people I can rely on when I have problems.	5	4	3	2	1
	I often feel rejected.	5	4	3	2	1
	I miss having people around.	5	4	3	2	1
	There are many people I can trust completely.	5	4	3	2	1
	There are enough people I feel close to.	5	4	3	2	1

5. GDS

Please think about how you felt during the last week. Read each statement and then circle either YES or NO

1	Are you basically satisfied with your life?	YES	**NO**	
2	Have you dropped many of your interests and activities?	**YES**	NO	
3	Do you feel that your life is empty?	**YES**	NO	P4
4	Do you often get bored?	**YES**	NO	
5	Are you in good spirits most of the time?	YES	**NO**	
6	Are you afraid that something bad is going to happen to you?	**YES**	NO	
7	Do you feel happy most of the time?	YES	**NO**	P4
8	Do you often feel helpless?	**YES**	NO	
9	Do you prefer to stay at home, rather than going out and doing things?	**YES**	NO	
10	Do you feel that you have more problems with memory than most?	**YES**	NO	
11	Do you think it is wonderful to be alive now?	YES	**NO**	P4
12	Do you feel worthless the way you are now?	**YES**	NO	P4
13	Do you feel full of energy?	YES	**NO**	
14	Do you feel that your situation is hopeless?	**YES**	NO	P4
15	Do you think that most people are better off than you are?	YES	**NO**	

6. GAI



Please think about how you have been feeling during the last week. Read each statement and then tick either YES or NO

	YES	NO
1. I worry a lot of the time.		
2. I find it difficult to make a decision.		
3. I often feel jumpy.		
4. I find it hard to relax.		
5. I often cannot enjoy things because of my worries.		
6. Little things bother me a lot.		
7. I often feel like I have butterflies in my stomach.		
8. I think of myself as a worrier.		
9. I can't help worrying about even trivial things.		
10. I often feel nervous.		
11. My own thoughts often make me anxious.		
12. I get an upset stomach due to my worrying.		
13. I think of myself as a nervous person.		
14. I always anticipate the worst will happen.		
15. I often feel shaky inside.		
16. I think that my worries interfere with my life.		
17. My worries often overwhelm me.		
18. I sometimes feel a great knot in my stomach.		
19. I miss out on things because I worry too much.		
20. I often feel upset.		

7. NZ-WHOQOL-BREF

This questionnaire asks how you feel about your quality of life, health or other areas of your life. Please answer all the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response. Please keep in mind your standards, hopes, pleasures and concerns and think about your life in the last two weeks.

Please read the question, assess your feelings **OVER THE LAST TWO WEEKS** and **circle the number** on the scale for each question that gives the best answer for you.

		Very poor	Poor	Neither poor nor good	Good	Very good
	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the **last two weeks**.

		Not at all	A little	A moderate amount	Very much	An extreme amount
	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
	How much do you enjoy life?	1	2	3	4	5
	To what extent do you feel your life to be meaningful?	1	2	3	4	5
	How well are you able to concentrate?	1	2	3	4	5
		Not at all	A little	A moderate amount	Very much	An extreme amount
	How safe do you feel in your daily life?	1	2	3	4	5

	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about **how completely** you have experienced **or** were able to do certain things in the last two weeks.

		Not at all	A little	A moderate amount	Very much	Extremely
0	Do you have enough energy for everyday life?	1	2	3	4	5
1	Are you able to accept your bodily appearance?	1	2	3	4	5
2	Have you enough money to meet your needs?	1	2	3	4	5
3	How available to you is the information you need in your day-to-day life?	1	2	3	4	5
4	To what extent do you have the	1	2	3	4	5

	opportunity for leisure activities?					
5	How well are you able to get around physically?	1	2	3	4	5

The following questions ask you to say how **good** or **satisfied** you have felt about aspects of your life over the **last two weeks**.

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
6	How satisfied are you with your sleep?	1	2	3	4	5
7	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
8	How satisfied are you with your	1	2	3	4	5

	capacity for work?					
9	How satisfied are you with yourself?	1	2	3	4	5
0	How satisfied are you with your personal relationships?	1	2	3	4	5
1	How satisfied are you with your sex life?	1	2	3	4	5
2	How satisfied are you with the support you get from your friends?	1	2	3	4	5
		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied

3	How satisfied are you with the conditions of your living place?	1	2	3	4	5
4	How satisfied are you with your access to health services?	1	2	3	4	5
5	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to **how often** you have felt or experienced certain things in the last two weeks.

		Never	Seldom	Quite often	Very often	Always
6	How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	1	2	3	4	5

The following question asks about **how good or satisfied** you have felt about various aspects of your life over the last two weeks.

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
7	How satisfied are you that you are able to meet the expectations placed on you?	1	2	3	4	5

The following questions asks about **how completely** you have experienced **or** were able to do certain things in **the last two weeks**.

		Not at all	A little	A moderate amount	Very much	Extremely
8	To what extent do you feel respected by others?	1	2	3	4	5
9	To what extent are you able to manage personal difficulties?	1	2	3	4	5

The following questions ask **how much** you have experienced certain things in **the last two weeks**.

		Not at all	A little	A moderate amount	Very much	Extremely
0	To what extent do you have feelings of belonging?	1	2	3	4	5
1	To what extent do you feel you have control over your life?	1	2	3	4	5

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