Auckland University of Technology (AUT)

Investigating the COVID-19 risk communication experience of international tertiary education students: An exploratory study during Alert Levels 4 and 3 (17 August – 1 December 2021) in Auckland, New Zealand

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A dissertation submitted to Auckland University of Technology in partial fulfilment of the requirements for the degree of Master of Disaster Risk Management and Development

2022

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Abstract

Risk communication represented a core component of New Zealand's COVID-19 pandemic response. Despite its recognised role in both the disaster risk field and in the management of public health emergencies, risk communication has not received focused attention by the higher education enterprise. Acknowledging the limited research on risk communication in tertiary education, this exploratory study sought to investigate its role in the experience of international students enrolled at a tertiary education institution in Auckland, New Zealand.

With an emphasis on the 17 August – 1 December 2021 "lockdown" period in Auckland, the study investigated the specific challenges faced by the international students, as well as the measures they took to address these, along with their risk communication experiences.

The study adopted an interpretivist paradigm, and applied a qualitative descriptive approach, also using semi-structured interviews as the data-gathering method. Face-to-face interviews took place in September 2022 with six international students who had also been living in Auckland during Alert Levels 4 and 3 from August – December 2021. Thematic analysis and coding with NVivo software identified four main themes related to the students' experiences: 1) student characteristics, 2) the experience of multiple stressors 3) disrupted and uneven social support, and 4) their risk communication experience.

The findings highlighted four important issues. These included the multiple, interlinked stressors that the students had faced that were amplified by wide-ranging uncertainties related to the pandemic. They also underlined the key role of social media in the students' risk communication, and the students' limited engagement with the tertiary education institution's email messaging and COVID-19 student webpage. Results indicated that the international students' risk communication experiences also varied, depending on whether they were supported through the Manaaki New Zealand Scholarships Programme or were self-funded. This indicated the vital role played by institutional structures such as the Scholarships Office that provided some of the interviewed students access to linking social capital through its role as an institutional navigator.

Given the limited research on international students, despite their vital role to their host institutions' financial sustainability, this exploratory study suggests the need for further research on how international students navigate periods of prolonged difficulty. It also highlights the need for additional study of risk communication in tertiary education settings, as well as on the enabling factors that enhance international tertiary student resilience in public health and other emergencies.

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List of abbreviations

AUT	Auckland University of Technology
AUTEC	Auckland University of Technology Ethics Committee
CDC	Centers for Disease Control and Prevention
CERC	Crisis and Emergency Risk Communication
COVID-19	Coronavirus disease 2019
ERC	Emergency Risk Communication
IHR	International Health Regulations
NICE	National Institute for Health and Care Excellence
NIHM	National Institute of Mental Health
PHE	Public Health Emergency
PHEIC	Public Health Emergency of International Concern
PIS	Participant Information Sheet
QD	Qualitative Descriptive
RCCE	Risk Communication and Community Engagement
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organisation

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Attestation of Authorship

“I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.”

Signed:

Clement Meslet

Date: 21 December 2022

Acknowledgments

My dissertation experience was such a long journey. May I say thanks to many people for their assistance, support, encouragement, motivation, and friendship throughout this dissertation.

Words cannot express my gratitude to my supervisor, Dr Ailsa Holloway, for her invaluable patience and feedback. I wish I could say the words that are more meaningful than 'thank you' for your understanding, time, expertise, and on-going encouragement in my time of stress during the COVID-19 pandemic. I would not have achieved these levels and been capable of completing this dissertation without her expertise, understanding and encouragement.

Thanks should also go to the Auckland University of Technology (AUT) librarians, lecturers, the international student' advisors who have impacted and inspired me in my student life in New Zealand. I am also grateful to the study participants who shared their time and thoughts so generously.

Finally, I would be remiss in not mentioning my family, my friends, and especially my partner Marie Wisniewski. Their belief in me has kept my spirits and motivation high during this process. I would also like to thank Kiki for all the entertainment and emotional support.

The tertiary institution's Ethics Committee approved the research on 22 August 2022 (Reference number 22/222), as attached in Appendix F.

Chapter 1 Introduction

1.1 Background

The COVID-19 pandemic has highlighted the crucial role of risk communication in public health emergencies. First defined by Covello et al. (1986) as "any purposeful exchange of information about health or environmental risks between interested parties", risk communication is now a central consideration in disaster risk management planning and public health emergencies management (De Sa et al., 2009; UNDRR, 2021).

Risk communication played a key role in harmonising the New Zealand government's response during the COVID-19 pandemic (Bloomfield, 2021). The extent of this response went beyond the health and emergency domains to include other fields, such as education (Holloway, 2022).

In the education sector, the need for a coherent risk communication response was underlined by the pandemic's far-reaching effects, including increased student drop-out rates and adverse impacts on student wellbeing. At institutional levels the pandemic's impacts also led to diminished funding (Jensen et al., 2022).

During the COVID-19, specific student sub-groups faced increased pressures. In this context, international students emerged as a particularly vulnerable group with complex needs and pressures that were poorly understood (Plakhotnik et al., 2021).

From March 2020 to December 2021, Aotearoa, New Zealand, implemented a robust strategy to manage and control the spread of COVID-19. This was reflected in a suite of public health measures, including border restrictions, physical distancing, and other movement restrictions, which were guided by the application of a COVID-19 Alert System Framework (New Zealand Government, 2022a).

Two of the defining elements of New Zealand's 2020-2021 COVID-19 response were its enforcement of tight border restrictions and the strict application of physical distancing measures. These resulted in highly constrained international travel as well as the abrupt closure of non-essential services, the application of stay-at-home measures, and the closure of all educational facilities (Godber & Atkins, 2021).

While New Zealand's university students experienced significant disruptions to their studies, specific student subgroups, including international students, faced significant pressures such as financial uncertainty, mental health pressures and well-being challenges (Jagroop-Dearing et al.,

2022). While the abrupt switch to online learning affected tertiary students globally (UNICEF, 2020), international students in New Zealand confronted the additional pressures of border closures and limited scope to leave and then re-enter the country (Jagroop-Dearing et al., 2022).

The scale of upheaval experienced by international university students in New Zealand was signalled by the dramatic reduction in international enrolments. Materially, this was indicated by a total enrolment of only 17,750 international students in March 2020, compared with the pre-COVID-2019 annual enrolment of 33,900 students (New Zealand Government, 2022b).

This sudden reduction not only had profound financial consequences for New Zealand's higher education enterprise that historically depended on up to 13-15% of its revenue from international students; it also created immense uncertainly and new challenges for international students who chose to remain in New Zealand, rather than repatriate to their countries of origin (Maidment, 2021).

Despite the central role that international students play in New Zealand's higher education sector and the dramatic impact that COVID-19 response measures had on this group, there is limited research on the challenges they faced during the COVID-19 pandemic. To address this gap, this study sought to examine the COVID-19 experience of international students in Auckland, specifically focusing on the risk communication they received from government and higher education sources in the second half of 2021.

Chapter 1 introduces the key concepts that informed the research and its context in relation to the COVID-19 pandemic. It continues by presenting the research rationale, research question and objectives and concludes by providing an overview of the dissertation structure.

1.2 Key concepts and themes

Several key concepts underpinned this research. While the COVID-19 pandemic represented a complex transboundary emergency, this study focused on how the risk communication experience of international students at an Auckland tertiary education institution enabled their resilience during this public health emergency.

1.2.1 Risk communication

Risk communication is a widely used concept introduced by Covello et al. (1986). While its initial focus was on communicating information on environmental and technological threats, the concept’s scope of application has since expanded. This was reflected in its definition by the

World Health Organisation (2017) as the "real-time exchange of information, advice and opinions between experts or officials and people who face a threat to their survival, health or economic or social well-being". More recently, in response to the COVID-19 pandemic, its interpretation has extended even further, referring to "the process of sharing risk-related information within and between different groups such as scientists, policymakers and the public both nationally and internationally" (Collins et al., 2020). This evolution signals recognition of the concept's growing applicability across multiple threats and contexts, as well in multiple directions and across geographic scales (Arval & Rivers III, 2013).

With increasingly frequent and intense disaster events, risk communication is considered an essential component of resilience-building efforts. This is reflected in leading global initiatives such as the Sendai Framework for Disaster Risk Reduction and by institutions such as the World Health Organisation, among others (Kar & Cochran, 2019).

1.2.2 Resilience: a higher education perspective

As with risk communication, "resilience" is a crucial concept applied and adapted across multiple disciplines and fields in relation to managing and recovering from shocks and stressors.

However, while resilience has a long and diverse history, it has also become a "fashionable buzzword" interpreted and used differently by policymakers, practitioners, and academics worldwide (Le Dé, 2021). Originally, resilience stemmed from the Latin words resilire, resilio meaning "bouncing back" (Manyena et al., 2011). In the last century, the term resilience became increasingly applied in ecology to describe ecological system changes (Holling, 1973). Its application also emerged in the 1970s within the field of developmental psychopathology. This first wave of resilience research focused on understanding the adaptation factors that enabled children to develop well despite genetic or environmental conditions (Masten & Obradovic, 2006).

The term resilience is also used widely in disaster risk reduction and has been recently defined as "the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions." (UNDRR, 2017)

In education, resilience is understood and applied in two complementary ways. One view of resilience draws on its psychological tradition by focusing on individual attributes and capabilities (Kincheloe, 2006). The second takes forward an "ecological" view at the organisational and sector levels, with increasing interest since the H1N1 outbreak in 2009 (Wu & Wu, 2013).

Approaches to resilience in the higher education sector also vary. These include an emphasis on the agility demonstrated by academic organisations "to manage and continue their work in the face of disruptions" during public health emergencies (de los Reyes et al., 2022, p.46). Other, more encompassing perspectives suggest resilience in tertiary education involves more than "surviving, adapting and growing" during times of transition to include a clear understanding of their mission and stakeholders, including staff and students (Arnhold & Bassett, 2021).

1.2.3 Public health emergency

The need for improved education sector resilience was clearly underlined during the COVID-19 pandemic. This represented a public health emergency (PHE) or event whose "health consequences have the potential to overwhelm routine community capabilities to address them" (Nelson et al., 2007).

In the context of the COVID-19 pandemic, an additional layer of global severity was applied, given its declaration by WHO on 30 January 2020 as a "Public Health Emergency of International Concern" (PHEIC) (WHO, 2020). This reflected a WHO assessment that COVID-19 "constituted a public health risk to other states through the international spread of disease, which required a coordinated international response" (WHO, 2008; Wilder-Smith & Osman, 2020).

1.3 Research context: COVID-19 in Aotearoa New Zealand

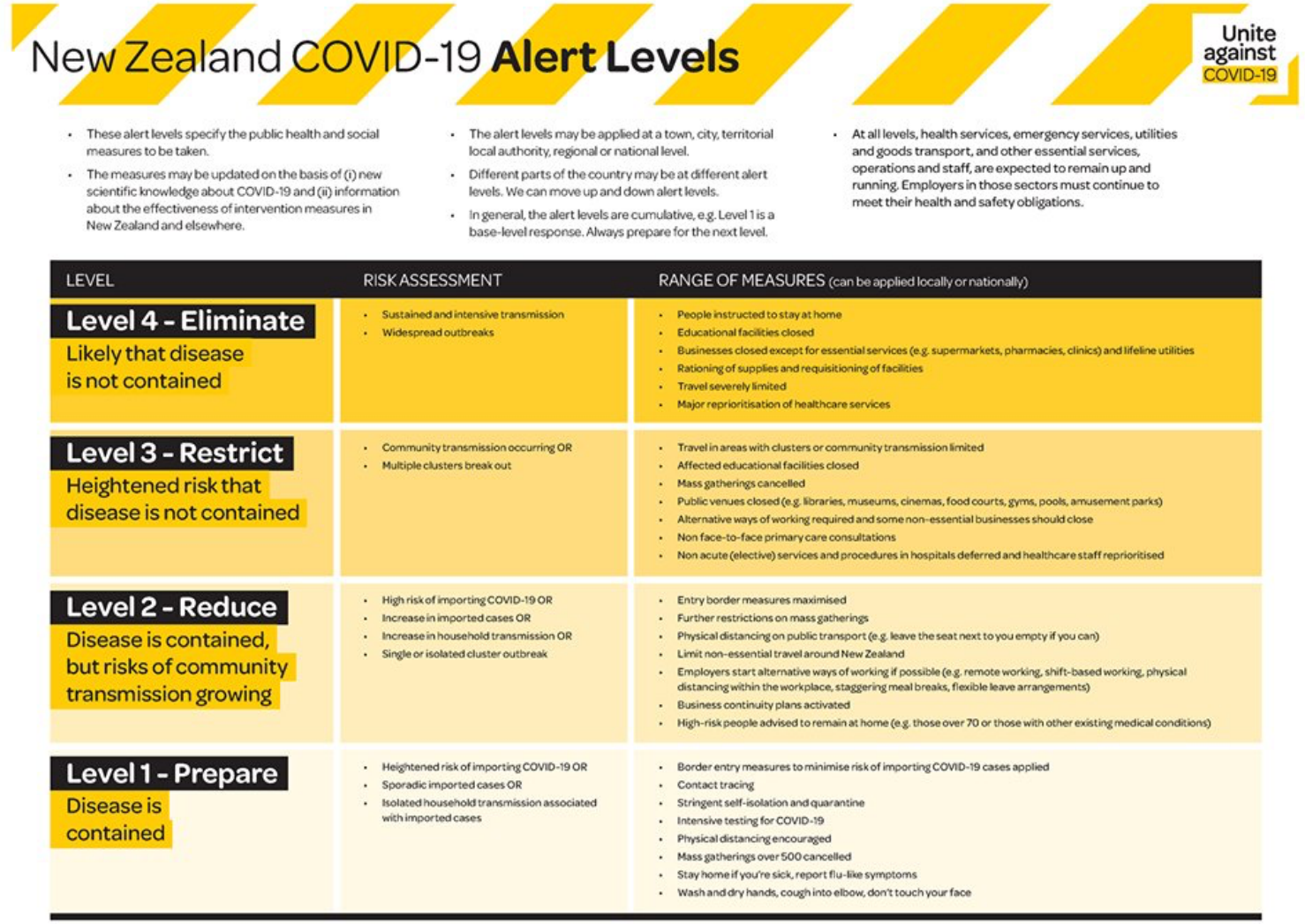
The research context for this study was framed by two interlinked concerns: the COVID-19 pandemic in New Zealand as experienced from August to November 2021, and the capability of the higher education enterprise to adjust to an external shock in relation to the specific needs and pressures faced by international students who were living in Auckland at that time.

1.3.1 New Zealand's COVID-19 response 2020-2021

The COVID-19 public health emergency in New Zealand prompted wide-ranging measures from February 2020 to September 2022. New Zealand was the first country to establish an elimination strategy in 2020, which initially focused on using a national alert level system (Figure 1) to ensure uniformity, achieving, and maintaining "zero COVID-19" (New Zealand Government, 2022c).

The Alert Level System was phased from Level 1 "prepare" to level 4 "lockdown" and offered a uniform framework for response and risk communication based on COVID-19's epidemiological profile (Holloway, 2022). This enabled a harmonised response across geographic scales and sectors.

Figure 1 New Zealand COVID-19 Alert Levels

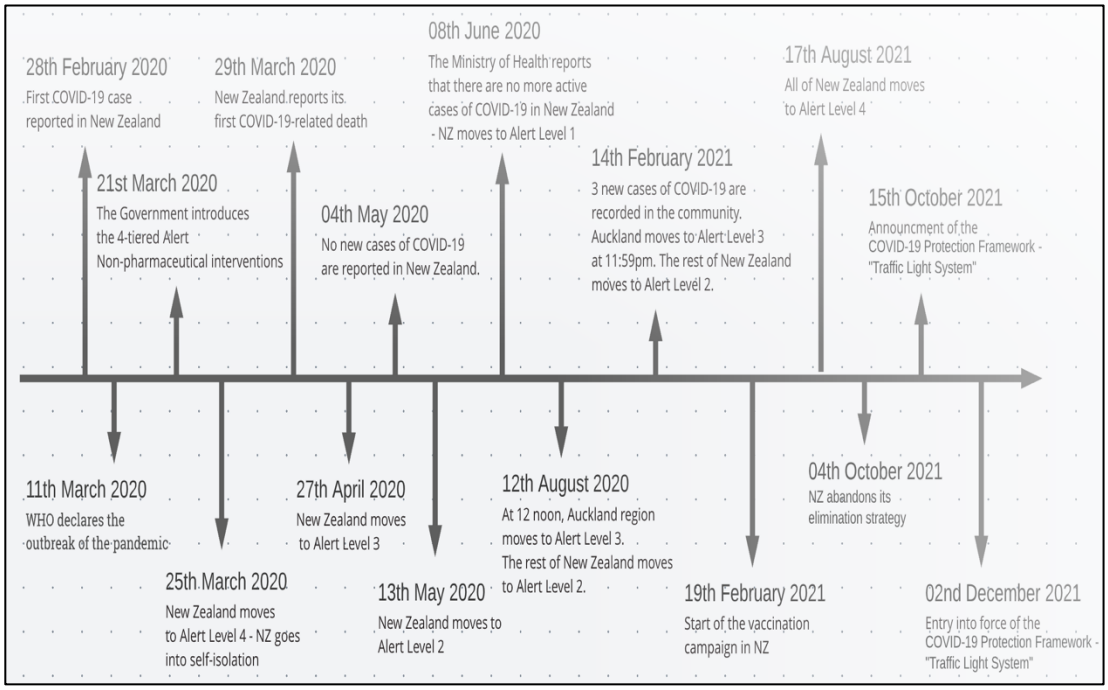


Note. New Zealand COVID-19 Alert Levels Summary. From "The Prime Minister has announced New Zealand Covid-19 Alert Levels" by New Zealand Government, 2022a, *Unite Against Covid-19*. Copyright 2022 by New Zealand Government

The March 2020 - December 2021 period was characterised by a changing array of public health measures, reflected in Figure 1, ranging from border restrictions to vaccination requirements (New Zealand Government, 2022a). Until August 2021, the elimination strategy proved to be particularly effective, resulting in New Zealand reporting the lowest disease incidence across all the countries from the Organisation for Economic Co-operation and Development (OECD), reflected in 600 cases and 5 cases per million inhabitants (Ritchie et al., 2021). However, with the arrival of the more transmissible "Delta" variant in August 2021, previously effective control measures came under increased pressure (New Zealand Government, 2022a). This led to the government revising its approach in October 2021 to adopt a Minimisation and Protection framework. This sought to accelerate population-wide vaccination against COVID-19 through the announcement of the "Traffic Light System", followed by its introduction in December 2021 (Zealand Government, 2022c).

Key milestones and changes in strategy over this dynamic 2020-2021 period are shown in Figure 2 below. They are summarised chronologically in Table 1.

Figure 2 Timeline of Covid-19 Policy Decisions in New Zealand



Note. Timeline with dates from February 2020 to December 2022 related to COVID-19 and policy decisions taken by the New Zealand government. From "The End of the Elimination Strategy: Decisive Factors towards Sustainable Management of COVID-19 in New Zealand" by Blair A, de Pasquale M, Gabeff V, Rufi M, Flahault A, 2022, *Epidemiologia, 3*(1), p. 137. Copyright 2022 by MDPI

Table 1 Sequence of New Zealand's Alert Level Responses

Date	Policy channel	Description
25th March - 27th April 2020	Alert Level 4	The highest level of an elimination strategy, using, for example, border movement restrictions, self-isolation, cancellation or closures of facilities, schools, and significant events (New Zealand Government, 2022a).
08th June - 12th August 2020	Alert Level 1	The country's borders were opened but restricted by self-isolation and quarantine, COVID-19 control measures, COVID-19 tests were widely used and mass gatherings of over 500 persons were cancelled (New Zealand Government, 2022a).
12th August - 30thAugust 2020	Alert Level 3 and 2	Auckland moved to Alert Level 3; people stayed at home, and only people who could not work from home could return to work. People were required to wear masks inside specific businesses, keeping a 2-metre distance from others while outside. Contact healthcare consultation was impossible, and public facilities remained closed (New Zealand Government, 2022a). The rest of New Zealand remained in Alert Level 2; people returned to their places of work. Gatherings were allowed up to 100 people. Event facilities could open, sports and recreation were allowed, and people were required to wear masks in specific areas such as public transport (New Zealand Government, 2022a).
17th August 2021 – 1st December 2021	Alert Level 4 and 3	17th August: all New Zealand moved to Alert Level 4 "lockdown". People were required to stay at home, with no travel or gatherings, as well as businesses, were allowed except for essential services. People were required to wear masks everywhere outside their homes, and specific supplies were rationed (New Zealand Government, 2022a). 2nd September: all New Zealand (except Auckland) moved to Alert Level 2 (New Zealand Government, 2022a). 21st September 2021: Auckland moved to Alert Level 3 (New Zealand Government, 2022a).
2nd December 2021	Traffic Light System	New Zealand moves to the "Traffic Light System". Auckland move to the highest-level Red. People were required to self-isolate for 7 days if testing positive or living with someone who had COVID-19. Indoor capacity limits of 200 people and face masks were required in most indoor settings (New Zealand Government, 2022a).
14th & 16th December 2021	Traffic Light System	14th December: restrictions on Auckland travel outside, lifted at 11:59pm. People travelling out of Auckland needed to be vaccinated or have proof of a negative test (New Zealand Government, 2022a) 16th December: New Zealand achieved 90% of full vaccination coverage against COVID-19 (New Zealand Government, 2022a).

Note. Details of public health measures associate with each Alert Level applied in New Zealand between 25 March 2020 and 16 December 2021. Adapted from *Unite Against COVID-19* by New Zealand Government (2022a).

1.3.2 Pressure on the higher education enterprise

Globally, the COVID-19 pandemic highlighted numerous shortcomings in higher education's capacity to adjust to a system-wide disruption. The pandemic disrupted education systems worldwide, forcing the "shuttering" of campuses in 175 countries and affecting 220 million post-secondary students (Arnhold & Bassett, 2021). Campus closures prompted the sudden introduction of a hybrid teaching mode that switched between distance learning and in-person teaching (United Nations, 2022), referred to as the "great pivot online" (World Bank, 2020). These disruptions were compounded by reduced maintenance and services in tertiary education. Other adverse sector effects included freezing salaries of academic staff, as well as deceased funding for research, exacerbating administrative unemployment (United Nations, 2022).

Border restrictions and other factors also impacted the tertiary sector, including the abrupt drop in international student enrolments leading to reduced fee revenues (Gerritsen, 2022). For students, those studying internationally faced multiple challenges, including disrupted studies, research, and campus activities, as well as financial pressures (United Nations, 2022).

1.4 Rationale, research questions and objectives

The rationale for this study was underpinned by an awareness of the crucial role played by risk communication during the COVID-19 pandemic. This was particularly apparent in New Zealand, where, for almost two years, an explicit elimination strategy, required the public to follow wide-ranging control measures.

While the university sector successfully navigated this volatile period by shifting to online learning, it became clear that specific student populations also experienced immense difficulty and inequities during this time. Valuable focused research has been undertaken during COVID-19 on marginalised student groups, including Māori students during COVID-19 (Te Tari Arokate Mātauranga, 2022). However, few studies have examined the challenges faced by international students in New Zealand. This is despite their being isolated from their home countries during a prolonged public health emergency, in which international travel was highly constrained to and from New Zealand (Jagroop-Dearing et al., 2022). This involves ongoing communication between the government and other stakeholders, including the tertiary education sector, over a difficult period.

In addition, the experience of international students has the potential to probe the role played by risk communication in advancing both institutional and individual resilience during a time of duress. Therefore, this exploratory study sought to investigate how international tertiary education students experienced and interpret COVID-19 risk communication during Alert Levels 4 and 3 (17 August-1 December 2021) in Auckland, New Zealand.

This research question was addressed by four guiding objectives as follows:

- To explore international tertiary education students' primary concerns and challenges during the study period.
- To identify the measures and actions international students took to address these challenges.
- To investigate the international students' experience of risk communication, including its associated barriers and enablers.
- To make recommendations that strengthen future risk communication efforts for international tertiary education students.

1.5 Dissertation outline

This dissertation comprises five chapters:

Chapter One, presents the chapter, introduces the researcher's study encompassing the problem context, critical concepts, and research context. It also describes the research gap, question, and objectives.

Chapter Two critically reviews the previously published literature on risk communication, education sector resilience and New Zealand's tertiary education sector experience during COVID-19.

Chapter Three clarifies the methodology, which adopts a qualitative descriptive approach. It includes a discussion of the research paradigm, design, rigour, ethical considerations, and likely research output.

Chapter Four provides the findings and outcomes of this study after analysing data collected from interviews with international students.

Chapter Five discusses the implications of the study findings, linking to current relevant literature. It emphasises the implications for practice and point out the strengths and limitations of this study. It also proposes areas for future research and summarises the main findings.

1.6 Chapter summary

This chapter has introduced the research background and highlighted significant themes relevant to the research topic. It has identified gaps in current knowledge about risk communication in tertiary education. The chapter also introduced the research question with its objectives and presented an overview of the dissertation.

Chapter 2 Literature Review

2.1 Introduction

This study's focus on COVID-19 risk communication for international tertiary students in New Zealand called for a careful and wide-ranging literature review. With a specific emphasis on risk communication in public health emergencies, this chapter explores the emerging knowledge domain of higher education sector resilience as expressed during the COVID-19 pandemic, along with expanding literature on international students' resilience during emergencies, such as COVID-19.

The chapter begins by describing the development of risk communication approaches in the context of public health emergencies. It continues by examining the scope and challenges of resilience-building for the higher education enterprise, including those related to international tertiary students. It then revisits the COVID-19 pandemic in the New Zealand higher education sector. The chapter concludes by highlighting the knowledge gap between concerns about higher education sector resilience and the unexplored role that risk communication plays in bridging institutional and individual resilience during public health and other emergencies.

The literature search was carried out between May 2022 and November 2022. The researcher could access the tertiary's institution library website, Google Scholar, Scopus, and other reputable websites to search for relevant literature.

2.2 Risk communication in public health emergencies

While risk communication is a widely applied concept across disaster risk management and the health policy and practice domains, it plays a specific role in public health emergencies, such as the COVID-19 pandemic (Glik, 2007). Since its emergence as a critical element of public health emergency management in the early 2000s, risk communication has evolved substantially to be more inclusive and multi-directional (WHO, 2021a).

2.2.1 Evolution of risk communication as a concept applied in global public health emergencies

Although Covello and al.'s concept of risk communication emerged in response to the environmental emergencies of the 1980s (Covello et al., 1986), it gained greater importance following WHO's introduction of the International Health Regulations (IHR) in 2007 (Mullen et al., 2020). In this specific context, risk communication constituted one of the eight core country capabilities required to strengthen global health security (WHO, 2020). WHO's initial emergency

risk communication efforts emphasised more of a "top-down" approach to disseminating information related to public health risks, including epidemics. It also focused on communicating measures that required behaviour change by the public to reduce their risk (Yong et al., 2020). However, many limitations of this narrow, hierarchical approach were underlined by both the 2014-2016 West African Ebola disease outbreak, as well as the 2015-2016 Zika and multi-country yellow fever outbreaks (Toppenberg-Pejcic, 2018).

Drawing on the evidence and insights of three wide-ranging systematic reviews of peer-reviewed publications and grey literature on risk communication in public health emergencies (Jha et al., 2018; Sopory et al., 2019; Toppenberg-Pejcic et al., 2018), WHO reframed its approach. This resulted in risk communication being redefined as the "real-time exchange of information, advice and opinions between experts, community leaders, officials and the people at risk, and is an integral part of any emergency response" (WHO, 2017). The reframed approach signalled growing recognition that effective risk communication in public health emergencies involved active listening and responsiveness to people's concerns rather than "top-down" information dissemination.

These shifts in approach also acknowledged the need to address uncertainty in public health emergencies. In their review of communicating uncertainty in public health emergencies, Sopory et al. (2019) distinguish between the “uncertainty of information” and the “uncertainty of experience”. They also acknowledged that confusing conflicting or inconsistent information provided by media can increase uncertainty for both the public and health workers, and even adversely affect higher-level decision-making (Sopory et al., 2019).

Growing awareness of the protective benefits of this more inclusive and participatory risk communication processes was further reflected in WHO’s and UNICEF’s introduction of “risk communication and community engagement” (RCCE), first applied during the 2016 Zika emergency (WHO, 2016). For WHO (2020b), community engagement is “the collaborative process that involves people in understanding the risks they face and includes communities in developing health and response practices that are acceptable and workable for them”. The explicit linking of the real-time exchange of information across multiple audiences with commitment to community engagement signalled a more inclusive and participatory shift in public health communication (WHO, 2020b).

Ten principles underpinned this expanded approach to risk communication, that included a focus on nationally-led communication, community-centred and participatory. They also highlighted the importance of trust, maintaining open and transparent communication, as well as the role of

data and the need for an integrated and coordinated approach, that should be inclusive and accountable to all vulnerable and affected communities.

2.2.2 The Crisis and Emergency Risk Communication model: a parallel approach

In parallel with WHO's efforts to strengthen risk communication related to public health emergencies, the United States Centers for Disease (CDC) formulated its Crisis + Emergency Risk Communication guidelines, as shown in Figure 3 (CDC, 2018). Prompted by the 2001 United States anthrax attacks that followed 9/11, the CERC approach aimed at bridging more emergency-oriented "crisis communication", which required an immediate response, with "risk communication" that provides the public with information for protective decision-making (CDC, 2018). The guidelines embraced an explicit "process view of crisis" (Reynolds & Seeger, 2005), recognising that an emergency would progress through different stages.

Figure 3 The Six Principles of Crisis + Emergency Risk Communication

Note. Crisis and Emergency Risk Communication (CERC) manual is based on psychological and communication sciences intended for public health response officials and communicators who have a basic knowledge of public health communication. From "CERC Manual" by Centers for Disease Control and Prevention. 2018, *Emergency, Preparedness and Response,* p. 15. Copyright 2018 by CDC.

Six guiding principles underpin the CERC guidelines, “be first, be right, be credible, express empathy, promote action and show respect” (CDC, 2018). Despite their introduction in the early 2000s, these are updated regularly and remain widely used in the United States almost 20 years later.

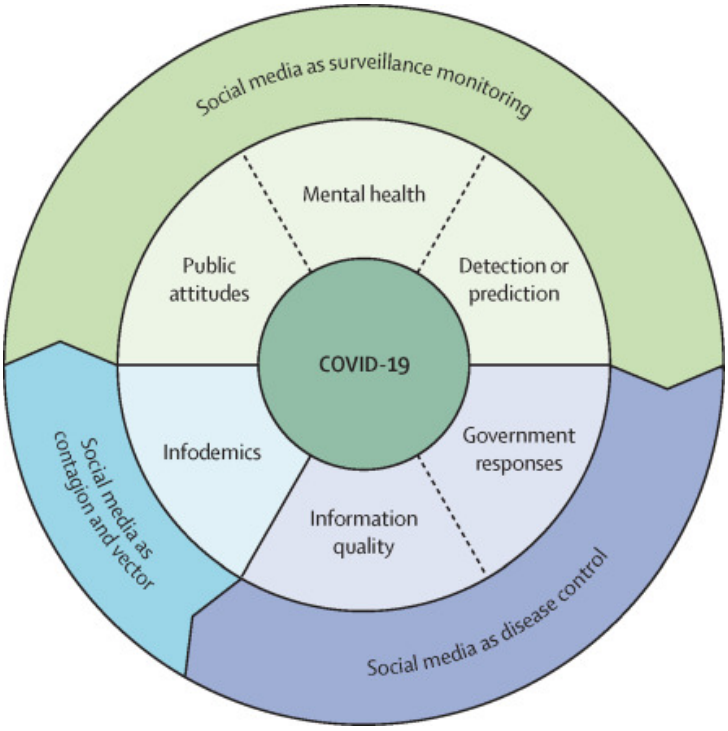
While the origin of the CERC guidelines was primarily prompted by sudden onset threat rather than WHO’s focus on pandemic emergencies, both underline the importance of risk communication "bridge-building" between the authorities and civil society during emergencies.

2.2.3 Risk communication challenges and inequalities during COVID-19

A defining feature of the COVID-19 pandemic was the sheer volume of information generated and shared, especially through social media channels. This "tsunami of information" (Zarocostas, 2020) about COVID-19 resulted in an “infodemic” characterised by the sharing of too much information, "including false or misleading information in digital and physical environments during a disease outbreak" (Zarocostas, 2020). This meant that health authorities were managing both an epidemic and an infodemic. Their risk communication efforts were made more complex due to people being more physically isolated on one hand but with greater time to interact with social media on the other – thus increasing their potential exposure to misinformation (Cinelli et al., 2020).

Even before COVID-19, social media platforms such as Twitter or Facebook had become key communication channels for authorities to inform and interact with during public health emergencies (Kar & Cochran, 2019). However, social media engagement increased dramatically during COVID-19. Its wide-ranging effects have been examined in numerous studies, with Tsao et al. (2022) identifying 81 peer-reviewed articles on COVID-19 and social media. Through the application of thematic analysis, the authors identified and clustered six main themes into a Social Media and Public Health Epidemic and Response framework, in the following Figure 4.

Figure 4 The six main themes shaped by the SPHERE framework



Note. Modified Social Media and Public Health Epidemic and Response framework. From "What social media told us in the time of COVID-19: a scoping review" by Tsao, S. F., Chen, H., Tisseverasinghe, T., Yang, Y., Li, L., & Butt, Z. A. (2021), *The Lancet Digital Health, 3*(3). Copyright 2021 by Elsevier Ltd.

The diverse effects of social media during COVID-19 were reflected in themes on infodemics, public attributes, mental health, detection, or prevention of COVID-19 cases government pandemic responses, as well as the quality of prevention education videos (Tsao et al., 2022). While some studies highlighted the increasing use of social media by the government to provide the public with accurate information, they also underlined that there had been limited research on the effectiveness of these measures on public beliefs or behaviours (Tsao et al., 2022; Huang et al., 2022).

COVID-19's infodemic had multiple other consequences. For instance, In a study conducted internationally, Islam et al. (2020) also noted that people were confused due to receiving information from multiple sources. This limited the effectiveness of risk communication from the authorities while simultaneously contributing to infodemic conditions. Cinelli et al. (2020) also reported that it worsened anxiety, chronic stress, and mistrust in health authorities, especially among at-risk groups such as ethnic minorities and migrants (WHO, 2022). In parallel, Watson (2020) noted that "Covid-19 presented a special problem" […] as certain populations at-risk are also at risk for inadequate access to information, in relation to a language, media or health literacy

while health and communication operate together and exacerbate each other" (Kalocsányiová et al., 2022).

However, despite these insights, the COVID-19 risk communication for at-risk groups such as foreign workers was still characterised by language barriers, inadequate translation, and a lack of consideration of their specific vulnerabilities (Kalocsányiová et al., 2022).

2.2.4 Risk communication, vulnerable communities, and social capital

The challenges faced in developing risk communication for culturally and linguistically diverse communities during COVID-19 were not new nor limited to public health emergencies. For instance, Hanson-Easy et al. (2018) highlighted the failure of risk communication guidance to interpret and consider interpretive processes from different communities, particularly new migrant communities in Australia. These are more vulnerable than already-communities due to the absence of family networks (Hanson-Easy et al., 2018). In addition, they also noted that migrants adjusting to the new country's social and climatic differences would need to learn new practices, including accessing and interpreting important information about hazards and risks.

In this context, the concept of social capital is considered crucial for building resilience in vulnerable communities (Eisenman et al., 2007). Social capital focuses on the size and quality of social networks among individuals or small groups, their resources and the social norms affecting them (Yong et al., 2020). It is expressed through trusting and reciprocal relationships "between people with shared values and worldviews" (Hanson-Easy et al., 2018; Field, 2008).

Aldrich and Meyer (2014) have also proposed that social capital could be clustered into "bonding", "bridging", and "linking" forms. Bonding social capital defines the personal relations between individuals, such as friends and family, while bridging social capital refers to horizontal group connections. Linking social capital reflects trusting relations between vulnerable communities and formal authorities such as government and other officials. In the broader disaster risk domain, this constitutes a crucial dimension that "cuts across" other forms of disadvantage faced by migrant groups (Hanson-Easy et al., 2018), including international tertiary education students.

2.3 Resilience in higher education, focus on institutions and students

2.3.1 Overview

The abrupt introduction of online learning for millions of tertiary education students and the ongoing support required during the volatile and uncertain period of COVID-19 stimulated

conversations on the need for enhanced resilience, both at the university (organisational) level and for the individual students enrolled (Bartuseviciene et al., 2021).

In education, the concept of *individual resilience* has an established history of application to primary and tertiary education students (De Los Reyes et al., 2022). It is specifically associated with academic achievement despite previous adversity and other obstacles (Martin, 2002), while resilience and self-efficacy have been recognised as protective factors for mental health in the face of COVID-19-related stress and challenges (Kowalski et al., 2022). This view of resilience as it applies to individual students, reflects the longstanding influences of the behavioural sciences on education, derived initially from early research on the "invulnerability" as well as resilience of children (Garmezy et al., 1984; Werner, 1967; Masten & Obradovic, 2006; Alexander, 2013).

In contrast, the concept of *organisational resilience* in higher education is less developed (Bartuseviciene et al., 2021; Shaya et al., 2022). It draws from Holling's original research on resilience in ecological systems (1973) and then Meyer's application of the term (1982) to "describe an organisation's capability to absorb a shock and return to the original state" (Bartuseviciene et al. 2021). This systems-oriented conceptualisation has further evolved to incorporate change, learning and adaptation and has been defined as a "capability to anticipate possible risks, successfully cope with unexpected events, and learn and adapt to changing situations aimed at promoting organisational transformation" (Duchek, 2020; Shaya et al., 2022).

The COVID-19 pandemic clearly highlighted the interaction between these interlinked views of resilience within higher education, reflecting the tension between the need to ensure institutional continuity on one hand and provide individual student support on the other during a prolonged time of uncertainty.

2.3.2 Organisational resilience: focus on tertiary education institutions

The widespread disruptions experienced by the tertiary education enterprise due to COVID-19 drew attention to the need for strengthened institutional resilience within the sector (Bartuseviciene et al., 2021; Shaya et al., 2022).

Although organisational resilience is a relatively recent concept in higher education, the concept of "academic continuity" has long been applied (Day, 2015; Bartuseviciene et al., 2021). Academic continuity focuses on "the extent to which operations can be sustained, which enables affected faculty, staff, and students to continue academic activities during the response and recovery phase despite the disruption caused by the crisis" (Bates, 2013).

Scholarly interest in academic continuity has focused on both its characteristics and the processes that enable it. Schweber's research on the strategies applied by universities in response to the conflict in Lebanon and the aftermath of Hurricane Katrina identified important academic continuity characteristics that were consistent with other forms of organisational resilience (Schweber, 2008). These included adapting to the specific situation and problem-solving, expanding on existing resources, and rapid decision-making and action. One of the central attributes of these and other academic continuity approaches is an explicit priority on online learning to overcome on-campus disruptions (Bartuseviciene et al., 2021).

In addition to research on academic continuity *characteristics*, other studies have explored its *process* dimensions, broadly aligning these with the recognised stages of managing an emergency (Bartuseviciene et al., 2021). For instance, Regehr et al. (2013) proposed a four-phase academic continuity model involving pre-planning, approaching the crisis (preparedness), response and recovery. In such process-oriented academic continuity models, planning is considered crucial for both staff and students to respond coherently to a crisis and minimise interruptions to teaching and other activities.

More recently, and particularly in response to the COVID-19 pandemic, the focus on academic continuity in the tertiary education sector has extended to embrace resilience-building (Arnhold & Bassett., 2021). In a higher education context, resilience is conceptualised as going beyond merely "surviving, adapting and growing in the face of change". It also requires that tertiary education institutions clearly understand their missions and stakeholder communities in order to support them during periods of duress (Arnhold & Bassett., 2021).

This emphasis on "resilience to disruption" (Dohaney et al., 2020) has been explained at both individual academic staff and institution levels. Key attributes identified in resilient institutions include "flexibility, communication, community support, strategic planning, preparedness, and leadership" (Dohaney et al., 2020). These characteristics underline the roles that support, community and leadership play in advancing resilience in higher education institutions.

2.3.3 University student resilience and mental health challenges

While the COVID-19 pandemic underlined the need for greater resilience planning at a sector level higher education, it also highlighted the importance of resilience building for tertiary education students. Although student resilience in a higher education context generally relates to academic achievement and refers to learners abilities "to cope and thrive through adversity" (Dohaney et al., 2020), the concept is still not clearly defined (Brewer et al., 2019).

However, in their scoping review of 72 peer-reviewed publications of resilience in higher education students, Brewer and colleagues identified three interlinked sets of capabilities that enhanced student resilience. These included “intrapsychic” or protective psychological factors to better enable students to manage their thoughts and emotions. A second category reflected “interpersonal factors” where students received resources or outcomes from others, while a third cluster of considerations involved access to contextual resources, particularly social support (Brewer et al., 2019).

Recognising the protective role that enhanced university student resilience plays, particularly in promoting mental health, Brewer et al. (2019) suggest student resilience to be a “dynamic process of positive adaptation in the face of adversity or challenge”. They further argue that “this process involves the capacity to negotiate for, and draw on psychological, social, cultural, and environmental resources” (Brewer et al., 2019).

Such need for strengthened student resilience capabilities reflects the recognition of a changing higher education environment, which has become increasingly stressful for students (Ahmed & Julius, 2015). In this context, higher education students represent a group that faces multiple challenges. These are particularly reflected in mental health concerns, with one study indicating that 35% of student participants across 19 universities in eight countries met the diagnostic criteria for one or more mental health conditions (Auerbach et al., 2016).

Tertiary students are also at higher risk of depression compared with the general population (Ibrahim et al., 2013). This is attributed, among other factors, to the challenges associated with the transition to adulthood, sleeping and eating disturbances, financial pressures, family relationship distortions and academic concerns (NIMH, 2003). Such mental health concerns are worsened by “exam competition” that promotes and spreads stress (Widjaja et al., 2021). They argue that adolescents’ mental health worsened has these risk factors accumulate (Widjaja et al., 2021).

While higher education students are generally considered at risk of mental health and other challenges, sub-groups are viewed as particularly vulnerable. These include ethnic and migrant minority students, students from lower socio-economic communities as well as international students (Thorup-Binger & Charania, 2019).

2.3.4 Focus on international tertiary students as at-risk group

International higher education students represent a unique and complex group of concerns in tertiary education (Jung et al., 2021). While, at an organisational level, they play a crucial role in the financial viability of many higher education institutions, they also experience multiple challenges in the course of completing their studies (Jung et al., 2021).

The substantial personal, social, and environmental changes that international students must make in a new country have long been recognised (Ward, 1967; Alexander et al., 1981). These may be characterised by language and cultural barriers, family problems, loss of social support, financial difficulties, or anxiety about returning home (Yeh & Inose, 2003: Hsu, 2003).

International students can also be more vulnerable due to the absence of social networks after arriving in their destination countries. This is due to their arrival as individuals rather than with their family members, as seen with other migrant groups (He, 2007). In this context, they may have less capability to navigate administrative process as well as reduced access to financial support from their families. They may also be constrained to low-paying employment opportunities (O'Shea, 2016).

Some authors have highlighted the difficulties that international students face in navigating their new host institutions. For instance, Bittencourt et al. (2021) and Li et al. (2022) suggest that even if support programmes and processes are in place and their importance in minimising anxiety and uncertainty, these may not be entirely useful to international students.

2.3.5 Tertiary education students and COVID-19: mental health implications

The COVID-19 pandemic exposed many pre-existing vulnerabilities in tertiary education students globally. This was expressed in a wide range of impacts on tertiary students' academic work and life due to the sudden switch to online learning, closed facilities and isolation, resulting in mental health issues (Liyanage et al., 2021; Ochnik et al., 2021). Some studies reported an increase in students' levels of stress/anxiety, especially among vulnerable groups such as women, exacerbating pre-existing health concerns (Sankhi & Marasine, 2020; Rettie & Daniels, 2021).

The heightened stress created by the pandemic was not only associated with lower academic performance but also with increased self-injury and suicidal attempts (Patsali et al., 2020). For instance, WHO (2021b) highlighted that suicide was the fourth leading cause of death among tertiary students, possibly associated with higher prevalence of mental health disorders such as depression and anxiety. While lockdowns proved efficient in reducing the virus spread, the loss

of employment created additional stress for students who became increasingly concerned about their financial situation (Baloran, 2020). Unfortunately, due to persisting stigmas, tertiary education students may view mental health issues as a sign of weakness and not seek help when needed (Colling & Mowbray, 2005).

2.4 COVID-19 in New Zealand and the university response

Consistent with higher education sector action worldwide, the New Zealand university enterprise adopted sweeping measures in response to COVID-19. These involved a sector-level response overseen by the country's Ministry of Education. Other key institutions involved at national scale included The Tertiary Education Commission (TEC) responsible, for Universities New Zealand – Te Pōkai Tara (UNZ) that provides an advocacy platform for the country's universities and the Academic Quality Agency of New Zealand (AQA), whose remit focuses on university external quality assurance. The sector's national-level engagement in COVID-19 was further enabled by Te Hautū Kahurangi/ Tertiary Education Union (TEU), the New Zealand Union of Students Associations (NZSUSA) and Te Mara Ākonga (The National Māori Tertiary Students Association) (Holloway, 2022).

2.4.1 Sector impacts and responses to COVID-19

This pre-existing platform of national coordination mechanisms for New Zealand's university sector enabled a vigorous and largely coherent COVID-19 response (Holloway, 2022). However, the sector still experienced major disruptions during 2020-2021. These included the abrupt shift to online learning that followed the government's announcement of Alert Level 4 on 23 March 2020, that required the immediate cessation of all face-to-face teaching. This nationwide adjustment to teaching online was successfully implemented by all universities within five weeks of the announcement (Holloway, 2022).

While these first "lockdown" restrictions and their implications for universities were eased by 13 May 2020, New Zealand's COVID-19 response remained highly volatile until December 2021. This was particularly the case in greater Auckland area, which experienced additional "lockdown" restrictions from 12 August 2020 until 7 October 2020 and then from 17 August 2021 to 9 November 2021 (New Zealand Government, 2022a). Face-to-face university teaching in Auckland only resumed in Semester 1, 2022 (New Zealand Government, 2022a).

Consistent with its precautionary approach to domestic COVID-19 transmission, New Zealand began lifting border restrictions to non-citizens and residents from 11:59 pm, 31 July 2022 (New Zealand Government, 2022a). It was only on 1 October 2022 that Immigration New Zealand

opened student visa applications for international students intending to commerce studies from semester 1, 2023 (New Zealand Government, 2022a).

The introduction and enforcement of such strict border restrictions represented one of the most significant disruptions to New Zealand's university sector. Prior to 2020, New Zealand's eight universities had enrolled 180,000 students, of whom 33,900 (19%) were international students (New Zealand Government, 2022b). By April 2020, international student enrolments had dropped to 17,570, falling even further to only 12,000 enrolments in 2021 (New Zealand Government, 2022b). Given that universities had historically received 13-15% of their annual revenues from international students, the steep and prolonged drop in overseas enrolments profoundly impacted university income (Burns, 2022). By 2021, lower university revenue was measurably reflected in the loss of 700 university jobs (Braddock, 2022), contributing to growing anxiety across the tertiary education workforce (Haar, 2021).

In this context, the COVID-19 experience in New Zealand's university enterprise provoked multiple short and long-term challenges both at institutional as well as individual levels.

2.4.2 COVID-19: University student experience

While the overall response by New Zealand's university sector was coherent and coordinated, at an individual level, many tertiary education students experienced multiple difficulties and obstacles. For instance, a survey of 147 students by Cameron et al. (2022) conducted in New Zealand as part of a 3000-participant study across 62 countries worldwide, highlighted differences between students in New Zealand and those overseas.

The study noted that students who reported more robust financial resources showed higher resilience and satisfaction with online learning. In contrast, more vulnerable students such as Māori faced additional challenges. This combination created anxiety and exacerbated workload pressures and learning challenges (Cameron et al., 2022). The New Zealand data also showed higher levels of negative emotions than elsewhere, with 66.1% students expressing frustration and 64.5% of those surveyed being more anxious. As with studies in other countries, the students surveyed underlined the role of friends and family in providing essential support (Cameron et al., 2022). Survey results also indicated the highest levels of satisfaction with lecturers and administrative supports, but lowest for financial accounting and the international office.

Studies conducted in New Zealand in 2020 by the NZUSA and Te Mana Ākonga, particularly highlighted issues related to finances and increased stress (James, 2020; Akuhata-Huntington, 2020). Students also underlined mental health challenges and anxieties due to prolonged social

isolation. In addition, students reported difficulties in understanding "confusing" and "incomprehensible" university communications. 25% of Māori students interviewed through the Te Mana Ākonga survey highlighted difficulties accessing strong, dependable internet connections (Akuhata-Huntington, 2020).

Despite their central role in New Zealand's university system, there is limited research on the COVID-19 experience of the international students who persevered through the two years of border closures. One survey of 50 international students by Hannigan and Saini (2020) revealed four main categories of concern; these included mental and physical well-being, academic disruption, financial stability, and concern about or from family.

On mental health and physical well-being, the international students noted diverse sources of stress. These ranged from being unable to meet assignment deadlines to financial pressures and the sense of being "trapped" in New Zealand (Hannigan & Saini, 2020). In this limited study, participants reported losing their jobs during lockdowns, compounding existing academic stress. Financial pressures represented significant sources of concern, with adverse impacts on student study capacity (Hannigan & Saini, 2020). Consistent with their findings, Cameron et al. (2022) also noted that international students were significantly less satisfied with student counselling services than their domestic peers.

2.5 Advancing risk communication in tertiary education: addressing knowledge gaps

COVID-19's effects on higher education have underlined an urgency to strengthen education sector resilience. Despite the central and recognised role of risk communication in both the public health emergency management and DRM practice domains, this crucial element has not been explicitly investigated in relation to resilience in higher education institutions. This includes its scope for mutually advancing institution-level and individual student resilience during times of emergencies and duress.

In addition, while international research, reinforced by New Zealand-based studies from Akuhata-Huntington (2020) and Cameron et al. (2020), has highlighted the many challenges vulnerable tertiary education student groups faced, there is limited research on the experience of international students. This is despite their critical contribution to the financial sustainability of their many destination universities.

Therefore, in the context of New Zealand's prolonged geographic isolation during COVID-19, this study sought to address a double-sided knowledge gap. Empirically, it sought to expand understanding of the risk communication challenges faced by Auckland-based international

students in 2021 during the COVID-19 pandemic. Conceptually, it explored the role played by risk communication in enabling institutional and individual resilience during the COVID-19 pandemic.

2.6 Summary

This chapter has reviewed a wide range of literature on risk communication, resilience in higher education and the New Zealand tertiary education sector's COVID-19 experience. It has also described a two-sided knowledge gap related to international students' experience of risk communication during COVID-19 and the role of risk communication in advancing institutional and individual resilience. The literature review in this chapter is connected to Chapter five, the discussion.

Chapter 3 Methodology

3.1 Introduction

Risk communication involves numerous fields and disciplines. It represents a central element of public health emergency management, including during pandemic events (Glik, 2007). With its explicit emphasis on exchanging information and engagement across multiple groups, risk communication is also highly relevant to the COVID-19 experience of vulnerable groups, including international students in Auckland.

This chapter presents the research rationale for a qualitative descriptive (QD) study and the paradigm used in this research. It also presents the research design as well as the ethics approval process.

3.2 The rationale for a qualitative descriptive approach

The researcher used a qualitative descriptive (QD) approach for this study. This approach allows a researcher to identify motivations, theories, and concepts related to human behaviour, aiming to generate hypotheses and formulate theories (Neergaard et al., 2009). It is also viewed as the least theoretical approach of all qualitative research (Lambert & Lambert, 2012) and aligns well with the context of the COVID-19 pandemic. This is because a (QD) approach provides factual responses to questions about people's feelings about a singular event (Colorafi & Evans, 2016). Applying a (QD) approach also provides the research with straightforward descriptions of experiences and perceptions (Sandelowski, 2010).

QD studies are also valuable for helping to understand a person or group of individuals (Lambert & Lambert., 2012). In addition, they are beneficial in providing insights into groups such as tertiary international students (Cresswell, 2014). In this context, Sandelowski (2000) underlines the beneficial character of the research when the researcher and his/her interviewees share a similar experience.

In this study, the researcher was an international tertiary student who was studying in Auckland during the COVID-19 pandemic in 2021. This experience provided him with lived insights into student challenges during the pandemic and familiarity with the issues faced by international students. This insight and experience enabled the researcher to fully engage with the participants, improving the depth and quality of the data collected.

3.3 Research paradigm

Creswell (2014) described a paradigm as a basic theme of beliefs that guides action. This study's research paradigm was underpinned by interpretivism, allowing the researcher to understand the cultural and historical perspectives of the participants and their different meanings (Grant & Giddings, 2002). In this study, the choice of the interpretive paradigm enabled the researcher to investigate the effects of risk communication experienced by international students during Alert Levels 4 and 3 during COVID-19 that affected their everyday life (Gelo et al., 2008). The application of an interpretive worldview ensured that the specific challenges faced by international students became known and their different experiences and perceptions represented.

It also enabled the researcher to formulate his interpretations of the participants' responses. To explore these different interviewees' perceptions and experiences required the researcher to embrace multiple realities as his ontological assumption (Flick, 2004).

3.4 Research design

3.4.1 Overview

This research was conducted in Auckland and applied a qualitative descriptive approach to examine the participants' responses. It took place in 2022, after the acute first phase of the COVID-19 pandemic and during the implementation of the COVID-19 Protection Framework (New Zealand Government, 2022a). This allowed the researcher to conduct in-person interviews on-campus during September 2022.

3.4.2 Sampling

Purposive sampling is a a method used to select study's participants (Etikan et al., 2016). This approach enables a researcher to identify individuals who can provide helpful and logical information (Etikan et al., 2016). This study specifically sought participants to be international students aged between 20-55 years. The inclusion criteria also required students to be currently enrolled in September 2022, as well as enrolled during Semester 2, 2021. The rationale that informed the selection criteria was to ensure that interviewees shared equivalent experiences. The specification of the Semester 2, 2021 time-period was due to its "lockdown" significance from 17 August to 1 December 2021 during Alert Levels 4 and 3 in Auckland (New Zealand Government, 2022a).

As the researcher was an international student at an Auckland-based tertiary institution, he was able to approach the tertiary institution's Scholarship team and the Students Association to distribute the study advertisement on their respective Facebook pages to potentially eligible student participants.

3.4.3 Recruitment procedure

First, the researcher contacted the tertiary institution's Manaaki New Zealand Scholarships Team and the Students' Association to introduce the study and explain its purpose. In response, both the Manaaki Scholarships (New Zealand Government, 2022d) and Students' Association teams posted the announcement on their respective Facebook pages.

Second, the researcher provided the participant sheet (PIS) in person to each participant (attached in Appendix A). These potential participants could contact the researcher in person on-campus or by phone calls and emails and had two weeks for consideration. The PIS provided specific information related to the research project. The researcher then gave them the consent form, including essential details about data storage and protection and the use and disposal of participant numbers and data (see the form in Appendix B). Before starting the interviews, the participants were requested to sign the written consent form.

For this study, the researcher recruited six international student participants, three females and three males (see Table 2).

Table 2 Gender and Age Categories

Age category	Male	Female	Total
< 35 years old	2	3	5
≥ 35 years old	1	0	1
Total	**3**	**3**	**6**

Note. Gender and age category of participant (n=6). Produced by author, 2022

3.4.4 Data gathering tools and data collection

The researcher used semi-structured interviews with closed and open-ended questions. These approaches are often used in both health research and qualitative studies (Dearnley, 2005). The semi-structured interview method also enables researchers to identify other related questions for deeper insights (Cohen & Crabtree, 2006). Two face-to-face pilot interviews took place on campus with tertiary student volunteers before the main study. These pilot interviews allowed the researcher to understand whether the questions were appropriate and correctly framed (see Appendix D).

The actual face-to-face interviews took place in September 2022. The interviews were conducted in English and recorded through audio and written notes.

The interviews lasted approximately 15–30 minutes. They took place on-campus, in meeting rooms, to ensure that the participants felt at ease, as guided by the PIS (in Appendix A). Each participant responded to a question set of approximately six themes and fourteen extra sub-questions. During the interviews, the researcher interacted with the interviewees in a relaxed and informal way. This enabled him to adjust his questions appropriately (Creswell, 2014).

3.4.5 Data analysis

Consistent with an interpretive paradigm, the researcher used a reflexive thematic analysis in this research and an inductive approach for coding, pertinent for data analysis in QD research. The data analysis comprised four steps. First, the researcher familiarised himself with the data before the initial coding step. He then classified the initial codes into themes, before naming the categories and main themes (Braun & Clarke, 2012). Familiar with the data analysis and transcription, the researcher re-read, coded and transcribed into written form all information related to COVID-19 as themes and sub-themes.

The researcher used the computer-assisted qualitative data analysis software, NVivo 20, to identify initial codes and help him in the analysis process. According to Zamawe (2015), NVivo is a software able to handle a large amount of information in different formats, providing an automated digital process that saves significant time while minimising eventual errors.

Moreover, with NVivo, the researcher could organise and interpret minor information identified during the interviews into 'child codes' and group them under 'parent codes' as shown in the researcher's codebook, Appendix F. After that, he manually clustered the initial codes into themes from the NVivo coding process. The researcher and his supervisor carried out this step.

In the final step, the researcher evaluated the main themes and integrated them into a mind map, as seen in Figure 5. Ultimately, the research used manual and NVivo automated coding techniques to create coding and theme-based classification.

3.5 Researcher positionality and reflexivity

The researcher acknowledges the role of his past experience and perspectives in this study. During the COVID-19 pandemic, he was an international student originally from France.

Despite a professional background in occupational health and safety, he did not normally seek help from institutional student services. However, as an international student in Auckland during the COVID-19 pandemic, he observed the difficulties encountered by other students due to social and other difficulties in communicating with the institution's systems. This was especially clear during the lockdown from 17 August – 1 December 2021.

In online conversations with other international students, the researcher became intrigued by the similarities and differences in their support from the tertiary education institution. This prompted his interest in investigating the risk communication experience of international students during semester 2, 2021.

The researcher acknowledges that his positionality may have influenced his approach to this study. However, he also believes that his experience was essential both to establishing a trusting relationship with the participants and "making meaning" of the results. The researcher's focus on this topic also does not diminish his acknowledgement of the tremendous efforts and assistance put in place by the institution throughout the pandemic, including during Alert Levels 4 and 3, 2021.

3.6 Ensuring academic rigor

As a member of an academic community, the researcher is responsible for ensuring rigour in qualitative research. In recent years, multiple publications have synthesised several criteria and recommendations for rigorous research (Johnson et al., 2020). For instance, Lincoln and Guba (1986) underlined the importance of credibility, transferability, dependability, and confirmability for creating trust between the researcher and the participants in qualitative research.

Merriam (1998) also highlighted the following criteria as essential for ensuring credible quality research: peer debriefing, external audits, triangulation, member scrutiny, and the explanation of the research.

In this research, the peer review process was reflected through ongoing discussions between the researcher and his supervisor to develop sub-themes and themes for the study (Lincoln & Guba, 1986). The study's credibility was also strengthened due to the use of semi-structured questions during the interview process and the scope for the participants to answer the questions (Shenton, 2004). This approach enabled access to valuable information that benefited the study and allowed the researcher to build trust and avoid misinformation (Hadi & Closs, 2016).

To be credible, a study should be able to transfer the data to other contexts, frequently referred to as its "transferability" (Finfgeld-Connett, 2010; Lincoln & Guba, 1986). Research findings also are consistent and repeatable (Othman et al., 2015).

In this context, the researcher used data from a sample of international students in Auckland, New Zealand. The process included sampling, the application of inclusion criteria and interview procedures, all presented in this dissertation (Finfgeld-Connett, 2010). The researcher also kept all research-related items, including recordings, field notes, and translated drafts to ensure consistency throughout the study.

A study's confirmability is crucial for the researcher to build trust (Krefting, 1991). In this dissertation, all processes related to data collection, analysis, interpretation, and unique, exciting information were documented and transcribed throughout the entire research process (Carcary, 2009; Lincoln & Guba, 1986). These measures ensure that the study results could be confirmed by other researchers.

3.7 Ethics application and amendments

3.7.1 Overview of the process

A key aspect of the study's methodology was complying with the research ethics requirement. Research ethics aim at protecting the right of the individuals participating in a study and ensure that ethical considerations are observed during a research project. They also involve protecting confidential information, managing risks and ensuring the subject's consent (Berg, 2004).

In this study, the researcher observed research ethics throughout the study process. First, the study was entirely voluntary, with participants having the right to withdraw until the data analysis step.

The researcher also distributed an announcement with the assistance of the Students' Association and the Manaaki New Zealand Scholarships Offices on their respective Facebook pages to introduce the research topic. Once the researcher was contacted privately by the potential participants, he provided them with a PIS. The PIS was written in English and provided

information about the study, including the objectives, interview arrangements and inclusion and exclusion criteria. It explained how the participants' privacy would be protected and that numbers, not their names, would be used to report their observations.

The researcher then sent potential participants consent forms. Both before and after participants signed the consent form, the researcher invited them to ask him any questions about the study and their involvement. The researcher also retained the consent forms after they were signed.

The research process also protected the participants' rights during the actual interviews. This involved ensuring that participants understood they could withdraw, not respond or pause during the interviews while they were thinking through their responses. Although the PIS explained that participants could request support from the tertiary institution's counselling services, such assistance was not sought during any of the interviews.

3.7.2 Compliance with ethics requirements and Treaty of Waitangi expectations

The tertiary institution’s Ethics Committee approved the research on 22 August 2022 (Reference number 22/222), as attached in Appendix F. In addition, the three principles of partnership, participation, and protection of the Treaty of Waitangi (Te Tiriti o Waitangi) were also respected and applied in this study (New Zealand Ministry of Health, 2014).

The researcher consulted with the Students Association and the Manaaki New Zealand Scholarships Offices to respect the Treaty of Waitangi’s principle of partnership. In this context, the research sought to address an important knowledge gap on risk communication and resilience among international students in New Zealand, with the potential to improve risk communication and support. The research was also designed to ensure all interviewees were treated fairly and provided with equal access to information about the study and its focus.

To respect the Treaty of Waitangi’s principle of participation, the researcher ensured that participants understood they could withdraw at any time during the interview process. This also included ensuring they understood they could choose not to respond, or to pause or discontinue the interview at any time.

Concerning protecting the participants' privacy, participants could ask questions and raise concerns before providing written consent. The researcher also used numbers instead of names to protect the participants' identities both before and after participants signed the written consen form, the researcher informed the interviewees about the measures he would take to protect their privacy. In addition, all the data and documents related to the study, including interview data, were stored

confidentially by the researcher and his supervisor. The data storage and disposal plan also complied with the tertiary education institution's protocols.

3.8 Research output

Academic staff members of the students' tertiary education institution reviewed the research proposal in Auckland, New Zealand.

3.9 Chapter summary

This chapter focused on the QD methodology used by the researcher for this study, that was informed by an interpretive paradigm. It also described the different steps taken in collecting and analysing the data. These incuded the sampling approach, recruitment procedures, and analytic methods. The chapter also described the researcher's positionality in this study and the measures taken to respect the ethics requirements.

Chapter 4 Findings

4.1 Introduction

This study examined the risk communication experience of international higher education students Alert Levels 4 and 3 (17 August-1 December 2021) in Auckland, New Zealand. Despite the challenges associated with recruiting international students due to New Zealand's border restrictions in 2021, the researcher could still conduct interviews with the affected students in 2022 and undertake his analysis.

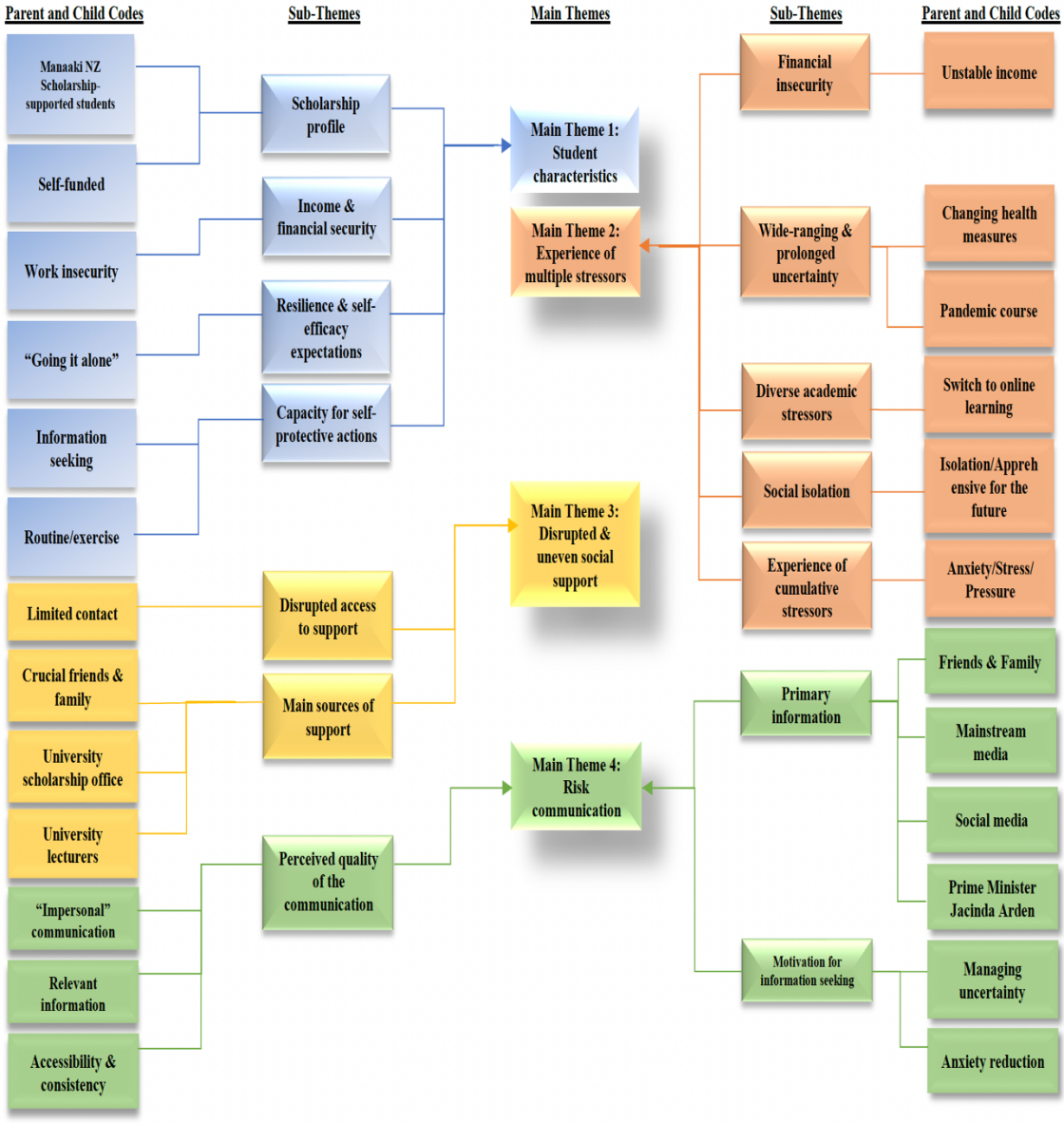
This chapter explains step by step the process which enabled the researcher to identify the themes and sub-themes of this qualitative study and the insights from the thematic analysis to the research questions.

4.2 Identification of main themes and sub-themes

The NVivo conding process highlitghted a wide range of responses on the COVID-19 communication-related challenges the interviewees faced. The researcher grouped the responses into fourteen sub-themes, and clustered into four main themes: student characteristics, the experience of multiple stressors, disrupted and uneven social support, and risk communication experience, as shown in the researcher's codebook in Appendix F. After that, both the researcher and his supervisor organised and clustered these themes into a mind map, as illustrated in Figure 5 below.

Figure 5 presents the main themes identified through this process: student characteristics (Theme 1), the experience of multiple stressors (Theme 2), disrupted and uneven social support (Theme 3), and risk communication experience (Theme 4). The nested sub-themes are shown on the figure's left and right sides. The sub-themes for student characteristics are presented in the blue boxes on the left. The experience of multiple stressors sub-theme is presented in the orange boxes on the right, while the disrupted and uneven social support sub-theme is presented in the yellow boxes on the left. The risk communication experience sub-theme is shown through the green boxes on both the left and right sides.

Figure 5 Mind Map of identified themes and sub-themes related to the risk communication experience of international students during Alert Levels 4 & 3, August-December 2021



Note. Mind map of central themes and sub-themes related to the impact and experience of risk communication for international students in an Auckland-based tertiary education institution during Alert Levels 4 and 3, 2021, New Zealand. Produced by author, 2022.

A summary of the central themes and sub-themes are summarised in Table 3 below.

Table 3 Thematic Analysis Interview Themes

Main theme 1: Student characteristics Participants' characteristics and their resilience and capacity for protective actions while isolated during Alert levels 4 and 3, 2021, in Auckland.	
Sub-themes	*Descriptions*
Manaaki New Zealand Scholarship profile	Participants' scholarship profiles that could affect their experience of social isolation
Income and financial security	Difference and accessibility of participant's source of revenue while isolated at home
Resilience and self-efficacy expectations	Participants' resilience beliefs while isolated at home
Capacity for self-protective actions	How students dealt with the social isolation experience during Alert levels 4 & 3, 2021, in Auckland
Main theme 2: Experience of multiple stressors Effects of multiple stressors created by Alert levels 4 and 3, 2021, in Auckland on the participants' mental health.	
Financial insecurity	How students' source and accessibility of revenue affected them while isolated at home
Wide-ranging and prolonged uncertainty	The challenges created by prolonged uncertainty affected the participants while isolated at home
Diverse academic stressors	Academic changes during Alert levels 4 & 3, 2021, in Auckland that could affect participants
Social isolation	Social isolation' effects on participants during Alert levels 4 & 3, 2021, in Auckland
Experience of cumulative stressors	Adverse effects of cumulative stressors on participants' mental health while isolated at home
Main theme 3: Disrupted and uneven social support Social supports participants' preferences and perceptions during Alert levels 4 and 3, 2021, in Auckland.	
Disrupted access to support	The issues international students faced in accessing social support during Alert levels 4 & 3, 2021, in Auckland.

Main sources of support	Participant's preferences when seeking social support during Alert levels 4 & 3, 2021, in Auckland.
<u>Main theme 4: Risk communication experience</u> Participants' experience of risk communication during Alert levels 4 and 3, 2021, in Auckland.	
Primary information sources	Participants' preferences when seeking information related to COVID-19
Motivation for information seeking	Reasons participants sought information during a period of uncertainty as the COVID-19 pandemic
Perceived quality of the communication process	Participants' perception of the tertiary education institution's risk communication in Auckland during Alert levels 4 & 3, 2021, in Auckland.

Note. Main themes and sub-themes for thematic analysis of participant interviews. Produced by author, 2022.

4.3 Main Theme 1: Student characteristics

In this study, the participants' characteristics represented a key theme in relation to their experience of Alert Levels 4 and 3 during August-November 2021. Manaaki New Zealand Scholarships status (from here on referred to as "scholarship status" or "scholarship profile") was a recurrent sub-theme that played a key role beyond providing financial stability to include access to social support as well as more personalised forms of risk communication. Student beliefs about their own resilience and self-efficacy expectations to manage prolonged periods of staying at home also emerged as a clear sub-theme.

4.3.1 Scholarship status

Three of the six interviewed participants were scholarship-supported students, while the self-funded students depended on income from part-time employment. All the self-funded students mentioned worrying about work insecurity, as illustrated by Participant 4 and Participant 5 below.

Most of the time you lose your job during covid and then you need to find a new job so you're not getting any money until you have a new job and it's hard to get a new job with all the criteria they have, like you need two vaccines, you must wear a mask 24/7." … 'a lot of business have closed, and a lot of business just pay the minimum they can because they don't have any money because of covid. (Participant 4: Self-funded)

I mean, financially, it was tough because I work in the hospitality market, I could not work anymore, and so I had a restricted income. (Participant 5: Self-funded)

4.3.2 Resilience, self-efficacy expectations and capacity for self-protective actions

The study's findings also highlighted a close link between the participants' beliefs about their own resilience and self-efficacy expectations and their self-protective capabilities to act while isolating. Resilience and self-efficacy have been recognised as protective factors for mental health in the face of COVID-19-related stress and challenges (Kowalski et al., 2022). In this research, Participant 5 and Participant 6 were explicit about "going it alone". Their responses signalled a clear awareness of their self-efficacy and sense of responsibility for overcoming the difficulties related to "lock-down" measures and online learning.

You try your best and you push through, and things are challenging but you must do it on your own. (Participant 5: Self-funded)

Personally, you just don't really have the choice, you just do it on your own.
(Participant 6: Self-funded)

Such resilience and self-efficacy expectations were also linked to self-protective actions. These were indicated by the measures some students initiated. These included, establishing a routine, and structuring physical exercise into their weeks during Alert Levels 4 and 3.

I started to do more exercise, once every two days and get some fresh air and trying to work.
(Participant 4: Self-funded)

I signed the gym, tried to keep social connections even though sometimes we can't see each other but it's like having video calls with my friends. (Participant 5: Self-funded)

4.4 Main Theme 2: Experience of multiple stressors

This theme reflected the participants' experience of multiple stressors during "lock-down" conditions in late 2021. It comprised a wide range of concerns, including financial insecurity, multi-dimensional uncertainty, academic stressors, and social isolation. The interview data indicated compounding and cumulative effects of these multiple pressures.

4.4.1 Financial insecurity

This theme highlighted a recurrent observation by the participants concerning their income. While self-funded students expressed concerns about their income security (Participant 4 and Participant 6), at least one scholarship-supported student (Participant 2) was concerned about being unable to financially help his family overseas.

It was hard money wise, not much help from the Government or the school.
(Participant 4: Self-funded)

It was complicated as I worked in hospitality to cope with all the expenses, I had with my partner, to pay the school for instance. (Participant 6: Self-funded)

I couldn't send money back home because it was already tough financially for me.
(Participant 2: Scholarship-supported)

4.4.2 Wide-ranging and prolonged uncertainty

The COVID-19 pandemic was characterised by multiple sources of uncertainty, including, for some people, an inadequate understanding of public health measures. There was uncertainty about the evolution of the pandemic. This was further compounded by sudden policy changes in response to dynamic conditions that prompted adjustments in public health measures. This sub-theme was expressed through participant concerns about the volatility of the pandemic, as well as the lack of stability in their day-to-day lives, including their studies.

Yes, the fact that during this time everything was unstable, sometimes numbers of cases were going down and suddenly was going up. (Participant 1: Scholarship-supported)

It was just you know a lot of uncertainties about what was happening with (the institution), what was happening with just general life. we weren't sure what was happening, we weren't sure when it was going to end up. (Participant 5: Self-funded)

It was complex. We didn't know how long we would be in this situation.
(Participant 6: Self-funded)

Participants also reported being impacted by the constant change of the public health measures and the lack of certainty on timeframes given by the authorities during risk communication announcements in Alert Levels 4 and 3, as illustrated in comments by Participant 2 and Participant 4.

The different alert levels and how the rules were constantly changing.
(Participant 2: Scholarship-supported)

We didn't know how long it was coz Jacinda would every week tell you that you will be staying at home for another week and then you would just wait a week and see what would happen. She did not give a time. (Participant 4: Self-funded)

4.4.3 Diverse academic stressors and social isolation

Tertiary education students globally were reported as experiencing higher levels of mental ill-health during the COVID-19 pandemic (Ochnik et al., 2021; Liyanage et al., 2021). In this study, Participant 2, and Participant 5 expressed concern about their mental health during Alert Levels 4 and 3, mentioning difficulties in adjusting to online learning as a contributing factor.

Online classes were an issue as well for my learning. (Participant 2: Scholarship-supported)

I was just constantly finding someone that could offer me assistance like if it wasn't my classmates, that would be my teachers, my lecturers, or my scholarship advisors.
(Participant 3: Scholarship-supported)

There was challenges around you doing assignments, classes online which I find it harder to learn.
(Participant 5: Self-funded)

Moreover, Alert Levels 4 and 3 requirements meant that participants needed to stay at home, having little to no social contact. The participants were generally impacted by the lack of connection with their friends, family. Also, social isolation negatively affected their mental health, as noted by Participant 6 and Participant 1.

I was isolated and couldn't meet with my friends, no activities.
(Participant 1: Scholarship-supported)

Mentally tough because you're alone you're far from your family, your friends, you can't see them in person. (Participant 6: Self-funded)

4.4.4 Experience of cumulative stressors

The compounding experience of cumulative stressors such as social isolation, academic pressures, uncertainty, and financial insecurity had negative implications for the participants' well-being. In this study, most participants mentioned feeling anxious, under pressure and stressed due to the combined effect of multiple stressors such as physical isolation, financial pressures, and uncertainty about the pandemic's course. This experience applied to both self-funded and scholarship students, as illustrated by observations from the three participants below.

I couldn't send money back home because it was already tough financially for me. I was feeling really anxious. I was isolated and couldn't meet with my friends, no activities. Online classes were an issue as well for my learning. (Participant 2: Scholarship-supported)

Money, mental health, being confined in a small space was hard. Even physical health, there is not much you can do, and I remember being very sick because of the vaccine.
(Participant 4: Self-funded)

Everything was online so I felt isolated because you couldn't come onto campus. It was tough mentally, I was quite tired and stressed, it was just you know a lot of uncertainties about what was happening with uni, what was happening with just general life. (Participant 5: Self-funded)

4.5 Main Theme 3: Disrupted and uneven social support

A repeated observation across all participants was their experience of disrupted social support due to the physical isolation requirements of Alert Levels 4 and 3. This theme also reflects the uneven character of the institutional support provided, highlighting the role played by the institution's teaching staff as well as by the Scholarships Office.

4.5.1 Disrupted access to social support

Interview data indicated that most participants had difficulties accessing social support due, among other things, to the social isolation imposed during the study period. This included disrupted access to friends and family who continued to play major support during the "lockdown", as described by Participant 2 and Participant 6.

I was isolated and couldn't meet with my friends, no activities. (Participant 2)

Mentally tough because you're alone you're far from your family, your friends, you can't see them in person. (Participant 6)

Despite interrupted physical access to friends and family interviews, findings highlighted the crucial role that their friends and family played as the students' primary support preferences. This extended to support during online classes described by Participant 1. However, in the case of Participant 4, she commented that her mother was the only person who could help her.

Luckily, I had my phone and Internet. I called my family for support. During this time, we had online studies, it was great, we were pushing each other up. (Participant 1: Scholarship-supported)

First it was definitely just friends because it was a new situation I didn't know where to go. (Participant 3: Scholarship-supported)

My mum. She was the only one who could help. (Participant 4: Self-funded)

I tried to keep social connections even though sometimes we can't see each other but it's like having video calls with mate. (Participant 5: Self-funded)

However, this theme also highlighted the difference between the experience of scholarship-supported students and self-funded participants when seeking institutional support. Only the scholarship-supported participants reported seeking help from the International Office and the institution's counselling centre, as indicated by Participant 2 and Participant 3.

I've reached the International Office when I needed help.
(Participant 2: Scholarship-supported)

I've reached out to some people at school that then advise me where I could go talk to people in the organisation, at the (...) counselling centre. (Participant 3: Scholarship-supported)

Both scholarship-supported students and self-funded students identified their lecturers as a primary source of support, as illustrated through comments by Participant 3 and Participant 5.

I was just constantly finding someone that could offer me assistance like if it wasn't my classmates that would be my teachers, my lecturers. (Participant 3: Scholarship-supported)

If I was struggling at the (institution), I contacted my lecturers as well. (Participant 5: Self-funded)

4.6 Main Theme 4: Risk communication experience

The fourth theme highlighted in this study was the students' risk communication experience. It reflected the two-way character of risk communication that involved the exchange of COVID-19-related information between the institution and its students It also indicates the students' access to information from other sources, including the New Zealand government. This theme comprised three sub-themes: there included the students' motivation for information, the sources they used, and their perceptions of the quality of the communication process.

4.6.1 Motivation for information seeking

This sub-theme highlighted a variation in the participants' motivations for information seeking. It particularly underlined the wide-ranging uncertainty they were experiencing which has also been noted with other rapidly evolving public health emergencies (Sopory et al., 2019). Because COVID-19 was novel and emergent, and associated with ongoing changes in public health measures, participants mentioned their need to stay regularly updated.

I was checking every day in hope to be free from the lockdown or in search of any good news relating to this situation. I was anxious in other words. (Participant 1: Scholarship-supported)

I was checking regularly to stay updated regarding my studies and the new functioning of the school. (Participant 2: Scholarship-supported)

I was checking probably weekly. To understand what was going on and figuring out what we should be doing. (Participant 5: Self-funded)

4.6.2 Main information sources used

This sub-theme highlighted students' main information sources during Alert Levels 4 and 3. It underlines the role social media played during this period. This was due to factors such as feeling isolated at home and being removed from social life. For instance, five of the six participants reported using social media platforms to stay informed, with four mentioning following Jacinda Ardern's public health announcement updates on Facebook Live.

I was watching the daily update held by the Government on Facebook.
(Participant 1: Scholarship-supported)

The Minister of Foreign Affairs and Trade through the alarm when there was any update on the workforce agency. And the (institution's) app, they were sending update on the different alert levels. Also from the Scholarship Office, we have a Facebook page with updates.
(Participant 1: Scholarship-supported)

I was using mainly Facebook and Instagram, the information was just available.
(Participant 3: Scholarship-supported)

On Facebook. The Prime Minister talking on Facebook live. On government platform for the number of cases per days and I don't have a TV. (Participant 4: Self-funded)

I was reading the news every day or on Facebook with Jacinda she was a daily live to update everyone about the situation. (Participant 6: Self-funded)

Interview data also revealed that most participants were seeking and sharing information related to COVID-19 with their friends. Participant 3 also noted using the institution's email messages to seek information related to COVID-19.

I was communicating everyday with my friends about it and my manager.
(Participant 6: Self-funded)

That was where correspondence about covid was coming through as well. It was supplemented information that they would send randomly every day or so, during the lockdown.
(Participant 3: Scholarship-supported)

4.6.3 Perceived quality of the communication process

An unexpected sub-theme that emerged from the interview highlighted the importance of the "quality characteristics of the tertiary education institution's risk communication. It foregrounded a striking need expressed by self-funded students for more personal, "human" communication and engagement. This was clearly illustrated in the statements by Participant 4, Participant 5, and Participant 6, all self-funded.

I think they could just be more personal with their students and maybe calling about what kind of help was available at that time. (Participant 4: Self-funded)

I think it was complex and that it wasn't communicated to in a straightforward way.

(Participant 5: Self-funded)
Having maybe someone calling me to ask if I needed any help or just to see if I was okay. Calling me to feel like I was special, relating to myself. (Participant 6: Self-funded)

Other comments that were shared across self-funded and scholarship-supported students referred to the tertiary education institution's method of communication, the format used, and the perceived relevance of the information provided. For instance, Participant 3 found the email format "too formal". Participant 2, also remarked on the limited modes of communication, suggesting the value of a podcast. Participant 3 suggested the limited relevance of the information provided, while Participant 5 highlighted the role played by teaching staff in communicating new processes to students.

I don't think there is something I can say that goes beyond what (the institution) have done. The only downside is there is only one mode of communication. They could probably maybe communicate through podcast or something similar. (Participant 1: Scholarship-supported)

The problem is the layout, it comes in like a letter form and I don't want to read it yet because it was too formal. You will most likely miss out some vital information if you want to skip through. (Participant 3: Scholarship-supported)

I checked my e-mail but just apart from saying that they were closed or that they had cases in the school, I didn't get anything else that I can remember.
(Participant 4: Self-funded)

I didn't know until I spoke to my lecturers, I could get extensions for thing if I'd known that from the start it would have made things easier. They could have advertised or create a COVID-19 portal where I could have gone to see all the things that are available to students during this time would have been really helpful.
(Participant 5: Self-funded)

Scholarship-supported students consistently expressed satisfaction with the tertiary education's risk communication approach. They acknowledged the accessibility and consistency of the communication from the institution's Scholarships office, as described by Participant 1 and Participant 2.

I don't think there is something I can say that goes beyond what (the institution) have done. (Participant 1)

For me it was good. The scholarship office regularly updated us regarding to covid-19. (Participant 2)

4.7 Findings in relation to research questions

This study aimed to explore the COVID-19 risk communication experience of international tertiary education students during Alert Levels 4 and 3 from August-December 2021, in Auckland.

4.7.1 Multiple and cumulative stressors

Interview findings indicated that international students faced a wide range of interlinked challenges. They included financial pressures and difficulties related to online learning. These challenges were compounded by the sense of prolonged physical and social isolation from their friends and families. A cross-cutting finding was the effect of wide-ranging uncertainty on all aspects of the students' daily lives. This was expressed by uncertainties about the direction of the pandemic, ongoing adjustments in public health measures and their timelines, changing requirements in relation to the online learning environment, and prospects for employment and income generation.

Not only were these pressures experienced singly; they were also experienced cumulatively, with participants expressing concerns for their mental health due to feeling anxious and stressed.

4.7.2 Students' responses to overcome disrupted social support

The second question explored the measures international students adopted to address these challenges. A repeated observation from all the participants focused on the impact of disruptions on their usual sources of social support. Interview results also indicate that self-funded international students may have navigated these challenges differently from scholarship-supported students.

While all students interviewed highlighted that they turned to friends and family as their first lines of support, scholarship-supported students consistently underlined the assistance provided by the Scholarships Office. They also mentioned seeking support from the tertiary education institution's counselling services and International Office. However, self-funded students explicitly underscored expectations of their own self-efficacy during the lockdown period. This was reflected in statements like "pushing through" and "doing it on your own", as well as protective actions like structuring their weeks to include physical exercise and routines.

A second unexpected finding was the observation that lecturers played important support roles for both scholarship and self-funded students that extended beyond their teaching responsibilities. This important “institutional navigation” function was also associated with the Scholarships Office, which played a central and appreciated role for the scholarship-supported students.

4.7.3 The COVID-19 risk communication experience: barriers and enablers

On the question related to the students’ experience of COVID-19 risk communication during Alert Levels 4 and 3 in 2021, findings indicate both barriers and enablers to this process. All students interviewed highlighted using social media platforms to communicate COVID-19-related information with their friends and families. They seldom referred to the tertiary education institution’s COVID-19 messaging, with only one student reporting checking the institution’s emails. Some referred to the institutional messaging as “too formal”, “like a letter”, or irrelevant. None referred to the institution’s dedicated student COVID-19 support webpage, and some suggested that the institution should adopt more diverse student communication methods and approaches. This mismatch in communication and expectations between the students and the institution was an important barrier to enabling the risk communication process.

A second barrier, noted explicitly by the self-funded international students, was the impersonal quality of the institution's COVID-19 risk communication and its lack of social connectedness to them. This was illustrated by Participant 4, who stated, "I think they could be just more personal with their students…" and as reflected by Participant 6, who said, "having someone calling me to ask if I needed any help…".

The importance of this human quality of the risk communication experience was reflected in the positive perceptions of the scholarship-supported students. These contrasting views between scholarship-supported students and self-funded students on their respective risk communication experiences, suggest the critical enabling role played by institutional mechanisms such as the Scholarships Office. It highlights the crucial "linking social capital" function this team provided between the scholarship-supported students and the broader institutional messaging processes and systems.

One further cross-cutting observation was the students’ reliance on Prime Minister Jacinda Ardern’s public announcement on Facebook Live. Four of the six participants referred to these as a key source of COVID-19 information. Their responses also underline the role that social media played in the students’ risk communication experience. This was reflected primarily in conversations and contacts with their friends and families. While the students interviewed did not

refer to more formal institutional COVID-19 communication sources, they drew heavily on social media platforms for updating their information.

4.8 Chapter Summary

This chapter has presented the study's findings, which identified four main themes focused on student characteristics, multiple stressors, disrupted and uneven social support and risk communication. It has described the measures students undertook to overcome disruptions to their usual social support systems and identified barriers and enabling factors in relation to their risk communication experience.

Chapter 5 Discussion and Conclusion

5.1 Introduction

This chapter discusses the research findings on how international students at an Auckland tertiary institution experienced COVID-19 risk communication during Alert Levels 4 and 3 (17 August – 1 December 2021).

It begins by highlighting the multiple, interlinked challenges faced by the international students during Semester 2. The chapter continues by discussing the need for greater engagement in risk communication within university settings. The chapter then discusses the implications of a more encompassing "resilience-oriented" approach for tertiary education institutions. It also considers the complexities in framing student resilience, especially in prolonged emergencies characterised by high levels of uncertainty. The chapter concludes with recommendations for strengthening risk communication in higher education institutions and suggesting directions for future research.

5.2 COVID-19 and international students: interlinked challenges, compounded by uncertainty

The study's findings underlined the wide-range of simultaneous challenges that international students faced during the study period, including financial insecurity, academic stressors, prolonged social isolation, and multi-dimensional uncertainty. These results resonate with findings from Hannigan and Saini's study of international students in New Zealand that also underlined the impact of financial pressures. These were due to job losses during lockdowns, that compounded international students' academic stress, adversely affecting their study capacities (Hannigan & Saini, 2020).

However, diverging from related studies that identified material and mental health challenges for tertiary students, the current study's results underline the cross-cutting *presence of uncertainty* in all aspects of the international students' experience. Some students reported feeling anxious due to the constant change in the public health measures as well as the lack of uncertainty in time-frames on restrictions by the authorities. They also highlighted the sense of overall uncertainty about the pandemic – its direction and duration. This need to manage uncertainty in prolonged public health emergencies is well recognised in the health literature (Sopory et al., 2019). However, as with other concepts from the disaster risk and resilience fields, the management of uncertainty and its communication have yet to be more strategically incorporated into tertiary education processes and systems (Arnhold & Bassett, 2021; 60).

Although numerous authors have already noted the wide range of stressors faced by tertiary education students during COVID-19 (Sankhi & Marasine, 2020; Rettie & Daniels, 2021), this study's results highlight their cumulative and compounding effects. The findings also signal the students' needs for "multi-dimensional" problem-solving support, also highlighting the importance of access to institutional "navigators" during the lockdown period (Bittencourt et al., 2021).

5.3 Risk communication: the need for engagement

Study findings underlined three important insights related to risk communication in a prolonged emergency within a higher education setting. First, they reinforced the message of *community engagement* that comprises a key component of WHO's risk communication and community engagement strategy (WHO, 2017). Second, the results signal a mismatch in *communication expectations* between the students interviewed and the methods used by the tertiary education institution to convey information during COVID-19. Third, the findings underscore current research on the essential role that *linking social capital* plays in risk communication during public health and other emergencies and its relevance to higher education institutions.

5.3.1 The need for engagement in student communication

Interview results underlined the students' need for a more inclusive and compassionate communication process during the 2021 lockdown period. This was signalled by the striking comments by self-funded Participants 4 and 6, on the need for "more personal" communication and engagement. Their observations are also consistent with both WHO's public health thrust to integrate community engagement with its emergency communication strategies (WHO, 2020b). They reinforce the call for more inclusive processes by tertiary institutions towards international students (Bittencourt et al., 2021), as well as the crucial role of "effective communication channels and a coherent communication strategy" as leading attributes for resilient institutions (Bartusevičienė et al., 2021; Dohaney et al., 2020).

5.3.2 Mismatched communication expectations

Interview results for both scholarship-supported and self-funded international students consistently highlighted a mismatch between the institution's COVID-19 risk communication approaches and students' information expectations. The tertiary education institution provided a comprehensive "one-stop" COVID-19 webpage that contained detailed information on student support services and a dedicated link for international students. In addition, during the 17 August - 2 December 2021 period, the institution digitally communicated approximately 70 times with

its student community. This included eight separate messages specifically for international students, including detailed information on the processes for financial, counselling, and other support, first communicated on 7 September 2021.

Despite such communication measures, most of the students interviewed did not draw on these institutional information sources nor even refer to them during the interviews. They reported communicating with friends or using social media for COVID-19 information-seeking. Nearly all used social media platforms, including following Prime Minister Jacinda Ardern's COVID-19 updates and announcements on Facebook Live. Such observations reinforce other studies on the crucial role of social media during COVID-19 (Tsao et al., 2022; Huang et al., 2022). They also raise questions about the need to balance the use of digital platforms for mass student communication with more personalised communication approaches.

Despite the established use of intensive mass email, this study's findings from Auckland suggest that the email mode of communication may not be effective in reaching students, especially in a protracted emergency. The students interviewed commented on the "letter form" that was "too formal" as Participant 3 noted that information was not communicated "in a straightforward way" as the Participant 5 commented. Although scholarship-supported students appreciated the accessibility and consistency of the institution's risk communication from the Scholarships Office, they also noted the lack of diversity in the electronic communication methods used.

5.3.3 The crucial role of linking social capital

In this context, study findings underscore the crucial role of linking social capital that was associated with lecturers and (for scholarship-supported students) the Scholarships Office. These results resonate with existing literature (Hanson-Easey et al., 2018; Eisenman et al., 2007; Yong et al., 2020) that highlight the role of linking social capital in risk communication for vulnerable communities. They also reinforce observations by Bittencourt et al. (2021) on the enabling role that institutional navigators play in supporting international tertiary students, as well as their importance in minimising anxiety and uncertainty in public health emergencies such as COVID-19 (Li et al., 2022).

5.4 Academic continuity or institutional resilience: considering risk communication and community engagement

The results of this exploratory study highlight the differences between academic continuity and institutional resilience during a prolonged public health emergency. Consistent with experience elsewhere, the New Zealand tertiary education sector succeeded in achieving a wide-ranging pivot

to online learning in just five weeks, including at the study institution (Holloway, 2022). This shift aligns with the main thrust of academic continuity approaches, which focus on sustaining operations so that academic activities can continue despite disruptions (Bates, 2013), often with an explicit emphasis on online learning (SchWeber, 2008; Bartusevičienė et al., 2021).

This study's findings also underline the scope for tertiary education institutions to consider a more "resilience-oriented" institutional approach as proposed by Arnhold and Bassett (2021) and Dohaney et al. (2020). They highlight how the provision of the vigorous risk communication and community engagement approach, adopted for Manaaki New Zealand Scholarship-supported international students, enabled their navigation of a period of immense uncertainty.

In contrast, self-funded students with limited access to comparable linking social capital perceived they faced wide-ranging challenges without skilled institutional navigator support. This was during nearly four months of "lockdown" and social isolation, compounded by uncertainties on border restrictions. Such findings highlight the benefits of adopting a more resilience-oriented than academic continuity approach to emergency planning in tertiary education institutions. This requires a closer engagement with crucial stakeholder communities such as international students to strengthen support for these groups – whose enrolment is itself vital for long-term institutional sustainability.

Risk communication and community engagement are already central concepts in the disaster risk management and public health knowledge domains (WHO, 2017). The study findings suggest that they could also be important elements in tertiary education resilience strategies that support both institutional priorities as well as individual students during public health and other emergencies.

5.5 Conceptualising international student resilience in a prolonged uncertainty

Study findings reinforce existing literature on the complexities of understanding tertiary education student resilience (Brewer, 2019). On one hand, published literature identifies international students as a vulnerable subgroup (Ward, 1967; Alexander et al., 1981; Jung et al., 2021). However, this study's interview data also signal high levels of individual agency, resourcefulness, and determination among the students during a period of prolonged social isolation and uncertainty.

In their review of tertiary education student resilience, Brewer et al. (2019) identify three clusters of student resilience attributes, including intrapsychic (psychological) interpersonal and contextual resources. They particularly stress the role of students' psychological resources, including their self-efficacy, persistence and capacities for self-care and help-seeking as examples.

They also underlined the role of contextual (institutional) resources that emphasise social support that ensures students feel valued and supported (Brewer et al., 2019).

In this study, the international students interviewed reported uneven access to institutional *contextual* support, with some reporting appreciation for the personal support they received from the Scholarships Office. These differences were reflected in scholarship-supported students being able to leverage resilience resources across the broad spectrum of psychological, interpersonal, and contextual categories suggested by Brewer et al. (2019). However, self-funded students specifically were required to mobilise more of their psychological and interpersonal capacities to navigate the lockdown. This was explicitly expressed by self-funded Participant 5 and Participant 6 and underscored by Participant 5's comment, "you try your best and you push through, even when things are challenging, but you must do it on your own".

Such observations underline the complexities in conceptualising international tertiary education student resilience during prolonged periods of uncertainty, such as COVID-19. This also applies to determining appropriate institutional support services that, on one hand, would enable international students to harness their resourcefulness, but that would also signal institutional compassion and human connection.

5.6 Recommendations for strengthening risk communication

Recommendations for strengthening risk communication for international students are informed by both the study's findings and reviewed literature. They include revisiting international student support mechanisms and services for greater support for self-funded students. They also propose adopting a risk communication approach for international students that broadly reflects the principles expressed in WHO's risk communication and community engagement strategies. A third recommendation underlines the benefits for tertiary education institutions in adopting a more resilience-oriented approach to emergency planning rather than a primary focus on academic continuity.

The suggestion for tertiary education institutions to realign international student services for greater support to self-funded students was indicated by the contrasting experiences of scholarship and self-funded students during the August-December 2021 lockdown. While scholarship-supported students recalled consistent levels of support and access to updated information, self-funded students reported a lack of "human contact" from the tertiary education institution. These observations resonate with the findings by Cameron et al. (2022), which also showed low levels of student satisfaction in international office support during COVID-19. They are also consistent with arguments by Bittencourt et al. (2021) that international students may benefit from the

support of conational groups that offer a source of support. They also enable a collective voice and greater engagement that facilitates valuable relationships between international students and the institution concerned (Bittencourt et al., 2019).

The second recommendation on the value of a strengthened risk communication approach for international students was also underlined by the students' lockdown experiences. Although the tertiary education institution had introduced a wide range of student support services and profiled these on a dedicated COVID-19 student webpage, the students interviewed did not refer to this. Most did not engage with the institution's email messaging either, commenting that it was "too formal". Adopting a risk communication approach that broadly aligns with RCCE principles (WHO, 2020b) would require the institution to consult more explicitly with international and other student communities. This could enable the development of communication strategies that would be mutually beneficial at institutional and individual student levels. For instance, one possible strategy could be to have individual and small groups of international students meeting online every week. This would support students to stay well-informed and connected to the institution cohort as a mutually supportive group

The third recommendation suggests that tertiary education institutions shift beyond a primary focus on academic continuity to a more resilience-oriented approach to emergency planning. This study's results highlighted the international students shared the experience of multiple interlinked stressors, including financial insecurity, limited social support, social isolation, and academic pressures. These were further compounded by months of lockdown and the switch to online learning, and exacerbated by wide-ranging pandemic uncertainty. While the institution's success in transitioning quickly to online teaching signalled immense agility, this more academic continuity-oriented approach may fall short in a global context of increased interconnectedness and climate uncertainty (Arnhold & Bassett, 2021). These challenges require higher education institutions to build wide-ranging resilience capabilities, such as flexibility, communication and understanding of their key stakeholder communities, including international students (Dohaney et al., 2020; Arnhold & Bassett, 2021).

5.7 Conclusion

5.7.1 Revisiting the findings

Previous studies have indicated that international tertiary education students face more complex challenges compared with their domestic peers. These complexities were further compounded in the context of the COVID-19 pandemic in New Zealand in 2021. While the application of lockdown restrictions during Alert Levels 4 and 3, 2021, had wide-ranging effects on tertiary

education students in general, they brought additional challenges to international students studying in Auckland.

This research contributes to the advancement of knowledge on how international students experienced COVID-19 risk communication at a tertiary education institution during Alert Levels 4 and 3, 2021. The study took place in 2022. It applied a QD approach informed by interpretivism and adopted semi-structured interviews as the data-gathering method. The researcher conducted face-to-face interviews and completed his analyses within the research timeframe.

A wide range of interlinked and cumulative stressors included financial pressures, difficulties related to online learning and mental health concerns, compounded by both prolonged social isolation and disrupted social support mechanisms. Such challenges were further amplified by the effect of wide-ranging uncertainty about the pandemic's direction, shifting public health measures and timelines, the switch to online learning and prospects for work income.

Results, however, suggest variation in the problem-solving approaches adopted by the self-funded and those supported through the Manaaki New Zealand Scholarships programme. Although all students underlined the role of family and friends as the first line of support, scholarship-supported students acknowledged the crucial assistance from the Scholarships office. This help included institutional guidance and access to other relevant services such as counselling. Their responses contrasted with consistent observations of "going it alone" by the self-funded students, whose responses underlined expectations of their own resilience and self-efficacy.

Research findings also underlined similarities and differences in the students' risk communication experience. While the students interviewed stressed their consistent use of social media platforms to communicate with their friends and family, they reported limited engagement with the institution's mass email updates circulated regularly. These were viewed as "too formal" or "like a letter". Students also did not refer to the institution's COVID-19 webpage. This mismatch between student communication expectations and the institutional messaging provided constituted a barrier to an effective risk communication process during such a protracted lockdown period. Similarly, the absence of a more personalised communication process and engagement mechanism for self-funded students may have contributed to their continuing sense of social isolation.

In contrast, the scholarship-supported students' positive perceptions of their COVID-19 risk communication experience underline the enabling role of institutional mechanisms such as the Scholarships Office. Not only did this team play support roles as institutional navigators; they also provided a source of crucial consistent, and personalised risk communication to the scholarship-supported students.

5.7.2 Study strengths and limitations

Research on international tertiary education students remains limited, despite their growing importance in the higher education sector. This study provides valuable insights on the COVID-19 risk communication experience of international students in New Zealand. It also offers useful findings on improving international student access to social support and risk communication during public health emergencies and periods of prolonged uncertainty. The study's insights were strengthened due to both the participants and the researcher being international students during the COVID-19 Alert Levels 4 and 3 in 2021.

In this study, the sampling method could also be considered as a weakness. The small sample studied might not fully represent international students in Auckland, as the participants were self-selected, thus reducing the extent to which these findings may be generalised.

In addition, as Alert Levels 4 and 3 were implemented between August and December 2021, there were multiple adjustments in restrictions and Alert Levels between these dates and the September 2022 timing of the interviews. This may have limited the accuracy of participants' observations, as it was difficult for them to remember what happened a year before. It was also possible that participants may have forgotten aspects of their 2021 experience or confused the information they received over this period.

5.7.3 Areas for future research

This explorative study has highlighted many future areas of potential research. First, it underlines the need for a greater understanding of how international students navigate periods of prolonged difficulty, also recognising that this group is itself highly diverse.

Second, the study reinforces growing interest in the role of social media during public health and other emergencies. Given that study results highlighted student preferences for the use of social media sources during the Alert Levels 4 and 3 lockdown, there is a need for a greater understanding of how to optimise this communication mode in higher education settings.

The third area of potential institutional research focuses on investigating how integrating a more vigorous risk communication approach within tertiary education institutions might strengthen institutional and individual student resilience. This would especially apply to more marginalised student groups such as international students and ethnic minorities.

A fourth more conceptually-oriented gap focuses on seeking a clearer framing of resilience for tertiary education students, with a specific focus on international students. As indicated in this as well as previous studies, international students face multiple, often complex, challenges while studying at their host institutions. The diverse responses adopted by the students interviewed in this study suggest the need for further research on the most supportive mix of individual and institutional measures to enable their progress while studying abroad.

5.7.4 Chapter summary

The chapter has discussed the research findings in relation to relevant published literature. It has also recommended strengthening and implementing inclusive risk communication within tertiary institutions. This includes strategies to improve engagement and resilience with vulnerable groups such as international students. The chapter has described the study's strengths and limitations. Its conclusion calls for further studies to improve understanding of how international students navigate periods of uncertainty, and the supportive measures that facilitate their development while studying at their destination institutions.

References

Ahmed, Z., & Julius, S. H. (2015). Academic performance, resilience, depression, anxiety, and stress among women college students. *Indian journal of positive psychology, 6*(4), 367. https://www.proquest.com/scholarly-journals/relationship-between-depression-anxiety-stress/docview/1776182512/se-2

Akuhata-Huntington, Z. (2020). Impacts of the COVID-19 lockdown on Māori University students. *Te Mana Ākonga*. http://hdl.voced.edu.au/10707/543367

Aldrich, D. P., & Meyer, M. A. (2015). Social capital and community resilience. *American behavioural scientist, 59*(2), 254-269. https://doi:10.1177/0002764214550299

Alexander, D. E. (2013). Resilience and disaster risk reduction: An etymological journey. *Natural Hazards and Earth System Sciences, 13*(11), 2707–2716. https://doi.org/10.5194/nhess-13-2707-2013

Alexander, A. A., Klein, M. H., Workneh, F., & Miller, M. H. (1981). Psychotherapy and the foreign student. *Counseling across cultures, 2*, 227-43.

Arnhold, N., & Bassett, R. M. (2021). *Steering Tertiary Education*. World Bank Group. https://hdl.handle.net/10986/36328

Arvai, J., & Rivers, I. L. (Eds.). (2013). *Effective risk communication* (p.3). London, UK: Routledge.

Auerbach, R. P., Alonso, J., Axinn, W. G., Cuijpers, P., Ebert, D. D., Green, J. G., & Bruffaerts, R. (2016). Mental disorders among college students in the World Health Organization world mental health surveys. *Psychological medicine, 46*(14), 2955-2970. https://doi:10.1017/S0033291716001665

Baloran, E. T. (2020). Knowledge, attitudes, anxiety, and coping strategies of students during COVID-19 pandemic. *Journal of loss and trauma, 25*(8), 635-642. https://doi.org/10.1080/15325024.2020.1769300

Bartusevičienė, I., Pazaver, A. & Kitada, M. (2021). Building a resilient university: ensuring academic continuity—transition from face-to-face to online in the COVID-19 pandemic. *WMU J Marit Affairs 20*, 151–172. https://doi.org/10.1007/s13437-021-00239-x

Bates, R. (2013). Institutional continuity and distance learning: A symbiotic relationship. *Online Journal of Distance Learning Administration, 16*(3), n3.

Berg, B. L. (2004). Methods for the social sciences. Qualitative Research Methods for the Social Sciences. *Boston: Pearson Education, 2*, *191*.

Bittencourt, T., Johnstone, C., Adjei, M., & Seithers, L. (2021). "We see the world different now": Remapping assumptions about international student adaptation. *Journal of Studies in International Education, 25*(1), 35-50. https://doi.org/10.1177/1028315319861366

Blair, A., de Pasquale, M., Gabeff, V., Rufi, M., & Flahault, A. (2022). The End of the Elimination Strategy: Decisive Factors towards Sustainable Management of COVID-19 in New Zealand. *Epidemiologia, 3*(1), 135–147. https://doi.org/10.3390/epidemiologia3010011

Bloomfield, A. (2021). COVID-19, 20, 21: Lessons from New Zealand's 2020 response for 2021 and beyond. *The New Zealand Medical Journal, 134*(1529), 7-9. https://journal.nzma.org.nz/journal

Braddock, J. (2022). *New Zealand universities hit by long-term assault on pay and jobs*. WSWS. https://www.wsws.org/en/articles/2022/09/02/tymn-s02.html

Braun, V., & Clarke, V. (2012). Thematic analysis. *American Psychological Association, 2*, 57-71. https://doi.org/10.1037/13620-004

Brewer, M. L., van Kessel, G., Sanderson, B., Naumann, F., Lane, M., Reubenson, A., & Carter, A. (2019). Resilience in higher education students: A scoping review. *Higher Education Research & Development, 38*(6), 1105–1120. https://doi.org/10.1080/07294360.2019.1626810

Burns, A. (2022). *Foreign students' return will take years to build up steam, universities predict*. Radio New Zealand. https://www.rnz.co.nz/news/national/472034/foreign-students-return-will-take-years-to-build-up-steam-universities-predict

Cameron, M., Fogarty-Perry, B., & Piercy, G. (2022). The impacts of the COVID-19 pandemic on higher education students in New Zealand. *Journal of Open, Flexible and Distance Learning, 26*(1), 42-62. https://search.informit.org/doi/10.3316/informit.640968543718398

Carcary, M. (2009). The research audit trial—enhancing trustworthiness in qualitative inquiry. *Electronic journal of business research methods, 7*(1), 11-24.

Centers for Disease Control and Prevention. (2018). *CERC Manual*. https://emergency.cdc.gov/cerc/ppt/CERC_Introduction.pdf

Cinelli, M., Quattrociocchi, W., Galeazzi, A., Valensise, C. M., Brugnoli, E., Schmidt, A. L., ... & Scala, A. (2020). The COVID-19 social media infodemic. *Scientific reports, 10*(1), 1-10. https://doi.org/10.1038/s41598-020-73510-5

Cohen, D., & Crabtree, B. (2006). *Qualitative research guidelines project*. Robert Wood Johnson Foundation. http://www.qualres.org/HomeSemi-3629.html

Collins, A., Florin, M. V., & Renn, O. (2020). COVID-19 risk governance: Drivers, responses, and lessons to be learned. *Journal of Risk Research, 23(*7-8), 1073-1082. https://doi.10.1080/13669877.2020.1760332

Collins, M. E., & Mowbray, C. T. (2005). Understanding the policy context for supporting students with psychiatric disabilities in higher education. *Community Mental Health Journal, 41*(4), 431-450. https://doi.org/10.1007/s10597-005-5079-6

Colorafi, K. J., & Evans, B. (2016). Qualitative Descriptive Methods in Health Science Research. *HERD, 9*(4), 16–25. https://doi.org/10.1177/1937586715614171

Covello, T. V., Winterfeldt, D., & Slovic, P. (1986). Risk communication: A review of the literature. *Risk Abstracts, 3*, 171-182.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications.

Day, T. (2015). Academic continuity: Staying true to teaching values and objectives in the face of course interruptions. *Teaching and Learning Inquiry, 3*(1), 75-89. https://doi.org/10.2979/teachlearninqu.3.1.75

Dearnley, C. (2005). A reflection on the use of semi-structured interviews. *Nurse researcher, 13*(1). https://doi:10.7748/nr2005.07.13.1.19.c5997

De los Reyes, E. J., Blannin, J., Cohrssen, C., & Mahat, M. (2022). Resilience of higher education academics in the time of 21st century pandemics: A narrative review. *Journal of Higher Education Policy and Management, 44*(1), 39-56. https://doi.org/10.1080/1360080X.2021.1989736

De Sa, J., Mounier-Jack, S., & Coker, R. (2009). Risk communication and management in public health crises. *Public health, 123*(10), 643–644. https://doi.org/10.1016/j.puhe.2009.07.017

Dohaney, J., de Róiste, M., Salmon, R. A., & Sutherland, K. (2020). Benefits, barriers, and incentives for improved resilience to disruption in university teaching. *International Journal of Disaster Risk Reduction, 50*, 101691. https://doi.org/10.1016/j.ijdrr.2020.101691

Duchek, S. (2020). Organizational resilience: a capability-based conceptualization. Bus Res 13, 215–246. https://doi.org/10.1007/s40685-019-0085-7

Eisenman, D. P., Cordasco, K. M., Asch, S., Golden, J. F., & Glik, D. (2007). Disaster planning and risk communication with vulnerable communities: lessons from Hurricane Katrina. *American journal of public health, 97*(1), 109-115. https://doi.org/10.2105/AJPH.2005.084335

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American journal of theoretical and applied statistics, 5*(1), 1-4. https://doi:10.11648/j.ajtas.20160501.11

Field, J. (2008). *Social capital*. Routledge.

Finfgeld-Connett, D. (2010). Generalizability and transferability of meta-synthesis research findings. *Journal of advanced nursing, 66*(2), 246-254. https://doi.org/10.1111/j.1365-2648.2009.05250.x

Flick, U. (2004). *A Comparison to Qualitative Research*. In Constructivism. In U. Flick, E. von Kardorff, & I. Steinke (Eds) (pp. 88-94). London, United Kingdom: Sage Publications.

Garmezy, N., Masten, A. S., & Tellegen, A. (1984). The Study of Stress and Competence in Children: A Building Block for Developmental Psychopathology. *Child Development, 55*(1), 97–111. https://doi.org/10.2307/1129837

Gelo, O., Braakmann, D., & Benetka, G. (2008). Quantitative and qualitative research: Beyond the debate. *Integrative Psychological and Behavioral Science, 42*(3), 266-290. https://doi.org/10.1007/s12124-008-9078-3

Gerritsen, J. (2022). COVID-19: *Figures reveal education sector losses in international student fees*. Radio New Zealand. https://www.rnz.co.nz/news/national/473400/covid-19-figures-reveal-education-sector-losses-in-international-student-fees

Glik, D. C. (2007). Communication for Public Health Emergencies. *Annual review of Public Health, 28*, 33-54. https://doi.org/10.1146/annurev.publhealth.28.021406.144123

Godber, K. A. & Atkins, D. R. (2021) COVID-19 Impacts on Teaching and Learning: A Collaborative Autoethnography by Two Higher Education Lecturers. *Fronters in Education, 6,* 647524. https://doi:10.3389/feduc.2021.647524

Grant, B. M., & Giddings, L. S. (2002). Making sense of methodologies: A paradigm framework for the novice researcher. *Contemporary Nurse, 13*(1), 10-28. https://doi.org/10.5172/conu.13.1.10

Haar, J. (2021). *Anxiety rising in the Kiwi workforce*. AUT News. https://news.aut.ac.nz/news/anxiety-rising-in-the-kiwi-workforce

Hadi, M. A., & José Closs, S. (2016). Ensuring rigour and trustworthiness of qualitative research in clinical pharmacy. *International journal of clinical pharmacy, 38*(3), 641-646. https://doi.org/10.1007/s11096-015-0237-6

Hannigan, B. & Saini, S. (2020). Learning in lockdown: A case study of international student experiences of the covid-19 lockdown. *The Scopes*. https://www.thescopes.org/assets/scopes/SCOPE_024-Hannigan-Saini_LT9.pdf

Hanson-Easey, S., Every, D., Hansen, A., & Bi, P. (2018). Risk communication for new and emerging communities: the contingent role of social capital. *International journal of disaster risk reduction, 28*, 620-628. https://doi.org/10.1016/j.ijdrr.2018.01.012

He, X. (2007). International Students Vulnerability to Emergency Events: Does Tenure of Residence Make a Difference? *In papers and proceedings of applied geography conferences, 30*, 257. [np]; 1998.

Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual review of Ecology and Systematics, 4*(1), 1-23. https://www.annualreviews.org/doi/abs/10.1146/annurev.es.04.110173.000245

Holloway, A. (2022). Vigorous, Vital, Vulnerable: Universities and COVID-19, Aotearoa New Zealand. In: Izumi, T., Pal, I., Shaw, R. (eds) Safety and Resilience of Higher Educational Institutions. Disaster Risk Reduction. *Springer, Singapore*. https://doi.org/10.1007/978-981-19-1193-4_10

Hsu, P. Y. (2003). An assessment of counselling needs of international students at the University of Wisconsin-Stout Spring 2003. https://minds.wisconsin.edu/bitstream/handle/1793/40879/2003hsup.pdf?sequence=1

Huang, X., Wang, S., Zhang, M., Hu, T., Hohl, A., She, B., ... & Li, Z. (2022). Social media mining under the COVID-19 context: Progress, challenges, and opportunities. *International Journal of Applied Earth Observation and Geoinformation, 113*, 102967. https://doi.org/10.1016/j.jag.2022.102967

Ibrahim, A. K., Kelly, S. J., Adams, C. E., & Glazebrook, C. (2013). A systematic review of studies of depression prevalence in university students. *Journal of psychiatric research, 47*(3), 391-400. https://doi.org/10.1016/j.jpsychires.2012.11.015

Islam, A. N., Laato, S., Talukder, S., & Sutinen, E. (2020). Misinformation sharing and social media fatigue during COVID-19: An affordance and cognitive load perspective. *Technological forecasting and social change,* 159. https://doi.org/10.1016/j.techfore.2020.120201

Jagroop-Dearing, A., Leonard, G., Shahid, S. M., & van Dulm, O. (2022). COVID-19 Lockdown in New Zealand: Perceived Stress and Wellbeing among International Health Students Who Were Essential Frontline Workers. *International journal of environmental research and public health, 19*(15), 9688. https://doi.org/10.3390/ijerph19159688

James, A., Hendy, S. C., Plank, M. J., & Steyn, N. (2020). Suppression and mitigation strategies for control of COVID-19 in New Zealand. *MedRxiv.* https://doi.org/10.1101/2020.03.26.20044677

Jensen, T., Marinoni, G., & Van't Land, H. (2022). Higher Education One Year into the COVID-19 Pandemic. *Second IAU Global Survey Report. Paris: International Association of Universities*. https://www.iau-aiu.net/IMG/pdf/2022_iau_global_survey_report.pdf

Jha, A., Lin, L., Short, S. M., Argentini, G., Gamhewage, G., & Savoia, E. (2018). Integrating emergency risk communication (ERC) into the public health system response: Systematic review of literature to aid formulation of the 2017 WHO Guideline for ERC policy and practice. *PloS one, 13*(10). https://doi:10.1371/journal.pone.1205555

Johnson, J. L., Adkins, D., & Chauvin, S. (2020). A review of the quality indicators of rigor in qualitative research. *American journal of pharmaceutical education, 84*(1). https://doi.org/10.5688/ajpe7120

Jung, J., Horta, H., & Postiglione, G. A. (2021). Living in uncertainty: The COVID-19 pandemic and higher education in Hong Kong. *Studies in Higher Education, 46*(1), 107-120. https://doi.org/10.1080/03075079.2020.1859685

Kalocsányiová, E., Essex, R., & Fortune, V. (2022). Inequalities in Covid-19 messaging: a systematic scoping review. *Health Communication*, 1-10. https://doi.org/10.1080/10410236.2022.2088022

Kar, B., & Cochran, D. M. (Eds.). (2019). *Risk communication and community resilience*. Routledge.

Kincheloe, J. L. (2006). A critical politics of knowledge: Analysing the role of educational psychology in educational policy. *Policy Futures in Education, 4*(3), 220-235. https://doi-org.ezproxy.aut.ac.nz/10.2304/pfie.2006.4.3.220

Kowalski, E., Graf, J., Schneider, A., Zipfel, S., & Stengel, A. (2022). Resilience and General Self-Efficacy are Related to Perception of COVID-19 Symptomatology, Mental Health, and Coping with Acute COVID-19 Infection. Advance online publication. https://doi.org/10.1055/a-1876-2777

Krefting, L. (1991). Rigor in qualitative research: The assessment of trustworthiness. *The American journal of occupational therapy, 45*(3), 214-222. https://doi.org/10.5014/ajot.45.3.214

Lambert, V. A., & Lambert, C. E. (2012) Qualitative descriptive research: An acceptable design. *Pacific Rim International Journal of Nursing Research, 16,* 255–256.

Le Dé, L. (2021). *Community Resilience: An overview*. Auckland University of Technology.

Li, S., Sun, Y., Jing, J., & Wang, E. (2022). Institutional Trust as a Protective Factor during the COVID-19 Pandemic in China. *Behavioural Sciences, 12*(8), 252. https://doi.org/10.3390/bs12080252

Lincoln, Y. S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New directions for program evaluation, 1986*(30), 73-84. https://doi.org/10.1002/ev.1427

Liyanage, S., Saqib, K., Khan, A. F., Thobani, T. R., Tang, W. C., Chiarot, C. B., ... & Butt, Z. A. (2021). Prevalence of anxiety in university students during the COVID-19 pandemic: a systematic review. *International journal of environmental research and public health, 19*(1), 62. https://doi.org/10.3390/ijerph19010062

Maidment, R. (2021). *How key players in the education sector dealt with the challenge the pandemic imposed on their institutions, how they have pivoted, how competitors have fared, and the next steps New Zealand needs to take to re-charge the sector*. Interest.co.nz. https://www.interest.co.nz/business/113129/how-key-players-education-sector-dealt-challenge-pandemic-imposed-their

Manyena, S. B., O'Brien, G., O'Keefe, P., and Rose, J. (2011). Disaster resilience: A bounce back or bounce forward ability? *Local Environment,16,* 417–424, 2011. https://doi.org/10.1177/000494410204600104

Martin, A. J. (2002). Motivation and academic resilience: Developing a model for student enhancement. *Australian Journal of Education, 46*(1), 34-49. https://doi.org/10.1177/000494410204600104

Masten, A. S., & Obradović, J. (2006). Competence and resilience in development. *Annals of the New York Academy of Sciences, 1094*(1), 13-27. https://doi.org/10.1196/annals.1376.003

Merriam, S. B. (1998). *Qualitative Research and Case Study Applications in Education. Revised and Expanded from" Case Study Research in Education*.". Jossey-Bass Publishers, 350 Sansome St, San Francisco, CA 94104.

Meyer, A. D. (1982). Adapting to Environmental Jolts. *Administrative Science Quarterly, 27*(4), 515–537. https://doi.org/10.2307/2392528

Mullen, L., Potter, C., Gostin, L. O., Cicero, A., & Nuzzo, J. B. (2020). An analysis of international health regulations emergency committees and public health emergency of international concern designations. *BMJ global health, 5*(6), e002502. http://dx.doi.org/10.1136/bmjgh-2020-002502

National Institute of Mental Health. (2003). Health: Depression and college students. New York: NIH Publication.

Nelson, D. R., Adger, W. N., & Brown, K. (2007). Adaptation to Environmental Change: Contributions of a Resilience Framework. *Annual Review of Environment and Resources, 32*(1), 395-419. https://doi.org/10.1146/annurev.energy.32.051807.090348

Neergaard, M. A., Olesen, F., Andersen, R. S., & Sondergaard, J. (2009). Qualitative description–The poor cousin of health research? *BMC Medical Research methodology, 9*(1), 52. https://doi.org/10.1186/1471-2288-9-52c

New Zealand Government. (2022a). *Unite Against COVID-19*. https://covid19.govt.nz

New Zealand Government. (2022b). *Participation in Tertiary education in New Zealand.* https://www.educationcounts.govt.nz/statistics/tertiary-participation

New Zealand Government. (2022c). COVID-19: *Minimisation and protection strategy for Aotearoa New Zealand. Ministry of Health*. https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-response-planning/covid-19-minimisation-and-protection-strategy-aotearoa-new-zealand

New Zealand Government (2022d). *Manaaki New Zealand Scholarships: Building potential leaders*. https://www.nzscholarships.govt.nz

New Zealand Ministry of Health. (2014). Treaty of Waitangi principles. https://www.health.govt.nz/our-work/populations/maori-health/he-korowai-oranga/strengthening-he-korowai-oranga/treaty-waitangi-principles

Ochnik, D., Rogowska, A. M., Kuśnierz, C., Jakubiak, M., Schütz, A., Held, M. J., & Cuero-Acosta, Y. A. (2021). Mental health prevalence and predictors among university students in nine countries during the COVID-19 pandemic: A cross-national study. *Scientific reports, 11*(1), 1-13. https://doi.org/10.1038/s41598-021-97697-3

O'Shea, S. (2016). First-in-family learners and higher education: Negotiating the 'silences' of university transition and participation. *HERDSA Review of Higher Education, 3*, 5-23. www.herdsa.org.au/herdsa-review-higher-education-vol-3/5-23

Othman, A. S., Chowdhury, I. A., Bo, Y., Omar, A. R. C., & Osman, L. H. (2015). Key drivers of customer loyalty in online banking. *Annals of Management Science, 4*(1), 89.

Patsali, M. E., Mousa, D. P. V., Papadopoulou, E. V., Papadopoulou, K. K., Kaparounaki, C. K., Diakogiannis, I., & Fountoulakis, K. N. (2020). University students' changes in mental health status and determinants of behaviour during the COVID-19 lockdown in Greece. *Psychiatry research, 292*, 113298. https://doi.org/10.1016/j.psychres.2020.113298

Plakhotnik, M. S., Volkova, N. V., Jiang, C., Yahiaoui, D., Pheiffer, G., McKay, K., Newman, S, & Reibig-Thust, S. (2021). The Perceived Impact of COVID-19 on Student Well-Being and the Mediating Role of the University Support: Evidence from France, Germany, Russia, and the UK. *Frontiers in Psychology*, *12*, 2663. https://doi.org/10.3389/fpsyg.2021.642689

Regehr, C., Glancy, D., & Pitts, A. (2013). Interventions to reduce stress in university students: A review and meta-analysis. *Journal of affective disorders, 148*(1), 1-11. https://doi.org/10.1016/j.jad.2012.11.026

Reynolds, B., & Seeger, M. W. (2005). Crisis and emergency risk communication as an integrative model. *Journal of Health Communication, 10*(1), 43–55. https://doi-org.ezproxy.aut.ac.nz/10.1080/10810730590904571

Ritchie, H., Mathieu, E., Rodés-Guirao, L., Appel, C., Giattino, C., Ortiz-Ospina, E., & Roser, M. (2020). Coronavirus pandemic (COVID-19). *Our world in data*. https://ourworldindata.org/coronavirus

Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health, 23*(4), 334-340. https://doi.org/10.1002/1098-240X(200008)23:4%3C334::AID-NUR9%3E3.0.CO;2-G

Sandelowski, M. (2010). What's in a name? Qualitative description revisited. *Research in nursing & health, 33*(1), 77-84. https://doi.org/10.1002/nur.20362

Sankhi, S., & Marasine, N. R. (2020). Impact of COVID-19 pandemic on mental health of the general population, students, and health care workers. *Europasian Journal of Medical Sciences, 2*, 64-72. https://doi.org/10.46405/ejms.v2i2.131

SchWeber, C. (2008). Determined to Learn: Accessing Education despite Life-Threatening Disasters. *Journal of Asynchronous Learning Networks, 12*(1), 37-43. https://eric.ed.gov/?id=EJ837468

Shaya, N., Abukhait, R., Madani, R. et al. (2022). Organizational Resilience of Higher Education Institutions: An Empirical Study during Covid-19 Pandemic. *High Educ Policy*. https://doi.org/10.1057/s41307-022-00272-2

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for information, 22*(2), 63-75. https://doi.org/10.3233/EFI-2004-22201

Sopory, P., Day, A. M., Novak, J. M., Eckert, K., Wilkins, L., Padgett, D. R., Noyes, J. P., Barakji, F. A., Liu, J., Fowler, B. N., Guzman-Barcenas, J. B., Nagayko, A., Nickell, J. J., Donahue, D., Daniels, K., Allen, T., Alexander, N., Vanderford, M. L., & Gamhewage, G. M. (2019). Communicating uncertainty during public health emergency events: A systematic review. *Review of Communication Research, 7*, 67-108. https://doi.org/10.12840/ISSN.2255-4165.019

Te Tari Arokate Mātauranga (2022). *Learning in a Covid-19 World: The Impact of Covid-19 on Pacific Learners*. Education Evaluation Center.

Thorup-Binger, C., & Charania, N. A. (2019). Vulnerability and capacities of international students in the face of disasters in Auckland, New Zealand: A qualitative descriptive study. *International journal of disaster risk reduction, 39*, 101136. https://doi.org/10.1016/j.ijdrr.2019.101136

Toppenberg-Pejcic, D., Noyes, J., Allen, T., Alexander, N., Vanderford, M., & Gamhewage, G. (2018). Emergency risk communication: lessons learned from a rapid review of recent grey literature on Ebola, Zika, and yellow fever. *Health communication, 34*(4), 437-455. https://doi.org/10.1080/10410236.2017.1405488

Tsao, S. F., Chen, H., Tisseverasinghe, T., Yang, Y., Li, L., & Butt, Z. A. (2021). What social media told us in the time of COVID-19: a scoping review. *The Lancet Digital Health, 3*(3), 175-194. https://doi.org/10.1016/S2589-7500(20)30315-0

United Nations. (2022). *Building back better from the coronavirus disease (COVID-19) while advancing the full implementation of the 2030 Agenda for sustainable Development*. https://www.un.org/ohrlls/sites/www.un.org.ohrlls/files/hlpf_non-paper-lldcs-2022-final.pdf

United Nations International Children's Emergency Fund. (2020). *Building Resilient Education Systems beyond the COVID-19 Pandemic: Considerations for education decision-makers at national, local, and school levels.* UNICEF Europe and Central Asia. https://www.unicef.org/eca/media/13411/file

United Nations Office for Disaster Risk Reduction. (2017). *Resilience*. PreventionWeb. https://www.preventionweb.net/understanding-disaster-risk/key-concepts/resilience

United Nations Office for Disaster Risk Reduction. (2021). *Risk communication for better disaster risk management: Side event at 7th session of committee on disaster risk reduction*. https://www.undrr.org/event/risk-communication-better-disaster-risk-management-side-event-7th-session-committee-disaster

Ward, L. (1967). Some observations on the underlying dynamics of conflict in a foreign student. *Journal of the American College Health Association,10*, 430-40.

Watson, C. (2020). Covid-19 is a wake-up call for ethical health communication*. Blog of the Journal of Medical Ethics*. https://doi.org/10.1136/bmj.m2021

Werner, E. E. (1987). Vulnerability and Resiliency: A Longitudinal Study of Asian Americans from Birth to Age 30. *ERIC.*

Widjadja, T. A., Lim, E. P., & Gunawan, A. (2021). *On Analysing Student Resilience in Higher Education Programs using a Data-Driven Approach*. IEEE Xplore. https://doi:10.1109/TALE52509.2021.9678537

Wilder-Smith, A., & Osman, S. (2020). Public health emergencies of international concern: a historic overview. *Journal of travel medicine, 27*(8), taaa227. https://doi.org/10.1093/jtm/taaa227

World Bank. (2020). *The COVID-19 crisis response: Supporting tertiary education for continuity, adaptation, and innovation*. World Bank Group Education. https://documents1.worldbank.org/curated/en/621991586463915490/The-COVID-19-Crisis-Response-Supporting-Tertiary-Education-for-Continuity-Adaptation-and-Innovation.pdf

World Health Organisation. (2008). *International health regulations (2005).* World Health Organisation. https://www.who.int/publications/i/item/9789241580496

World Health Organisation. (2016). *Zika Strategic Response Plan Quarterly Update (No. WHO/ZIKV/SRF/16.4)*. World Health Organisation. https://apps.who.int/iris/handle/10665/250626

World Health Organisation. (2017). *Communicating risk in public health emergencies: A WHO guideline for emergency risk communication (ERC) policy and practice*. https://apps.who.int/iris/bitstream/handle/10665/259807/9789241550208-eng.pdf?sequence=2&isAllowed=y

World Health Organisation. (2020). *COVID-19 Public Health Emergency of International Concern (PHEIC) Global research and innovation forum*. https://www.who.int/publications/m/item/covid-19-public-health-emergency-of-international-concern-(pheic)-global-research-and-innovation-forum

World Health Organisation. (2020b). *Community engagement: A health promotion guide for universal health coverage in the hands of the people*. World Health Organisation. https://www.who.int/publications/i/item/9789240010529

World Health Organisation. (2021a). *Effective risk communication for environment and health: a strategic report on recent trends, theories, and concepts* (No. WHO/EURO: 2021-4208-43967-61972). Regional Office for Europe. https://apps.who.int/iris/bitstream/handle/10665/349338/WHO-EURO-2021-4208-43967-61972-eng.pdf?sequence=3&isAllowed=y

World Health Organisation. (2021b). *Suicide*. World Health Organisation. https://www.who.int/news-room/fact-sheets/detail/suicide

World Health Organisation. (2022). *Infodemic*. World Health Organisation.

Wu, J., & Wu, T. (2013). Ecological resilience as a foundation for urban design and sustainability. *In Resilience in ecology and urban design, 3*, 211-229. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-5341-9_10

Yeh, C. J., & Inose, M. (2003). International students reported English fluency, social support satisfaction, and social connectedness as predictors of acculturative stress. *Counselling Psychology Quarterly, 16*(1), 15-28. https://doi.org/10.1080/0951507031000114058

Yong, A. G., Lemyre, L., Pinsent, C., & Krewski, D. (2020). Community social capital and individual disaster preparedness in immigrants and Canadian-born individuals: An ecological perspective. *Journal of Risk Research, 23*(5), 678-694. https://doi.org/10.1080/13669877.2019.1628090

Zamawe, F. C. (2015). The implication of using NVivo software in qualitative data analysis: Evidence-based reflections. *Malawi Medical Journal, 27*(1), 13-15. https://doi.org/10.4314/mmj.v27i1.4

Zarocostas, J. (2020). How to fight an infodemic. *The lancet, 395*(10225), 676. https://doi.org/10.1016/S0140-6736(20)30461-X

Appendix A: Participant Information Sheet (PIS)

AUT
TE WĀNANGA ARONUI O TĀMAKI MAKAU RAU

Participant Information Sheet

Date Information Sheet Produced:

19 August 2022

Project Title

Impact and experience of risk communication for international students at AUT during Alert Levels 3 & 4, 2021 in Auckland, New Zealand.

An Invitation

My name is Clement Meslet. I am currently completing a master's degree in Disaster Risk Management and Development at the Auckland University of Technology (AUT) and volunteering as a driver member for Red Cross Meals on Wheels in Auckland, New Zealand.

I am interested in researching how the international students at AUT, Auckland perceived risk communication during the previous Alert Levels 4 & 3 between August and December 2021.

Would you be willing to help me? You are invited to be part of this study through face-to-face interviews.

What is the purpose of this research?

This study aims to explore international students' perception of public health messages from Auckland University of Technology (AUT), New Zealand Ministry of Health or from other public health specialists during Alert levels 3 and 4 (17 August- 1 December) in 2021. It is also to strengthen understanding of the vulnerabilities and capabilities of international students in times of duress in Aotearoa, New Zealand, to inform support services for students from abroad better – given their high historic enrolment in New Zealand universities.

Results will provide beneficial information and evidence to explore how to improve future public health measures and risk communication toward international student migrants in New Zealand. The findings from this research will be used for various outputs such as a dissertation, research reports, journal articles and better future risk communication policies and programmes for international students. This research will also significantly improve the researcher's skills and knowledge and support him in achieving his Master of Disaster Risk Management and Development.

How was I identified and why am I being invited to participate in this research?

You have been invited to participate in this study because you have responded to an advertisement and you are an international student in higher education at Auckland University of Technology (AUT) in Auckland, New Zealand. Also, because you meet the following criteria:

1. You are aged between 20-55 years old
2. You are currently enrolled as international students at AUT, as well as during semester 2, 2021

How do I agree to participate in this research?

To participate and be included in the research project, you are invited to sign the Consent Form attached. You can return the Consent form to me at my email address (clement.meslet@hotmail.fr) after placing your signature electronically or scanning the document together with your signature in a printed copy. Anyone who chooses not to sign the consent form will not be included in this research. Participation in this research is voluntary (your choice), and whether you participate will neither advantage nor disadvantage you. You can withdraw from the study at any time. If you decide to withdraw from the study, you can choose between having any identifiable data belonging to you removed or allowing it to continue to be used. However, removing your data may not be possible once the findings have been produced.

What will happen in this research?

You are invited to face-to-face interviews in group study rooms at the AUT city campus or the Auckland Central City Library at a convenient time. In this interview, you will answer various questions about risk communication during Alert levels 3 & 4 in Auckland. Although there will not likely be any significant risk, if you feel uncomfortable with any question, you do not answer. The interview will be recorded electronically with your permission, and the interview notes will be taken. The interviews are expected to take approximately 45 minutes.

What are the discomforts and risks?

It is not anticipated that you will experience any significant risks or discomfort during this study. However, during the COVID-19 pandemic, It could be that some participants may have had some uncomfortable experiences, and some may also feel easier to cope with such incidents. If you feel awkward answering any questions, you can refuse to answer any question or pause answering or stop participating during the interview process.

How will these discomforts and risks be alleviated?

In the unlikely chance that you experience any discomfort or risks, you will have access to counselling services at AUT. The researcher can refer adult participants who need counselling to AUT Health Counselling and Wellbeing because it offers three free, confidential counselling sessions for an AUT research project. AUT offers free counselling services and mental health support. You can have free counselling services via Microsoft Team video calls as well. Sessions are confidential and are delivered by professional counsellors. All AUT counsellors are professionally trained and are members of their relevant professional body. You can bring a support person with you.

You can call AUT counselling service – 09 921 9292 or text – 1737 or email counselling@aut.ac.nz; tell your student's ID and name and request an appointment. I will let you know my student's ID if you need it for interviews. You can also choose a male or female counsellor while ordering counselling services.

What are the benefits?

The wider community will benefit from this research by having better information and evidence to enhance existing risk communication and regulations and address international students' risk communication delivery needs in New Zealand – particularly during epidemics and other public health emergencies.

The findings from this research will be used for various outputs such as a dissertation, research reports, journal articles and better risk communication policies and programmes for international students. This research will also significantly improve my skills and knowledge and support me in achieving a Master of Disaster Risk Management and Development.

How will my privacy be protected?

If you agree to participate in this research, all the information you provide during the interview will be held in confidence. We will fully ensure confidentiality to the possible extent. Before commencing the discussions, you will be informed that your information, including your answers, will be kept confidential. Your name and any personally identifiable information will not appear in any publication or report of the research as all your inputs will be coded and safely stored with password protection. This information will be accessed only by the researcher.

After completing the study, all the electronic records and hard copies of your information will be securely stored and archived for six years at AUT. After a six-year retention period, all related information will be permanently deleted from research computers, and any hard copies will be destroyed.

What are the costs of participating in this research?

There will be no cost for you to participate in this study. After the interview, you will receive an NZD 20.00 shopping voucher or gift voucher card from participating.

What opportunity do I have to consider this invitation?

I kindly ask you to consider my invitation to participate in this study and provide a response within two weeks to the researcher, Clement Meslet, by email - clement.meslet@hotmail.fr.

Will I receive feedback on the results of this research?

After completing this research project, you will receive a summary report of the findings if you indicated in the Consent form that you would like to have a copy by email. Please sign the consent form.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the researcher' supervisor, Dr Ailsa Holloway, Faculty of Health, and Environmental Sciences, by email - ailsa.holloway@aut.ac.nz. Or phone number (+649) 9219999 Ext 6796.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC by email - ethics@aut.ac.nz. Or phone number (+649) 921 9999 Ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Clement Meslet, clement.meslet@hotmail.fr.

Project Supervisor Contact Details:

Dr Ailsa Holloway, ailsa.holloway@aut.ac.nz, (+649) 9219999 Ext 6796

Approved by the Auckland University of Technology Ethics Committee on 11 August 2022 final ethics approval was granted, AUTEC Reference number 22/222.

Appendix B: Consent Form

Consent Form

For use when interviews are involved.

Project title: Impact and experience of risk communication among higher education international students at AUT during Alert Levels 3 & 4, 2021 in Auckland, New Zealand.

Project Supervisor: Dr Ailsa Holloway

Researcher: Clement Meslet

- ○ I have read and understood the information provided about this research project in the Information Sheet dated May 2022.
- ○ I have had an opportunity to ask questions and to have them answered.
- ○ I understand that notes will be taken during the face-to-face interviews and that they will also be audio-taped and transcribed.
- ○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.
- ○ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.
- ○ I agree to take part in this research.
- ○ I wish to receive a summary of the research findings (please tick one): Yes ○ No ○

Participant's signature: .....

Participant's name: .....

Participant's Contact Details (if appropriate):

.....

.....

.....

.....

Date: .....

Approved by the Auckland University of Technology Ethics Committee on 11 August 2022 AUTEC Reference number 22/222

Note: The Participant should retain a copy of this form.

Appendix C: Recruiting Letter

Kia ora, Bonjour! Are you an international student?

Research interview participants required!

My name is Clement Meslet. I am currently completing a master's degree in Disaster Risk Management and Development at the Auckland University of Technology (AUT). I am conducting research about how the international students at AUT, Auckland perceived risk communication during the previous Alert Levels 4 & 3 between August and December 2021. Would you be willing to help?

An invitation to participate in research

I am looking for higher education students to participate in face-to-face semi-structured interview, which will take around 45 minutes. Please, do not respond if you do not meet the following criteria:

- Be aged between 20-55 years old
- Be currently enrolled as an international student at AUT, as well as during semester 2, 2021

What is the purpose of the research?

This research aims to explore international students' perception of public health messages from Auckland University of Technology (AUT), New Zealand Ministry of Health or from other public health specialists during Alert levels 3 and 4 (17 August- 1 December) in 2021.

Interested in participating?

You can contact the researcher by email (clement.meslet@hotmail.fr) to receive a participation information sheet and a consent form to participating. I will contact the first 6-8 people who express their interests from this Facebook post and arrange a convenient time with you for a face-to-face interview at the AUT city campus or Auckland Central City Library.

Research contact details

- Researcher: Clement Meslet (Email: clement.meslet@hotmail.fr)
- Researcher supervisor: Dr Ailsa Holloway (Email: ailsa.holloway@aut.ac.nz or Ph: (09) 921 9999 ext.6796)
- AUTEC (Email: ethics@aut.ac.nz or Ph: (09) 921 9999 ext. 6038

$20.00 NZD gift voucher card will be offered in recognition of the participant's time.

Approved by the Auckland University of Technology Ethics Committee on 11 August 2022 AUTEC Reference number 22/222

Appendix D: Indicative Interview Questions for the Participants

TE WĀNANGA ARONUI O TĀMAKI MAKAU RAU

Interview for the Participants

For use by research member only

Study participant number: _____

Date: _____

Hello, my name is Clement Meslet. First, thank you for agreeing to meet. Before I start with the interview, could I ask you few questions?

A. Personal information

1) How old are you?

2) How could you characterise your gender? (You don't have to answer if you don't want to)
- **a.** Female
- **b.** Male
- **c.** Another gender (please state):
- **d.** Do not wish to answer

3) Where do you come from?

4) During the second semester 2 of 2021 (August to November 2021), could you describe for me where did you live and with whom?

5) When did you arrive in New Zealand?

B. Previous experience before arriving in New Zealand

1) Have you ever experienced a disaster or emergency in your home country or elsewhere before coming here? If so, could you tell me about it?
After experiencing this, did your thinking or perspective about disasters change?

C. Explore public health messages

1) During Alert Levels 3 & 4 (17 August- 1 December 2021), how did you seek any information related to COVID-19? (Any platform?)
Whom did you ask? (Have you spoken to anyone?)
How often?

2) Have you even checked the email from AUT during this period? (If yes or no, is there a reason?)

D. Understanding of COVID-19 public measures levels 3 & 4

1) Is any public health message that stand-out in your mind during the semester two last year? (Did they push vaccination for example, if I am not wrong?)

E. Perception of COVID-19 public measures levels 3 & 4

1) If you think back to about semester 2 last year, does anything really stand out for you personally during this time?

2) During semester 2 last year, did you face any challenges? Would you like to explain? (What about your financial, mental health, assignment, visa challenges?)
In this situation, who would you contact first if you need help? (It can be a person or an organisation)

3) Can you recall any examples when you felt the help 'worked' for you? Could you share these with me?

4) Looking back during this COVID-19 experience, did you feel it was easy to get back on track or complex?

   If negatively or positively, tell me how did you deal with the situation?

F. Suggestions or Recommendations

1) If there is a way how AUT could improve their risk communication, what would work better for you?

Appendix E: PGR1 approval

Auckland University of Technology
Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999
www.aut.ac.nz

2 May 2022

Clement Meslet
Unit 3, 16 Belmont Terrace
Remuera
Auckland 1050

Dear Clement,

Thank you for submitting your PGR1 Research Proposal application for the Master of Disaster Risk Management and Development.

Your proposal has been reviewed and approved by the Faculty of Health and Environmental Sciences, which will be noted at the Postgraduate Research Committee May 2022 meeting.

Your enrolment details are:

Current programme:	Master of Disaster Risk Management and Development
Enrolment:	HEAL901 Dissertation
Student ID:	20120341
Topic:	Investigating the impact and experience of risk communication among higher education international students during Alert Levels 4 and 3 (17 August- 1 December 2021) in Auckland, New Zealand.
Primary supervisor:	Dr Ailsa Holloway
Start date:	4 April 2022
Expected completion date:	7 October 2022

For more information about the programme of study, please refer to the *Postgraduate Handbook*.

Yours sincerely

Associate Professor Nigel Harris
Associate Dean Postgraduate Research · Hoa Mautaki Taura Rangahau
Faculty of Health and Environmental Sciences · Te Ara Hauora A Pūtaiao
Auckland University of Technology · Te Wānanga Aronui o Tāmaki Makau Rau
09 921 9666 extension 7301

Cc Primary supervisor Dr Ailsa Holloway

Appendix F: Ethics approval from AUTEC

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

23 August 2022

Ailsa Holloway
Faculty of Health and Environmental Sciences

Dear Ailsa

Re Ethics Application: **22/222 Impact and experience of risk communication for international students at AUT during Alert Levels 3 & 4, 2021 in Auckland, New Zealand.**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 22 August 2025.

Non-Standard Conditions of Approval

1. Inclusion in the "How was I identified section "of the Information Sheet that the participant has responded to an advertisement.
2. Inclusion in the advertisement of advice to contact the researcher to receive a study Information Sheet.

Non-standard conditions must be completed before commencing your study. Non-standard conditions do not need to be submitted to or reviewed by AUTEC before commencing your study.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the Auckland University of Technology Code of Conduct for Research and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard and that all the dates on the documents are updated.
8. AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through http://www.aut.ac.nz/research/researchethics

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
Auckland University of Technology Ethics Committee

Cc: gpb6439@autuni.ac.nz; clement.meslet@hotmail.fr

Appendix G: Researcher's codebook

Researcher's codebook

Codes 1 = Main themes, Bold 1.A/B/C = Sub-themes, Bold 1.A/B/C.1 = Parent Codes 1.A/B/C.1.1 = Child Codes

Main theme 1: Student characteristics	Participants' characteristics and their resilience and capacity for protective actions while isolated during Alert levels 4 & 3, 2021, in Auckland.	Files	References
1.A - Capacity for self-protective actions	**How students dealt with the social isolation experience during Alert levels 4 & 3, 2021, in Auckland**	0	0
1.A.1 - Information seeking		2	2
1.A.2 - Routine & exercise		3	3
1.B - Income & financial security	**Difference and accessibility of participant's source of revenue while isolated at home**	0	0
1.B.1 - Work insecurity		2	3
1.C - Resilience & self-efficacy expectations	**Participants' resilience beliefs while isolated at home**	0	0
1.C.1 - "Going it alone"		0	0
1.D - Scholarship profile	**Participants' scholarship profiles that could affect their experience of social isolation**	0	0
1.D.1 - Scholarship access		3	3
1.D.2 - Self-funded		3	3

Main theme 2: Experience of multiple stressors	Effects of multiple stressors created by Alert levels 4 & 3, 2021, in Auckland on the participants' mental health	Files	References
2.A - Diverse academic stressors	**Academic changes during Alert levels 4 & 3, 2021, in Auckland that could affect participants**	0	0
2.A.1 - Switch to online learning		5	6
2.B - Experience of cumulative stressors	**Adverse effects of cumulative stressors on participants' mental health while isolated at home**	0	0
2.B.1 - Anxiety, stress & pressure		5	5
2.C - Financial insecurity	**How students' source and accessibility of revenue affected them while isolated at home**	0	0
2.C.1 - Unstable income		3	5
2.D - Social isolation	**Social isolation' effects on participants during Alert levels 4 & 3, 2021, in Auckland**	0	0
2.D.1 - Isolation & apprehensive for the future		3	4
2.E - Wide-ranging and prolonged uncertainty	**What challenges created by prolonged uncertainty affected the participants while isolated at home**	0	0
2.E.1 - Changing health measures		4	4
2.E.2 - Pandemic course		3	5

Main theme 3: Disrupted and uneven social support	Social supports participants' preferences and perceptions during Alert levels 4 & 3, 2021, in Auckland	Files	References
3.A - Disrupted access to support	**Which issues international students faced in accessing social support during Alert levels 4 & 3, 2021, in Auckland**	0	0
3.A.1 - Limited contact		3	4
3.B - Main sources of support	**Participant's preferences when seeking social support during Alert levels 4 & 3, 2021, in Auckland**	0	0
3.B.1 - Crucial friends & family		5	7
3.B.2 - University lecturers		2	4
3.B.3 - University scholarship		3	4

Main theme 3: Disrupted and uneven social support	Social supports participants' preferences and perceptions during Alert levels 4 & 3, 2021, in Auckland	Files	References
office			

Main theme 4: Risk communication experience	Participants' experience of risk communication during Alert levels 4 & 3, 2021, in Auckland	Files	References
4.A - Motivation for information seeking	**Why participants seek information during a period of uncertainty as the COVID-19 pandemic**	0	0
4.A.1 - Anxiety reduction		1	1
4.A.2 - Sensemaking		4	4
4.B - Perceived quality of the communication process	**Participants' perception of a university's risk communication in Auckland during Alert levels 4 & 3, 2021, in Auckland**	0	0
4.B.1 - "Impersonal communication"		5	8
4.B.2 - Accessibility and consistency		4	5
4.B.3 - Relevant information		5	6
4.C - Primary information sources	**Participants' preferences when seeking information related to COVID-19**	0	0
4.C.1 - Friends & family		4	4
4.C.2 - Mainstream media		1	1
4.C.3 - Prime Minister Jacinda Arden		2	2
4.C.4 - Social media		4	4