An evaluation of a mindfulness meditation-based program for Tāmaki Health patients

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Abstract

Background: One in five New Zealanders are affected by mental health issues every year and suicide rates in New Zealand are consistently high. Mindfulness-meditation based programs (MMBPs) have research evidence for use with a variety of mental and physical health disorders in a range of settings such as outpatient care, primary healthcare, and private care. However, much of this research is not contextualized to New Zealand healthcare. The Aotearoa Mindfulness and Awareness (AMA) Wellness course is an MMBP based on Mindfulness Based Stress Reduction (MBSR) and was developed by an MBSR trained clinician. Tāmaki Health, New Zealand's largest primary healthcare group offers approximately 63 AMA courses per year. The aim of this study was to investigate the impact of Tāmaki Health's AMA Wellness course on wellbeing for participants aged sixteen and older.

Participants/Method: For this mixed-methods research, quantitative data were collected via questionnaires at baseline from 70 participants and post-intervention from 31 who completed the course. Due to the nationwide COVID-19 lockdown starting in August 2021, AMA courses continued online, therefore, data from participant samples were analysed according to whether they received in-person course delivery or online delivery. Qualitative data were collected from telephone interviews with ten participants and the data analysed using thematic analysis.

Results: Spearman's rho correlation analyses found that, in both samples, higher mindfulness levels were correlated with lower levels of anxiety and depressive symptoms. Additionally, higher depressive symptom levels were correlated with higher somatization and anxiety symptom levels in both samples. Descriptive statistical analysis and Wilcoxon Signed Rank tests found that after completing the AMA in-person courses, scores of mindfulness increased and levels of somatization, anxiety, and depressive symptoms decreased. The same analysis revealed that for the online courses, levels of mindfulness increased and levels of anxiety symptoms decreased from pre- to post-intervention. Attrition rates were over 50%. However, an independent samples T-test and chi-square analyses indicated no statistically significant differences in demographics and course completion. Interviews revealed two major themes: *Slowing down* and *Letting things go.*

Conclusions: The quantitative data suggest that after attending the AMA course, most participants demonstrate an increase in mindfulness levels and decrease in anxiety when delivered in-person or online. When the AMA course is completed in-person, scores of somatization and depressive symptoms also decrease. Most participants who were interviewed commented that the AMA course impacted them positively and provided tools to cope with everyday challenges. Strengths and limitations, clinical implications and directions for future research are discussed.

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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

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This research is dedicated to Kerry Atma, for the light you bring to all of your patients at Tāmaki health is admirable beyond comparison. Thank you for your dedication to AMA, showing the world your resilient nature, and for always being humorous and helpful to myself, Miren, Manjusha and Lila.

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Ethics Approval

As the current study involves human participants, an ethics application was submitted to the Health and Disability Ethics Committees and Auckland University of Technology Ethics Committee. Ethical approval was granted by Northern B Health and Disability Ethics Committee (HDEC) on 11th June 2021 (Application reference 21/NTB/141, submission code NZ/1/401A18) (Appendix 2). Ethical approval was granted by Auckland University of Technology Ethics Committee (AUTEC) on 21st June 2021 (Application # 21/206) (Appendix 3). As a requirement of HDEC approval, this study was registered under the Australian New Zealand Clinical Trials Registry (ANZCTR) on 23rd August 2021 (Registration number ACTRN12621001110875) (Appendix 19). Study amendments were approved by both HDEC and AUTEC on 14th July and 22nd July respectively (see Appendix 20).

Abbreviations

AMA	Aotearoa Mindfulness and Awareness
CAMS-R	Cognitive and Affective Mindfulness Scale-Revised
CBT	Cognitive Behavioural Therapy
CSQ	Client Satisfaction Questionnaire
GAD-7	General Anxiety Disorder 7-item
MMBPs	Mindfulness meditation-based programs
MBCT	Mindfulness-Based Cognitive Therapy
MBSR	Mindfulness-Based Stress Reduction
PHQ-SADs	Patient Health Questionnaire – SADs
PHQ-15	Patient Health Questionnaire 15-item
PHQ-9	Patient Health Questionnaire 9-item

Chapter One: Introduction and Literature Review

"Mindfulness gives you time. Time gives you choices. Choices, skilfully made, lead to freedom" (Bhante Henepola Gunaratana, 1991).

Introduction

The Scope of Mental Health Problems Globally and Locally

According to Whiteford et al. (2013) mental health and substance abuse disorders were the primary cause of disabilities globally in 2010. In 2017 it was estimated that 528 million people worldwide were living with some form of mental health disorder and 20% of the international burden of disease was attributable to mental health disorders (Campion et al., 2020; James et al., 2018). Nochaiwong et al. (2021) suggest that prior to 2014, the prevalence of mental health disorders was 29.1%, 9.6% for mood disorders and 12.9% for anxiety disorders; however, worldwide prevalence of mental health problems has increased amid the COVID-19 outbreak and in 2020 prevalence rates for depression were 28% and anxiety 26.9%.

One in five New Zealanders are affected by mental health issues every year and suicide rates in New Zealand (NZ) are consistently high (Bandyopadhyay & Meltzer, 2020). Mulder et al. (2017) reported that rates of psychological distress for adults in NZ increased from 4.5% in 2011 to 6.8% in 2016. In Auckland alone, crisis referrals increased from 2,000 in 2010 to over 6,000 in 2015 (Mulder et al., 2017). In NZ, Māori experience higher levels of mental health disorders such as depression and anxiety, than non-Māori groups (Russell, 2018). Similarly, Minster et al. (2018) found that, on average, Pacific peoples report higher psychological distress than non-Māori and non-Pacific people in NZ. Lee et al. (2017) found that Māori and Pacifica had an increased likelihood of anxiety and depression compared to NZ Pākehā but NZ Pākehā reported higher rates of diagnosed depression or anxiety. Lee et al. (2017) suggest that this may be due to low service usage by Māori and Pacifica and therefore lower rates of reported diagnoses.

A third wave of therapy treatments

"Waves of treatment" is a term given to the different types of behavioural treatments that are developed from precursing theories or "waves" of therapy (Hayes, 2004). Skinner and Watson's theories of classical and operant conditioning formed the basis of the first "wave" of behavioural therapies (Brown et al., 2011; Skinner, 1953; Watson, 1925). "First wave" behavioural therapies focus on dysfunctional behaviours and subsequent behaviour modification in response to stimuli that would increase or decrease certain behaviours (Carvalho et al., 2017). Therefore, eliminating one or more of these influences would facilitate behaviour change

(Carvalho et al., 2017). The inclusion of thoughts, cognitions, and core beliefs influenced the development of the second "wave" of therapies (Beck, 1976; Brown et al., 2011; Ellis, 1957). "Second wave" therapies such as Cognitive Behavioural Therapy (CBT) introduced the approach of identifying maladaptive thoughts, negative core beliefs, and specific physiological states that influence dysfunctional behaviours (Brown et al., 2011). Approaches such as cognitive restructuring support individuals to reappraise thoughts and negative core beliefs in an attempt to reduce dysfunctional behaviours (Clark, 2013). "Third wave" therapies occurred with the consideration of contextual influences on psychological wellbeing and the function of psychological behaviours and experiences (Hayes et al., 2013). Some third wave therapies, such as Acceptance and Commitment Therapy, focus on the acceptance and mindfulness of adverse internal experiences and value focused living (Hayes, 2004). Acceptance and mindfulness-based treatments have been integrated into psychological care and have been advocated as a "third wave" of therapy following behavioural therapies and CBT (Hofmann & Asmundson, 2008).

Mindfulness and Health

Mindfulness is a significant aspect of traditional Buddhist meditative practice and involves bringing one's attention to the present moment (Kang & Whittingham, 2010). Mindfulness is an ancient construct and has been found in many other religious practices such as Hinduism, Islam, Judaism, and Christianity (Harris, 2009). Mindfulness aims to support individuals to expand their awareness of internal and external experiences and to facilitate acceptance of unhelpful thoughts, feelings, and sensations (Kang & Whittingham, 2010). Although not the aim of mindfulness practice, symptom reduction is a common by-product of increased levels of mindfulness (Boone et al., 2015). Shapiro and Carlson (2017) describe mindfulness as becoming present or gaining a deep awareness of the present as each moment comes and goes. Fundamentally, mindful awareness involves being attentive to the experiences of the present with receptivity and openness, without judgement of whether the moment is positive or negative (Shapiro & Carlson, 2017). This use of non-judgement and mindfulness aids people in accepting distress, either physical or psychological, and lessens catastrophizing and rumination (Lakhan & Schofield, 2013).

Incorporating mindfulness into western medicine and psychology achieved prominence after 1979, when Jon Kabat-Zinn developed Mindfulness-Based Stress Reduction (MBSR) which has become one of the most researched forms of Mindfulness Meditation-Based Programs (MMBPs) (Goldin & Gross, 2010). MBSR is a structured group intervention that uses mindfulness-based meditation to reduce the distress accompanying physical, psychological, and psychosomatic disorders (Grossman et al., 2004). Mindfulness-Based Cognitive Therapy (MBCT) is a variation of MBSR which incorporates principles of cognitive therapy with mindfulness-based meditation (Fitzpatrick et al., 2010; Segal et al., 2002). Many MMBPs have

been developed following MBSR and have been offered across multiple settings such as schools, hospitals, and primary healthcare (Crane et al., 2017). The development of MMBPs has been influenced by contemplative mindfulness practices, scientifically proven approaches, and the disciplines of psychology, medicine, and education (Crane et al., 2017). MMBPs share similarities with programs such as MBSR and MBCT in that formal and informal meditation practices are a core aspect for therapeutic change (Crane et al., 2017).

Mindfulness meditation as used in MMBPs involves a variety of meditation techniques that can facilitate and enhance an individual's levels of mindfulness (Eberth & Sedlmeier, 2012). Mindfulness meditation has been known to enhance attention, reduce stress, and enhance self-regulation through self-awareness and emotion regulation (Tang et al., 2015). Mindfulness meditation mainly includes meditating quietly whilst focusing attention aspects such as thoughts, feelings, the breath, or someone you care for (involved in the "loving kindness" meditation) (Eberth & Sedlmeier, 2012). Relaxation techniques used in many MMBPs focus on targeting physiological sensations, such as the slowing of breathing to affect the autonomic nervous system and consequently thought processes resulting in relaxation (Wilson et al., 2014). Yoga is also introduced in many MMBPs as a form of informal practice.

Other techniques taught involve interrupting cognitive processes that can contribute to psychological distress, such as cognitive defusion exercises, which can also lead to reduced physiological distress and increase relaxation (Wilson et al., 2014). Cognitive fusion explains how individuals can overidentify and become "stuck" to thoughts which can cause rumination (Boone et al., 2015). When individuals become "stuck" with thoughts, they can become avoidant or fall into emotional habitual patterns (Boone et al., 2015). Therefore, cognitive defusion involves activities to reduce the attachment to thoughts and feelings and can result in decreases in depression and distress levels (Bramwell & Richardson, 2018).

Mental health services

Despite the variety of treatments available, McCabe and Leas (2008) state individuals experiencing mental health issues have many barriers influencing their willingness to access healthcare services. Schnyder et al. (2018) report that negative stigma and lack of awareness of mental health and its treatments are the main barriers for individuals accessing healthcare. Rudd and Beidas (2020) note that, even when treatment is available, few receive effective treatment. In 2019, 13.4% of adults in the New Zealand Health Survey reported not accessing healthcare services due to the cost (Ministry of Health, 2019). Barriers in healthcare at the organisational level include lack of appropriate appointment times and extensive wait times to access support (Ketu-McKenzie, 2019). Restrictions enforced to contain the spread of COVID-19, such as

frequent lockdowns, have restricted and disrupted accessibility of healthcare services worldwide (Nshimyiryo et al., 2021). Although many healthcare services have responded with virtual services such as video and phone consultations, they are not completely accessible; therefore, the effects of COVID-19 have added more barriers to healthcare access for a large proportion of individuals (Nshimyiryo et al., 2021).

Minster et al. (2018) found that 24% of Pacific peoples were not aware of support available if they experienced anxiety and 15% were not aware of support for depression. Additionally, Wong (2015) states that Asian peoples tend to have lower access rates to healthcare, including primary care. The Ministry of Health (2014) found that Māori adults are more likely than non-Māori to experience at least one form of unmet need through primary care. With the need for culturally appropriate interventions, the rising levels of mental distress in the community, and the effects of COVID-19, NZ mental healthcare services need to be expanded and improved (Bushnell et al., 2003; Campion et al., 2020).

In February 2021, the Mental Health and Wellbeing Commission was established to "contribute to better and equitable mental health and wellbeing outcomes for people in New Zealand" (Mental Health and Wellbeing Commission Act 2020). This commission functions to monitor and increase the effectiveness and adequacy of mental health and wellbeing services in NZ to improve mental health and addiction outcomes (Mental Health and Wellbeing Commission Act 2020). Health professionals have advocated for mindfulness based programs as being accessible, self-directed, and cost-effective interventions (Flett et al., 2020). MMBPs can be a treatment option that addresses barriers to accessing healthcare as they are evidence-based approaches that can be adapted for numerous populations, locations, and contexts (Crane et al., 2017; Wrapson et al., 2021). Mindfulness programs are also easily accessible as many can be accessed through self-referrals and are often free of charge (Agee et al., 2009; Walach et al., 2007).

Mindfulness and Te Ao Māori

Many Māori recognise health from a holistic viewpoint where overall hauora (health) is influenced by many aspects (Rochford, 2004). Te Whare Tapa Whā is a model of health described by Dr. Mason Durie (2001) that encompasses this holistic view of health as being a collective of taha tinana (physical health), taha hinengaro (emotional/mental health), taha whānau (social/family/friends), and taha wairua (spiritual health). Some Māori believe that some health services do not encompass a holistic view because they follow a biomedical model that can only assess taha tinana (Rochford, 2004). As MBSR follows a holistic view of health through its emphasis on the mind and body connection, this reflects key aspects fostered in Te Ao Māori (Ketu-McKenzie, 2019). Healthcare that is culturally responsive and includes clients'

cultural beliefs in intervention plans can assist in engagement of health services and retention (Cram, 2014; Wilson, 2008). Therefore, MMBPs can potentially be an effective treatment for individuals from different backgrounds and beliefs, and who may prefer alternatives to traditional more narrow biomedical treatments (Bowen et al., 2006).

The different types of mindfulness

There are two aspects of mindfulness, 'state' and 'trait' mindfulness. Shapiro et al. (2011) describe state mindfulness as the "actual experience" of practising aspects of mindfulness such as focusing attention on the present moment. Trait mindfulness is described as the degree to which a person is genuinely mindful, as if mindfulness is a 'trait' or stable personality characteristic (Shapiro et al., 2011). Research suggests that increasing state mindfulness levels through regular mindful meditation practice can increase trait mindfulness which has enhanced psychological benefits (Kiken et al., 2015).

Both formal and informal mindfulness practices can facilitate state and trait mindfulness (Birtwell et al., 2019). Informal mindfulness can involve awareness of everyday activities and mindfully engaging in everyday tasks, such as mindful eating, and can reduce reactivity to situations, allowing individuals to regulate emotions when responding to distressing situations (Jazaieri & Shapiro, 2017; Zeller & Lamb, 2011). Setting time aside to engage in mindfulness meditations such as the body scan is considered formal mindfulness practice (Hawley et al., 2014). Both formal and informal practices can help an individual cultivate mindfulness into their lives, and by practising formal mindfulness, informal mindfulness can be strengthened and vice versa (Jazaieri & Shapiro, 2017).

Group Interventions

There are a number of benefits of group interventions compared with individual interventions. Galik et al. (2013) suggest that they include the opportunity for participants to learn from each other, validation and normalisation from similarities between one's own distress and others', and the provision of a space to problem solve interpersonal issues. Ezhumalai et al. (2018) state that group interventions can also create a more permanent change to behaviours and mood, are easier to effect changes than at an individual level, and the benefits of the intervention can affect more clients at once making it time and resource efficient. Whilst MBSR was developed as a group intervention, recent studies have used mindfulness training as an intervention in individual sessions and have found benefits for participants (Wrapson et al., 2021).

Literature Review

Mindfulness and evidence for use with specific disorders

MMBPs have been used with a variety of mental and physical health disorders, with strong evidence supporting their effectiveness in reducing depression and anxiety (Groves, 2016). The findings from Carmody and Baer (2008) suggest that MBSR is effective in increasing individual mindfulness facets such as observing, describing, acting with awareness, nonjudgement, and non-reactivity, which are correlated with an increase in psychological wellbeing. High levels of mindfulness have been positively correlated with better health outcomes as they enable the individual to decrease their attachment to cognitions and emotions and remain in touch with the present moment (Brown et al., 2015). Benefits of attending MMBPs, such as reduced distress, are frequently accredited to the increase in levels of mindfulness cultivated by these programs (Shapiro et al., 2008).

Many studies also show the efficacy of mindfulness training for a reduction in severity of symptoms for post-traumatic stress disorder (PTSD) (Lang, 2017). Reffi et al. (2019) state that aspects of mindfulness such as non-judgement, mindful awareness, and non-reactivity have a positive influence on symptoms of PTSD such as re-experiencing, negative alterations in thoughts and mood, and hyperarousal. Brewer et al. (2013) and Davis et al. (2007) have found that MSBR and mindfulness training have shown efficacy in treating addictions, including smoking, by reducing the neurobiological processes that activate cravings and the distress that may precede addictive behaviours.

As mindfulness interventions emphasise the mind-body relationship, there are numerous benefits for physiological, as well as psychological, disorders. Armani-Kian et al. (2018) found that after completing MBSR, participants had a significant reduction in fasting blood sugar and Haemoglobin A1c (average blood sugar level) scores, as well as improvements in emotional wellbeing related to their type 2 diabetes. Nardi et al. (2020) and O'Reilly et al. (2014) found that mindfulness-based programs can increase physical activity and positively influence diet and eating habits, which can not only influence obesity and diabetes, but also positively affect cardiovascular health. Mindfulness training can help individuals respond to stressful situations more skilfully and mindfulness is positively linked to decreases in blood pressure (Nardi et al., 2020).

Mindfulness for Anxiety, Depression, and Stress

Presentations frequently seen in primary care services include stress, depression, and anxiety disorders (Sundquist et al., 2015). MMBPs are beneficial in primary care settings as they can introduce skills to clients that can be used within and outside of the sessions (Sundquist

et al., 2015). Studies utilising MBSR have been conducted in a range of contexts, including outpatient care, primary healthcare, and private care.

A study by Greeson et al. (2015) found that MBSR in a community medical centre was beneficial in decreasing symptom severity of depression and increasing levels of mindfulness regardless of an individual's religion, pre-intervention trait mindfulness level, spiritual orientation, gender, or age. Arch et al. (2013) used a randomized clinical trial in an outpatient care context with veterans being treated for anxiety disorders, to assess whether CBT or an adapted MBSR program would be more effective in reducing anxiety and co-occurring problems such as depression and emotion regulation. The study found that both the adapted MBSR and CBT interventions reduced the severity of anxiety disorders but the MBSR program was more effective than CBT in reducing clinician-assessed comorbid mood and anxiety disorders (Arch et al., 2013).

In NZ, Simpson and Mapel (2011) examined the effectiveness of MBSR for patients in the Hawke's Bay living with chronic illness and found substantial health benefits such as reduced pain, increased energy, and increased general wellbeing. The study found that MBSR reduced the severity of depression, anxiety, and stress from mild to normal levels, as measured by the Depression Anxiety Stress Scale (DASS). These lower levels were maintained at six months post-intervention. Additionally, participants' experience of pain was reduced and participants felt better equipped to manage their pain after completing the MBSR training (Simpson & Mapel, 2011).

Sundquist et al. (2015) found that mindfulness group therapy in a primary healthcare setting had significant effects on reducing participants' anxiety and depression, and was just as effective as individual CBT. Two hundred and fifteen participants were sampled from general practices across southern Sweden and were either allocated to a mindfulness course or a control group that involved attending 6 sessions of individual CBT. By using self-report questionnaires, this study found a statistically significant decrease in scores of depression and anxiety from baseline to post-intervention for both the intervention and control groups.

Mindfulness for Somatization

Somatization occurs when an individual's psychological distress is expressed as somatoform symptoms, which are physical symptoms that cannot be explained by a medical condition (Dantzer, 2005). Lakhan and Schofield (2013) found that MMBPs, including MBSR and MBCT, were effective in reducing depression, and anxiety in participants with somatization disorders, consequently improving quality of life and reducing pain. Fjorback et al. (2013) found that participants experiencing somatization disorders who attended MBSR in a university

hospital in Denmark showed reduced symptom severity and enhanced quality of life after completion of the course. Masuda and Tully (2012) found that mindfulness levels are inversely correlated with somatization symptom levels for students.

Mindfulness for Chronic pain

Chronic pain can be a standalone issue for many individuals when caused by physiological disorders, or it can be a symptom of a somatization disorder such as Irritable Bowel Syndrome (IBS) (Lakhan & Schofield, 2013). Studies have found that MMBPs can be effective for individuals experiencing chronic pain through reducing symptom severity and facilitating acceptance of chronic pain (Lakhan & Schofield, 2013).

McCubbin (2014) discovered that participants experiencing chronic pain and illness, and stress disorders showed improvement in symptom severity and a decrease in their use of health services after attending an MBSR course in a primary health setting. After attending MBSR sessions for eight weeks, clients reported a reduction in psychological symptoms such as depression and anxiety, as well as a decrease in body pain. Kurdyak et al. (2014) found that participants who attended MBCT in a clinical setting in the U.S. reported a significant decrease in primary healthcare utilization for non-mental health issues. The results provide support that psychosocial interventions such as MBCT can reduce somatic preoccupation and increase distress tolerance for individuals who are high users of primary healthcare services for mental health and physical health complaints.

A pilot study by Beaulac and Bailly (2015) found that an eight-week group program based on MBSR effectively reduced psychological distress and feelings of pain, and increased pain management skills and willingness to engage in life activities for primary care patients experiencing chronic pain. Participants also reported high satisfaction with the program regarding learnt skills, the facilitator's abilities, and the group setting.

Attrition and Retention rates of MMBPs

The findings from 13 different studies on MBSR attrition rates by Baer et al. (2006) suggest that participants who complete mindfulness programs range from 60 to 97% with an average completion rate of 85%. Anderson et al. (2007) suggest that factors such as work and sickness interfere with attendance, whereas Marjani (2017) suggests that attrition rates can be attributed to demographic variables that may influence how mindfulness meditation impacts an individual's situation.

The Current Study: A Pilot Study of an MMBP for Tāmaki Health patients

A review of relevant literature offers information about the use of MMBPs in healthcare and the outcomes associated with a variety of physical and mental health

conditions. However, much of this research is not contextualized to NZ healthcare. Demarzo et al. (2015) state that research regarding mindfulness-based interventions is lacking in a primary care setting as opposed to other settings like secondary care. By completing this study in a NZ context and in a primary healthcare setting, gaps in the literature may be addressed. This research will aim to answer the primary research question of: "What is the impact of the mindfulness-based course, Aotearoa Mindfulness and Awareness (AMA), on wellbeing for participants aged sixteen and older in the primary healthcare organisation Tāmaki Health?"

Beaulac and Bailly (2015) support the use of pilot studies to investigate whether the main components of the study work well together and the viability of using a certain protocol in a primary health setting. Becker (2008) argues that pilot studies have been critiqued by researchers as not producing statistically significant results and that the attempt to integrate findings into clinical practice is decreased as well as the chances of replicating a study. However, Secomb and Smith (2011) report that pilot studies can enhance the possible success of a future study by investigating the efficiency of study methods and data collection procedures.

The overarching aim of the current pilot study was to investigate the impact of an MMBP, the AMA Course, on participants aged 16 and above. A mixed method approach was used. A quantitative approach was used to investigate the impact of the course on levels of somatization, depression, anxiety, and mindfulness. The quantitative component included primary and secondary outcome measures and related research questions and hypotheses which are as follows:

Primary outcome measure*:*

Question One: *How will the AMA course affect levels of mindfulness and will this show a relationship with the severity of psychopathology?* Hypothesis 1: Participants who complete the AMA course will show an increase in mindfulness as measured by the Cognitive and Affective Mindfulness Scale – Revised (CAMS-R). Higher mindfulness levels will be correlated with lower levels of somatization, depression, and anxiety.

Secondary outcome measures:

Question Two*: How will the AMA course impact on levels of somatization?* Hypothesis 2: Participants who complete the AMA course will show a decrease in somatization as measured by the Patient Health Questionnaire - 15 item (PHQ-15).

Question Three*: How will the AMA course impact on levels of anxiety symptoms?*
Hypothesis 3: Participants who complete the AMA course will show a decrease in anxiety as measured by the Generalized Anxiety Disorder - 7 item (GAD-7).

Question Four*: How will the AMA course impact on levels of depressive symptoms?*
Hypothesis 4: Participants who complete the AMA course will show a decrease in depression as measured by the Patient Health Questionnaire - 9 item (PHQ-9).

The qualitative component investigated reasons for participant engagement in the AMA course, if participants had any expectations of the course prior to attending, the impact of the different practises experienced in the course, and if any participants continued to practise mindfulness after completing AMA.

Chapter Two: Method

Mixed Methods Research

Mixed methods research combines both quantitative and qualitative data to reap the benefits of both approaches to better understand phenomena (Guetterman et al., 2015). "Mixed methods" is a framework of enquiry that is frequently used in health sciences to examine a broad range of issues faced in public health (Creswell et al., 2011). These issues include adherence to treatments, behavioural aspects of health and disability, and health disparities in populations, ethnic and cultural groups (Creswell et al., 2011). Mixed methods research combines the strengths of both qualitative and quantitative approaches to provide a better understanding of the research topic that only one type can (Harrison et al., 2020). The mixed methods approach is justified on pragmatic grounds to fully understand the diversity and complexity of healthcare and issues within the health sciences (O'Cathain, 2009). A mixed methods approach is an appropriate methodology for the current study as it will provide a framework to explore the impact of the AMA course through psychopathology statistical findings (quantitative data) and accounts of lived experiences (qualitative data). When conducting pilot studies, mixed methods can provide both statistical and explanatory results to inform future research and address issues to do with methodology and design (Secomb & Smith, 2011).

Guetterman et al. (2015) explains that three approaches can be taken to mixed methods research designs: exploratory sequential, explanatory sequential, and convergent designs. Exploratory sequential uses the analysis of qualitative data to inform the collection and analysis of quantitative data. Explanatory sequential collects and analyzes quantitative data first to then inform qualitative data collection and analysis. Convergent designs collect and analyse quantitative and qualitative data simultaneously to create an amalgamated analysis process. Convergent designs integrate themes and statistics to understand a variety of experiences of a phenomenon and any variables that may affect outcomes (Guetterman et al., 2015). A parallel analysis approach to mixed-methods design involves analysing quantitative and qualitative data separately, and combining findings in the discussion phase of research (Henry et al., 2015). This research study followed a convergent design with a parallel analysis approach.

Quantitative approaches primarily use numerical data that are measurable and quantifiable and analyzed to determine relationships among variables to investigate if these statistical relationships happen by chance (Jack et al., 2010). Qualitative approaches use textual data to understand the lived human experience and explore the meaning, interpretation and significance of constructs described by participants (Jeanfreau & Jack, 2010). Therefore, the

combination of both approaches enables the researcher to view the phenomena in question from a broader, more diverse lens to better understand the parameters of the research topic (Shorten & Smith, 2017). Additionally, when used in conjunction, each approach can provide additional information to support findings found by the other (Shorten & Smith, 2017).

Thematic analysis (TA) is an analysis method used in qualitative data to identify patterns within the data that are important to gain understanding of a phenomenon (Fereday & Muir-Cochrane, 2006). TA is suitable for use across a variety of methodologies and is not motivated by a particular philosophical orientation (Braun & Clarke, 2006). Through a process of reading and re-reading text and creating codes of common occurrences, codes are developed into themes (Fereday & Muir-Cochrane, 2006). Themes within the data can be identified through an inductive or deductive approach. Inductive TA is when themes are identified within the data without attempting to fit the data into pre-determined coding frames, or the primary investigator's presumptions. Braun and Clarke (2006) describe this method of TA as "data-driven" and comment that when compared to deductive TA, it provides a richer production of data. Deductive TA, or "theoretical" TA, is driven by pre-existing knowledge or theories. Both approaches are determined by how and why the data are being coded (Braun & Clarke, 2006).

For both qualitative and quantitative research the literature suggests different sample sizes for adequacy and reliability of study findings. Delice (2010) explains that as quantitative research focuses on reliability and generalizability of data, sample sizes should be large enough to accurately represent the overall population. For relational surveys, Delice (2010) suggests the sample size should be at least 30, for experimental studies more than 50, and for survey research a minimum of 100 (20-50 for each subgroup). On the other hand, Sandelowski (2000) suggests for qualitative research to produce adequate findings a sample size of 10 participants could be sufficient. Too small a sample may not achieve sufficient diversity of participants and variation in the data, whereas too large a sample could jeopardize sufficiently detailed accounts from participants to enrich the research (Sandelowski, 2000). Therefore, in the current study the preliminary aim was to recruit 10 participants for the qualitative component and approximately 100 participants for the quantitative data.

The Aotearoa Mindfulness and Awareness (AMA) Wellness Course

Tāmaki Health is NZ's largest independent Primary Health Organisation (PHO). Founded in 1977 Tāmaki Health provides care for over 4,000 patients per day (https://www.tamakihealth.co.nz/). For the past eight years Tāmaki Health has offered the free Aotearoa Mindfulness and Awareness (AMA) course for patients who attend a White Cross or Local Doctor's medical clinic in Auckland.

The AMA course is a Mindfulness Meditation Based Program (MMBP) that was developed by MBSR trained clinician Lila O'Farrell (https://www.tamakihealth.co.nz/services/mental-wellness). The adaptation was guided by the recommendations included in a paper by Crane et al. (2017) for defining a mindfulness-based program, and teachers are trained and assessed according to the international standards for Mindfulness-Based Interventions: Teaching Assessment Criteria (MBI:TAC) (Lila O'Farrell, personal communication, September 26, 2021). Crane et al. (2017) state the MBI:TAC competence criteria include coverage, tempo and organization of the session syllabus; interpersonal skills; skilful administration of formal mindfulness meditation practices; specific ways of demonstrating course themes through interactive inquiry, group dialogue and didactic teaching; and effective holding of the group teaching/learning space.

An outline of session guides for both MBSR and AMA is provided in Appendix 1. MBSR involves eight to ten weekly sessions, spanning two-and-a-half to three-and-a-half hours each, and one full day mindfulness 'retreat' (Santorelli et al., 2017). MBSR encourages participants to engage in 40-45 minutes of formal meditation practice daily in between sessions (Santorelli et al., 2017). Engagement in 15-20 minutes of other activities, like informal practices, is also encouraged for each day between sessions (Santorelli et al., 2017).

The AMA course is adapted from MBSR by including one to one-and-a-half hours per session of mindfulness meditation practice, followed by teachings and group inquiry, and does not follow a didactic teaching program. Each AMA course runs for six weeks in total with participants attending one session per week and each session spanning two-and-a-half hours. Participants are also offered a free mindfulness retreat from 9:30am – 3:30pm on a Saturday, which is offered throughout the year.

Participants can graduate from the AMA course by attending five or six sessions and receive a graduation certificate. The AMA course and MBSR both include engagement in formal practices of yoga and body scan meditation, and informal practices like mindful eating, and mindfulness in daily life. The topics discussed in MBSR such as stress, self-compassion, habitual behavioural, cognitive, and emotional patterns, and responses to demands of life (Santorelli et al., 2017) are also covered in AMA.

AMA suggests participants implement informal mindfulness practices into their daily lives between sessions such as mindful walking or mindful eating, and 15-30 minutes of formal mindfulness practices like the body scan meditation. Unlike MBSR, the AMA course simply encourages participants to engage in homework practices. Dutton et al. (2013) report that, by encouraging participants rather than expecting engagement in homework, this reduces the

potential for the burden of failure, the guilt or feelings of failure that participants may experience if they cannot engage in homework exercises. As with MBSR, the AMA course provides participants with MP3s of guided meditations from 3-28 minutes duration for formal practice at home.

The AMA course is trauma-informed (Lila O'Farrell, personal communication, September 26, 2021) and blends teachings from psychology and Te Ao Māori with mindfulness meditation and gentle yoga practices (https://www.localdoctors.co.nz/services/mental-wellness). Trauma-informed practices involve adapting and modifying practices or the sequence of practices to decrease the possibility of dissociation and provide the client with resilience and grounding techniques (Burrows, 2016). Unlike MBSR, the AMA course offers grounding practices such as 'coming to our senses meditation' before practices like the body scan meditation. By offering grounding practices, the potential for clients with trauma backgrounds to dissociate or become re-traumatised is less likely (Burrows, 2016). Additionally, AMA offers clients the opportunity to practise meditations with eyes open or closed, and to identify their own sources of refuge such as grounding, stopping, karakia (prayer), or modifying practices as needed to remain in their learning or comfort zone (Lila O'Farrell, personal communication, September 26, 2021). This is to assist clients if they become distressed or begin to experience adverse effects related to anxiety or trauma. Trauma-informed practices increase the trans-diagnostic approaches of treatments. Trans-diagnostic approaches refer to methods that target key underlying processes in a range of psychological disorders, for example, the avoidance of negative emotions that underlie mood and anxiety disorders (Gutner et al., 2016).

The AMA course incorporates principles of Te Ao Māori such as pūrākau, the importance of Te hā (the breath), and the relationship between the spirit, the mind, and the body. By using teachings from Te Ao Māori, AMA offers an adapted program suited to a NZ population which honours the Treaty of Waitangi principles of participation, protection, and partnership.

Three mindfulness educators employed by Tāmaki Health collaborate to offer approximately 63 AMA courses per year. Tāmaki Health provides seven different starting dates throughout the year from January to November. Courses are offered at seven different locations in Auckland (including one course in Hindi) with two courses offered online via Zoom. The Wellness Support Team (WST) at Tāmaki Health offer clients who are referred for psychiatric and psychological support the option of attending the AMA course and other courses and have posters displayed in each clinic to expand awareness of the free support offered. Tāmaki Health offers both morning and evening courses to accommodate a variety of clients' availability and offers courses every seven weeks to reduce wait times for support.

Recruitment

Patients are referred to the AMA course by a healthcare professional such as doctors, nurses, psychologists, health improvement practitioners and health coaches employed at Tāmaki Health. Patients are also able to self-refer to the course by contacting Tāmaki Health's WST. After referral, patients are screened by programme coordinators at Tāmaki Health prior to registration for the AMA course. This screening is to assess patients for any contraindications to attending the course. The AMA clinical lead has developed a list of contraindications for participation; however, each patient is considered individually within the triage process. When enrolling participants in the AMA course, the contraindications screened for are:

- Active substance dependence – legal or illicit
- Inadequate comprehension of the language the course is delivered in – either English or Hindi (note: no Hindi courses were involved in the current research as they were not available to participants)
- Forensic concerns leading to participants' risk to others as assessed by clients' clinician
- Suicidality and self-harm – participants have a plan and/or intent or have recently attempted
- Psychosis unless assessed by a psychiatrist as stable/ symptom-free
- Complex Post-traumatic stress disorder or PTSD– unless assessed by AMA clinical lead as suitable.

Any concerns are referred to the AMA clinical lead who may decline or redirect the referral to a more appropriate service, or seek clarification from the referring general practitioner or psychiatrist. Frequently the AMA clinical lead will contact the patient to assess their readiness for the AMA course and/or to provide psychoeducation about the interaction of their diagnosis and the practice of mindfulness meditation. This includes extending support to the individual as needed throughout the program, or requesting that the participant's therapist or wellness advisor maintain contact with them.

After screening, participants are contacted by coordinators from the WST to register for a course. Participant registration is voluntary and if participants decline the referral, they are advised that they can contact the WST or visit their healthcare professional for another referral at any time.

The inclusion criteria for the current study were adults aged 16 and above who were able to give informed consent and registered for and attended the AMA course through Tāmaki Health. The Health and Disability Ethics Committees suggest that in research, participants under the age of 16 should give consent to participate **and** provide consent from parents or

guardians (https://ethics.health.govt.nz/HDEC/templates). Tāmaki Health allows participants aged 15 and above to attend the AMA course and does not require parental consent to attend to maintain a client's privacy and confidentiality. Therefore, to avoid the need to gain parental consent for participation in the study and to reflect Tāmaki Health's privacy and confidentiality rules for 15 year olds, only participants aged 16 years and above were invited to take part in this study.

Participants on anti-depressants or any other medications, and participants receiving other treatments such as those delivered by psychologists, specialist therapists, and psychiatrists, were eligible to be included in the study.

Participant recruitment to the current study commenced following ethical approval from AUTEC and HDEC (see appendix 2 and 3). The recruitment and retention process are included in Figure 1. Out of the 80 participants who were registered for the AMA courses in June 2021, 48 were reachable via telephone for an invitation to take part in the study. Of those contacted, four declined to take part. 28 participants of the 80 registered to attend the AMA course did not receive information about the study as the coordinators could not contact them by phone. Participants who were successfully contacted agreed to receive the study information and were emailed the participant information sheet (PIS), consent form, and demographic information sheet, of whom 42 volunteered to participate in the research by returning the forms. As the study aimed to recruit approximately 100 participants, participants were also recruited from the AMA courses that began in August 2021.

In an attempt to reach more participants for the study during the August course recruitment, an amendment was made to the recruitment process. This amendment was approved by both HDEC and AUTEC. Participants for the AMA courses in August were contacted via email, rather than by telephone, after their registration to the course. The email contained the PIS, consent form, demographic information sheet and a poster inviting participation in the study (see appendices 4, 5, and 6 respectively). With this amended recruitment method, participants had more time to contact the researcher with questions, or to arrange a face-to-face meeting to discuss their participation in the study. This process saw the recruitment of 32 additional participants.

Participants were advised that withdrawal from the study was possible at any point throughout the data collection process which was planned to end in September 2021.

Data collection

Pre-intervention

Courses were offered in six Auckland suburbs: Mount Roskill, Pukekohe, Glen Innes, Otara, Henderson, and Epsom, and subsequently online. The first AMA course started on 23rd June 2021 and the second round of AMA courses started on 10th August.

Participants from the June intake attended all six sessions of the AMA course in person. Participants from the August intake attended session one of the AMA course in person and the following five sessions online due to the Auckland COVID-19 Level 4 lockdown. Originally both samples were to be merged into one sample and data analyses were intended to be completed utilising all participants' data. As modes of delivery changed for the August courses, to maintain validity, samples were not merged, and data were analysed separately. Therefore, the June intake of participants who attended in person formed sample A and the August intake of participants who attended primarily online formed sample B.

At the first session of the AMA course, a participant information sheet and a consent form for the study were given to each AMA course participant by the mindfulness educators so as not to exclude anyone who was interested in taking part in the research. After completing a consent form for the course, participants were asked to complete a brief set of self-report measures. These measures are completed by all AMA course participants, the only difference was that if participants were taking part in the study, their data would be used by the researcher.

Two participants did not complete the baseline questionnaires, one participant did not complete the demographic questionnaire, and one participant withdrew from the study after completing the AMA course. Therefore, pre-intervention data were collected from a total of 70 participants. Out of these 70 participants, 37 participants did not complete the course and consequently did not complete the post-intervention questionnaires, and two participants finished the course but did not complete the post-intervention questionnaires. Post-intervention data were therefore collected from a total of 31 participants.

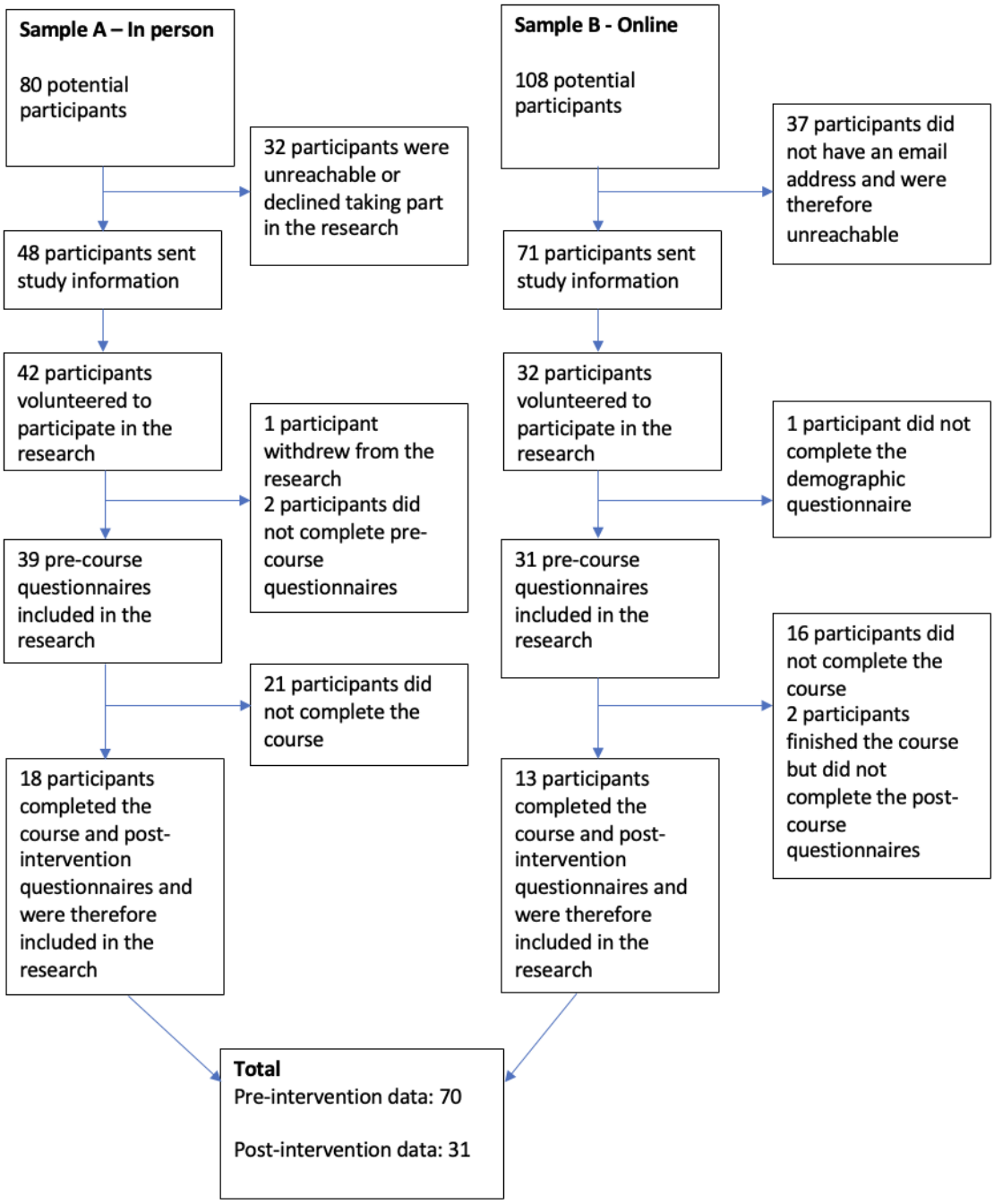

Figure 1.
Recruitment and retention for research participants

Post-intervention

The post-intervention data collection began on 28th July, for sample A, and began on 13th September, for sample B. All participants who concluded their course online were sent the post-intervention questionnaires via email and text to complete on a Google document created by Tāmaki Health. Each participant was also given 15 minutes at the beginning of session 6 of the course to complete the questionnaires via Google Documents.

Participants who volunteered on the consent form to be contacted for a telephone interview, as part of the qualitative component of the study, were contacted within four weeks of completion of the first AMA course that finished on 28th July 2021. Participants who volunteered were numbered from 1-20 and a random number generator was used to randomly select participants for an interview. Once ten participants had taken part in an interview, the interview process finished. During the process of contacting participants, four participants declined an interview and six were hard to reach. Therefore, all 20 participants who offered their time were contacted, with ten agreeing and participating in an interview. All telephone interviews were conducted within four weeks of the first AMA course. Telephone interviews were completed with participants from sample A (in person course) only due to time constraints.

Participants

At the first session, in addition to demographic questions, participants were asked if they had ever done any meditation before, and in an open-ended question, the reason for their referral to the AMA course. Referral reasons varied such as anxiety and depression, stress, post-traumatic stress disorder, and grief. Referral reasons identified by participants in the demographic information sheet are presented in Appendix 17. The demographics of all the participants who volunteered for the study are provided in Table 1. Where participants reported multiple ethnicities, a "principal ethnicity" was recorded according to the Statistics New Zealand ranking for prioritised reporting of ethnic groups (https://www.educationcounts.govt.nz/data-services/code-sets-and-classifications/ethnic_group_codes).

In the June sample (sample A), out of the 39 participants 30 (76.9%) identified as female. Ages ranged from 21 to 71 and the mean age of participants was 41 years (SD = 13.7). The distribution of ages was normally distributed with a skewness of .318 (SE= .38) and Kurtosis of -.981 (SE= .74). NZ Pākehā accounted for 21 participants (53.8%). The highest education level for 18 participants (46.2%) was university (or other tertiary education) whilst one participant did not disclose their education level. Nineteen (48.7%) had some level of meditation experience and two participants did not disclose their experience.

For the August sample (sample B), of the 31 participants 17 (54.8%) identified as male. Ages ranged from 20 to 76 and the mean age of participants was 45 years (SD = 14.8). The distribution of ages was normally distributed with a skewness of 0.251 (SE = 0.42) and Kurtosis of -0.638 (SE = 0.82). NZ Pākehā accounted for nine participants (29%). One participant's ethnicity was categorised as 'Other' to maintain confidentiality. The highest level of education for 17 participants (54.8%) was university (or other tertiary education) whilst one participant

did not disclose their education level. Seventeen participants (54.8%) had previous meditation experience.

Table 1.
Demographic information of samples A and B and the total sample

Category	*Sample A (n=39)*	*Sample B (n=31)*	*Total Sample (n=70)*
	n(%)	*n(%)*	*n(%)*
Gender			
Female	30 (76.9)	14 (45.2)	44 (62.9)
Male	9 (23.1)	17 (54.8)	26 (37.1)
Ethnicity			
NZ Pākehā	21 (53.8)	9 (29)	30 (42.9)
Māori	8 (20.5)	3 (9.7)	11 (15.7)
Indian	5 (12.8)	8 (25.8)	13 (18.6)
European	3 (7.7)	1 (3.2)	4 (5.7)
Pacific Islander/Pasifika	1 (2.6)	3 (9.7)	4 (5.7)
Asian	1 (2.6)	6 (19.4)	7 (10)
Other	0	1 (3.2)	1 (1.4)
Education			
University	18 (46.2)	17 (54.8)	35 (50)
Secondary	16 (41)	10 (32.3)	26 (37.1)
Postgraduate	4 (10.3)	3 (9.7)	7 (10)
Non-disclosed	1 (2.6)	1 (3.2)	2 (2.9)

The demographics of the participants who took part in the telephone interviews are provided in Table 2, with pseudonyms to maintain anonymity. Out of the ten participants, eight (80%) were female. Ages ranged from 26-60 with an average age of 44 (SD=11.74). The highest level of education for six participants (60%) was secondary school. Five (50%) of the sample had previous meditation experience. NZ Pākehā accounted for four participants (40%) and four participants (40%) identified as Māori. Three interviewees did not complete the course (sessions attended by non-completers bolded in Table 2), attending only 1-3 sessions each.

Table 2.
Demographics of interview participants (n=10)

Participant	Gender	Age	Ethnicity	Education	Previous meditation	Sessions attended
Ashleigh	F	34	NZ Pakeha	Secondary	Yes	5
Patrick	M	35	NZ Pakeha	Secondary	Yes	6
Shaun	M	53	Asian	University	Yes	5
Louise	F	53	Māori	Secondary	No	5
Anne	F	50	European	Secondary	No	6
Jane	F	46	Māori	University	No	5
Miren	F	53	NZ Pakeha	Secondary	No	6
Caitlin	F	60	Māori	Secondary	Yes	**1**
Emily	F	26	Māori	University	Yes	**2**
Rebecca	F	30	NZ Pakeha	University	No	**3**

Procedure/measures

Self-reported measures

The measures used were as follows:

The Patient Health Questionnaire – SADs (PHQ-SADs) (Appendix 7) is a tool primarily used for primary healthcare patients (Kroenke et al., 2010). It has three distinct components the *PHQ-15*, the *GAD-7* and the *PHQ-9* (Kroenke et al., 2010).

PHQ-15

The PHQ-15 is a 15-item questionnaire that can be used as a screening tool for somatization and somatoform disorders (Kroenke et al., 2002). The tool uses a Likert scale from 0 (Not bothered) to 2 (Bothered a lot), assessing how concerned participants have been by events over the past four weeks (Kroenke et al., 2010). Scores can range from 0 to 30; scores indicate somatic severity symptoms with 0-4 minimal, 5-9 low, 10-14 medium, and 15-30 high severity (Kroenke et al., 2002). The PHQ-15 demonstrates good internal consistency with a Cronbach's alpha (α) of 0.8 (Kroenke et al., 2002; van Ravesteijn et al., 2009).

GAD-7

The GAD-7 was created as a screening tool for Generalised Anxiety Disorder (GAD) (Kroenke et al., 2010). The GAD-7 provides reliable results when screening for GAD with a sensitivity of 89% (the ability to correctly produce threshold scores for people with GAD) and a specificity of 82% (the ability to correctly produce scores for those without GAD) (Williams, 2014). The GAD-7 has been proven to be helpful in screening for Social Anxiety (sensitivity 72%, specificity 81%), PTSD (sensitivity 66%, specificity 81%) and Panic Disorder (sensitivity 74%, specificity 81%) (Kroenke et al., 2010). Therefore, the GAD-7 is used as a screening tool for anxiety rather than a diagnostic tool for GAD. The GAD-7 uses

seven items to assess functionality over the last two weeks with a Likert scale from 0 (Not at all) to 3 (Nearly every day). The GAD-7 uses the DSM-IV criteria for GAD and scores can range from 0 to 21 with a score of 10 or more indicating diagnosable GAD (Spitzer et al., 2006). The GAD-7 has an additional section measuring panic attack symptoms in alignment with the DSM-IV criteria (Spitzer et al., 2006). Patients answer 'yes' or 'no' to indicate if they have experienced a panic attack in the last four weeks and the associated behaviours, physical, and emotional symptoms accompanying the attacks. The internal consistency as measured by Spitzer et al. (2006) was excellent ($\alpha = 0.92$).

PHQ-9

The PHQ-9 is a nine-item depression scale which measures symptoms and severity of depressive disorders (Kroenke et al., 2001). Similar to the GAD-7, the PHQ-9 uses the DSM-IV criteria for major depressive disorder (MDD) and asks participants to rate how different events such as poor appetite or overeating have impacted them over the past two weeks (Kroenke et al., 2001). The PHQ-9 uses the same Likert scale as the GAD-7. The scores can range from 0 to 27 and scores of 5, 10, 15, and 20 indicate mild, moderate, moderately severe, and severe depression, respectively (Kroenke et al., 2001). The internal consistency as measured by Kroenke et al. (2001) was very good ($\alpha = 0.89$) in a primary healthcare study.

Kroenke et al. (2002) describe that somatization is commonly co-morbid with disorders such as anxiety and depression and therefore the PHQ-9, PHQ-15 and GAD-7 combine in the PHQ-SADs to accurately measure these aspects of wellbeing. The PHQ-SADs includes a question to investigate the impact of somatization symptoms, anxiety, and depressive symptoms on functioning: "If you checked off any problems on this questionnaire, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?" Participants can choose an answer from "Not difficult at all", "Somewhat difficult", "Very difficult", or Extremely difficult". Additionally, the GAD-7 has a five-item scale to identify the frequency of panic attacks and each item that can be answered with either 'yes' or 'no'.

The Cognitive and Affective Mindfulness Scale - Revised (CAMS-R) (Appendix 8) is a 12-item scale that measures facets of mindfulness such as attention, awareness, acceptance and focus on the present; emotion-regulation; overall well-being and stress (Feldman et al., 2007). Questions 2 and 7 in the CAMS-R can be removed for a 10-item measure which has been proven to be as efficient in measuring the aspects of mindfulness as the 12-item measure (Feldman et al., 2007). The 10-item CAMS-R was used in the current study. The CAMS-R includes a Likert scale from 1 (Rarely/Not at all) to 4 (Almost always). Question 5 "I'm easily distracted" must be reverse coded (Feldman et al., 2007). Scores can

range from 10 to 40 with higher scores reflecting greater mindfulness qualities including cognitive flexibility, problem solving skills and emotion regulation (Feldman et al., 2007). According to Feldman et al. (2007), for the initial validation of the CAMS-R, an acceptable level of internal consistency was found ($\alpha = 0.74$ and $\alpha = 0.77$ for two samples of university students).

Client Satisfaction Questionnaires (CSQs) (Appendix 9) are self-report measures used to determine participants' satisfaction with different aspects of a provided service (Attkisson & Greenfield, 1996). The CSQ-8, CSQ-18A, and CSQ-18B have very good levels of internal consistency (α range from 0.83 to 0.93) (Attkisson & Greenfield, 1996). However, the CSQ version used in the AMA course was created by the AMA clinical lead. The CSQ used for the AMA course comprises 16-items measuring client satisfaction with the location and atmosphere of the course and the facilitator's abilities, as well as how the course has possibly changed how they feel now in comparison to when starting the course. Question 1, "Convenience of location" was altered for sample B to measure "convenience of Zoom". Clients respond to 14 statements on a 1-5 Likert scale from Poor to Excellent. Scores can range from 14 to 70 with higher scores reflecting higher satisfaction.

This CSQ also has two short answer questions which ask what the programme has done for the client and what they would tell others about the programme. The CSQ has two questions referencing interviewing and filming which relates to Tāmaki Health's process of receiving feedback from participants for course promotion. This invitation did not form part of the current study and no filming was undertaken.

Semi-Structured Interview

After the last AMA course session of the June intake, a subsample of 10 participants were invited to undertake a brief qualitative interview by telephone. Interviews were conducted by the researcher using an interview schedule (Appendix 11) as a guide, with questions adjusted during the interview process to reflect the participants' previous responses. Interview guides provide a structure to the interview but allow for flexibility and understanding of the research topic (Stuckey, 2013).

Verbal consent was obtained from each participant before commencing the interview which was audiotaped separately to the interview. By recording and storing verbal consent separately to interviews, interview data were then identified only by the participant's ID number. This process was to ensure the identity of participants remained confidential.

During the interview participants were asked about their previous mindfulness experience, their expectations of the course, any difficulties they had in attending the sessions, if and how they implemented mindfulness and the homework techniques into their daily lives, if they found the course useful for the reason they had originally attended it for, what benefits (if any) they perceived from practising mindfulness, if they had continued with mindfulness after course completion, if they experienced any unpleasant effects resulting from the course, and if there were any improvements they would like to see made to the course. Interviews were completed by thanking the participants, giving them the option to add any information they viewed as important that was not already covered in the interview, and asking if they had any questions concerning participation in the interview. A $10 gift voucher was given to participants as koha in appreciation of their time for the interview. The interviews ranged in length from six minutes to 16 minutes (mean = 11 minutes, median = 10 minutes).

Data analysis

Quantitative statistical analysis

To analyze the quantitative data the IBM Statistical Package for the Social Sciences (IBM-SPSS version 27) was used. Data were manually entered into a Microsoft Excel spreadsheet from the paper questionnaires and imported into SPSS. Conditioning of the data was completed by reverse coding appropriate scale items and computing scale total scores with the reverse coded items. Statistical analyses were carried out to investigate the impact of the AMA course on participants' reporting of somatization, anxiety, depression, and mindfulness. The following statistical analyses were conducted:

1. Descriptive statistics for items and total scores for the PHQ-9, PHQ-15, GAD-7 and CAMS-R for sample A and sample B at baseline Time 1 (T1) and post-intervention Time 2 (T2).
2. Internal consistency and item-total correlations for sample A and sample B for each scale at T1.
3. Spearman's rho correlations among scales at T1 for sample A and sample B
4. Comparison of median scores on all four measures between T1 and T2 using Wilcoxon's Signed Rank test for sample A and sample B.
5. Frequency statistics for the Client Satisfaction Questionnaire (CSQ) items
6. Descriptive statistics for demographic variables of completers and non-completers of the AMA course
7. Independent samples T-test and chi-square analyses for comparison of demographic characteristics of completers and non-completers.

Despite analysing data samples separately, the researcher did not attempt to compare results between in-person and online course outcomes as both samples attended the course

through different modes of delivery, and one group attended under normal societal circumstances and the other attended during a nationwide lockdown.

The first analyses involved the computing of descriptive statistics and frequencies for the samples' demographic information. Descriptive statistics for the total scale scores at T1 and T2 were also calculated for sample A and sample B. Histograms, box and whisker plots, and stem and leaf graphs were created to demonstrate the distribution of data. A Kolmogorov-Smirnov test was conducted to compare distributions for the four scales for samples A and B (Lopes et al., 2007). Significance scores of less than 0.05 indicate the data do not follow a normal distribution. Due to the non-normal distribution of the primary outcome of interest, CAMS-R score, and very small sample sizes at T2 (sample A = 13, sample B n = 7), non-parametric statistics were used for data analyses.

Internal consistency and item-total correlations for all measures for samples A and B were calculated. Following the guidelines by Taber (2018), Cronbach's alpha coefficients were computed and were considered optimal if they were greater than 0.70. A Cronbach's alpha of 0.70 is usually considered adequate, with values of .80 - .90 good or very good and 0.90 – 0.95 excellent. However a value above 0.95 might be too high and reflect a number of highly repetitive or redundant items. Item-total correlations were conducted for all four scales for each sample at baseline to determine if each item in the scales measured the same underlying construct intended for the total scale. Item-total correlations of less than 0.3 indicate the item may be measuring a different facet to the scale as a whole, whereas item-total correlations of over 0.8 may indicate multicollinearity (Lopes et al., 2007).

Spearman's rho bivariate correlation coefficients were used to investigate the relationships between total scale score variables at baseline. Spearman's rho is a non-parametric analysis that can be used for data that are not normally distributed (Akoglu, 2018). Demographics were not controlled for during these analyses. Spearman's correlation coefficients were calculated separately for both sample A and sample B. A value of 0 indicated there was no correlation between scales, whereas a correlation of -1 or +1 indicated a perfect correlation (Akoglu, 2018). Strong correlations were indicated by negative or positive correlation coefficients of 0.7 to 0.9, moderate correlations by coefficients of 0.4 to 0.6, and weak correlations by coefficients of 0.1 to 0.3 (Akoglu, 2018). Negative correlation coefficients indicated an inverse relationship between variables (Akoglu, 2018). Correlations were considered significant if $p < 0.05$. (Grabowski, 2016).

Wilcoxon's Signed Ranks test was used for both samples to compare total scale scores at T1 and T2. Signed Rank tests were conducted to assess the differences between medians for

all scale totals at T1 and T2. Negative ranks indicated if total scores decreased between T1 and T2, positive ranks indicated if scores increased between T1 and T2, and ties demonstrated that there was no change in T1 and T2 scores. Z scores were calculated to represent how much the Wilcoxon rank values differ from the standard deviation. Significance scores were generated to determine whether the difference between T1 and T2 median scores were significant at the 0.01 or 0.05 level (Grabowski, 2016).

Frequency analyses were conducted for all items in the Client Satisfaction Questionnaire (CSQ) to determine participants' overall satisfaction with the course.

Finally, descriptive statistics for demographic variables of completers and non-completers of the AMA course were calculated. An independent samples T-test was used to compare the mean ages of completers and non-completers of the course. Chi-square analyses of completers and non-completers were performed for gender, sample (A, B), education level, and previous meditation experience. These tests were computed to investigate the relationship between the demographic variables and their possible influences on attrition and retention. Statistical significance scores were generated to determine whether the relationships were statistically significant. Due to the small numbers in several categories of ethnic groups, no statistical comparisons were completed for ethnicity.

Qualitative Thematic analysis

The analysis of data was guided by the six phases of TA discussed by Braun and Clarke (2006) which were used as suggested by the authors. The researcher transcribed interview data verbatim and proof-read all transcripts to become familiar with the data and to support phase one of Braun and Clarke's model. The researcher continued to read and re-read the data whilst recording any initial ideas. Phase two involved the researcher generating initial codes from segments of the transcribed data. The researcher followed a hybrid coding approach discussed by Fereday and Muir-Cochrane (2006) where inductive coding is followed whilst ensuring the significant questions of the research were answered. Therefore, without coding with the hypotheses in mind, data were coded that were relevant to the questions asked during the interviews such as previous expectations of the course, engagement in homework, adverse effects of the course, and improvements that could be made to the course. NVivo version 12 was used to support and facilitate data analyses and data management and to document the progression of the data coding process.

After the codes were created, phase three commenced with the researcher categorizing the collated codes into potential themes through patterns within the codes. The researcher used multiple thematic maps to visually categorize the codes into preliminary themes as suggested by Braun and Clarke (2006) and the developing thematic map was discussed with the primary

supervisor. After this discussion and alterations to the codes and themes, a final structure was created.

Phase four included the modification of themes to ensure correspondence with the codes and overall data set. Codes from the interviews that did not collate to create themes were organized to create context for the themes and findings. The researcher then followed phase five by defining and naming each theme to embody the data comprising each theme. The sixth and final phase included the researcher reviewing the finalized themes and producing results using quotes from the participant interviews that best represented each theme.

Quality and Rigour

Within the context of mixed-methods research 'quality and rigour' can be defined as the trustworthiness of the research by accounting for potential biases, and the validity and legitimacy of research through its credibility, dependability, accuracy, and generalisability (Harrison et al., 2020). To ensure accuracy and credibility of the research, this study attempted to create an environment where participants were comfortable sharing honest accounts of their experiences. The semi-structured interview method allowed for participants to recall the impact of the AMA course while providing flexibility for freedom of speech. To ensure the qualitative data gave an accurate account of participants' experiences, participants were offered the opportunity to check the transcript of their interview and edit the transcript prior to data analysis. Two participants indicated they would like a copy of their transcripts which they checked, returned, and consented to be used in the study. To further ensure quality and rigour, trustworthiness can be enhanced by efforts to reduce confirmatory bias, the tendency to interpret information to fit a theory or hypothesis (Johnson & Onwuegbuzie, 2004). Therefore, in the current study the researcher had continuous supervision with the supervisory team throughout the data collection and analysis stages.

Conflicts of interest

The researcher who conducted the interviews is a program and referrals coordinator for the AMA course at Tāmaki Health. Therefore, conflicts of interest were disclosed in the application process to the ethics committees prior to ethics approval and to participants in the PIS. The potential conflict of interest was managed as per the following:

- Continuous work monitoring and support by Tāmaki Health management.
- The involvement of several staff in recruiting participants.
- The staff involved were informed of the study and full transparency remained throughout.
- The researcher upheld her ethical obligation to leave course registration completely voluntary for patients, allowing them to withdraw at any time with no consequences.

- The researcher removed herself from her usual duties of sending registration reminders to patients and following up on patients who did not attend.
- The researcher had no presence in the courses after recruitment and registration were completed.
- No coercion was used to register patients for the course or the study as per the researcher's contract of employment with Tāmaki Health.

Ethical considerations

The ethical principle of well-being of human research participants (principle 2.6) discusses a researcher's ethical obligation to conduct research that benefits individuals in society or, at least, do no harm (New Zealand Psychological Society, [NZPS] 2002). To support the wellbeing of participants and ensure their safety as explained in the NZ Code of Ethics (NZPS, 2002), ethical considerations were employed throughout the development and implementation of this study. A postgraduate research proposal (PGR1) (Appendix 12) was developed and approved by the Faculty of Health and Environmental Sciences at AUT prior to ethical approval and study commencement. To further guarantee participant safety, ethical approval was applied for and received from Northern B Health and Disability Ethics Committee and Auckland University of Technology Ethics Committee.

The ethical principle of informed consent (principle 1.7.2) notes that "psychologists obtain explicit informed consent for any psychological services provided for participation in research" (NZPS, 2002). Therefore, participant information sheets were provided along with consent forms (see Appendix 4) to participants via email or hard copy prior to data collection commencing. The PIS outlined the following: the purpose of the research, what participation involved, the limitations to privacy and confidentiality of information given, any conflicts of interest regarding the researchers and the study, and how the information would be stored and destroyed.

Identifiable and de-identified data were collected and stored in accordance with the study's Data Management plan (Appendix 21). Source documents were held at AUT in identifiable form. These consisted of the study Consent Form and the Demographic Questionnaire which contained names and other identifying features. De-identified data were linked to a unique identifying number (ID). The research team kept a password-protected log linking the participant code with identifiers. De-identified data in this study included hard copies of questionnaire forms which had any identifying features removed (for example, if a participant had written their name on a questionnaire, it was photocopied without the name visible and the photocopy was held at AUT). The original was stored in a secure location in a

filing cabinet at Tāmaki Health's Starcare centre. De-identified questionnaire responses were entered into the analysis data set.

Interview recordings were identified by ID only, with the interviewee's name not referred to once the recording had commenced. Separate recordings for the verbal consent taken in the telephone interviews and the interview itself were made for each individual to ensure privacy and confidentiality. The telephone consent (see Appendix 10) involved asking participants to verbally agree with a pre-determined list of statements and participants were offered the opportunity to receive a summary of the results from the study. Nine participants from the interviews elected to receive a summary of the findings. The consent recordings were stored in a different location to the interview recordings and transcript on a password-protected computer file. Post-interview, the audio-recordings were stored separately from any of the other study materials, including hard copy Consent Forms.

Cultural Safety

The sample included participants from different cultural backgrounds, therefore, the principles of the Treaty of Waitangi were respected throughout this study. By maintaining the principles of partnership, participation, and protection, ethical issues in research that are important to Māori can be respected to ensure impartial benefits for indigenous populations (Hudson & Russell, 2009).

Based on evidence that Māori have a higher risk of experiencing poor mental health including anxiety and depression, this research will have relevance to Māori. The AMA course incorporates principles of Te Ao Māori such as pūrākau, the importance of Te hā (the breath), and the relationship between the spirit, the mind, and the body. These practices of mindfulness resonate with the principles of Te Ao Māori and rituals of healing and wellbeing. The main cultural issue for Māori participants may be discomfort surrounding the topic of mental health. The researcher acknowledges that the presentation, definition, and treatment goals of mental health presentations may differ for Māori. It should be noted that Tāmaki Health has been running the AMA courses for several years and, although the course does not have a specific Māori component to it, facilitators are skilled in providing a culturally safe environment for all ethnicities who register for the course and for addressing any uncertainties around participants' involvement. Recognizing the western nature of the intervention, prior to obtaining informed consent, a face-to face discussion on the research intervention was offered to all participants so that any concerns could be discussed. Potential participants were encouraged to discuss their study participation with whānau and Kaumātua before deciding to take part.

The researcher acknowledged the responsibility to maintain culturally appropriate practices and consulted with Malcolm Brown (Self-Management education leader and Te Ao

Māori AMA course enrichment cultural advisor) who approved the research process and methodologies in the current study as being appropriate for Māori participants.

Chapter Three: Results

Quantitative Findings

1. Descriptive statistics for items and total scores for the PHQ-9, PHQ-15, GAD-7 and CAMS-R for sample A and sample B at baseline (T1) and post-intervention (T2).

Descriptive statistics for the four outcome measures are presented below in Table 3. The Kolmogorov-Smirnov test indicated that total scores for the CAMS-R for samples A and B at baseline and sample A's post-intervention PHQ-9 did not follow a normal distribution ($p < 0.05$). All other scales for both samples followed a normal distribution according to the Kolmogorov-Smirnov test ($p > 0.05$). Results of the Kolmogorov-Smirnov tests are presented in Appendix 13. Box and whisker plots were generated to further explore the distribution of data and are presented in Appendix 14.

Table 3 presents mean and median scores, and in both samples for the GAD-7 and PHQ-9 means and medians decreased from T1 to T2. By using the criteria from Spitzer et al. (2006), in both samples, GAD-7 median scores decreased from diagnosable scores of Generalised Anxiety Disorder to non-diagnosable (sample A from 13 to 6, sample B from 11 to 8). After attending the AMA course, PHQ-9 scores for sample A decreased from moderately severe levels to moderate levels of depressive symptom severity as determined by the score thresholds created by Kroenke et al. (2001). Total PHQ-15 mean and median scores decreased from T1 to T2 in sample A, but in sample B only mean scores decreased with median scores increasing slightly. From the threshold outlined by Kroenke et al. (2002), median scores of somatization in sample A decreased from medium (11) to low (8.5) somatic symptom severity. For both samples the mean and median scores for the CAMS-R increased from T1 to T2.

Table 3.
Descriptive statistics of PHQ-15, GAD-7, PHQ-9, and CAMS-R total scores T1 and T2

		N	Mean	Median	SD	Range	Skewness
Sample A							
PHQ-15	T1	27	10.81	11	7.23	26	0.35
	T2	14	8.00	8.50	5.28	20	0.62
GAD-7	T1	35	12.69	13	5.17	21	-0.56
	T2	18	6.50	6	4.89	21	1.58
PHQ- 9	T1	37	12.92	14	6.45	24	-0.11
	T2	17	8.94	6	6.09	24	1.22
CAMS-R	T1	39	22.77	21	6.08	24	0.90
	T2	17	23.88	23	4.50	14	0.37
Sample B							
PHQ-15	T1	23	10.00	9	5.29	20	0.23
	T2	10	9.30	10	4.95	14	0.10
GAD-7	T1	29	11.62	11	5.68	19	-0.24
	T2	13	8.69	8	5.22	17	0.74
PHQ- 9	T1	25	11.12	11	6.15	22	0.02
	T2	13	8.62	8	5.74	20	1.14
CAMS-R	T1	27	23.70	23	5.25	21	0.75
	T2	13	26.08	25	4.75	17	0.54

2. Internal consistency and item-total correlations for sample A and sample B for each scale at T1.

All scales for sample A had a Cronbach's alpha (α) of 0.85 or higher, indicating very good internal consistency. Cronbach's alpha for the four scales for sample A were: PHQ-15 α = 0.9, GAD-7 α = 0.86, PHQ-9 α = 0.85, CAMS-R α = 0.85. All scales for sample B had a Cronbach's alpha over 0.75, indicating good internal consistency, PHQ-15 α = 0.8, GAD-7 α = 0.89, PHQ-9 α = 0.85, CAMS-R α = 0.78.

Item-total correlations are presented in Appendix 15. For sample A, item-total correlations for the PHQ-15 ranged from 0.13 to 0.80, for the GAD-7 from 0.43 to 0.79, for the PHQ-9 from 0.33 to 0.79, and for the CAMS-R they ranged from 0.28 to 0.77. For sample B, item-total correlations for the PHQ-15 ranged from 0.13 to 0.62, for the GAD-7 from 0.56 to 0.82, for the PHQ-9 from 0.37 to 0.78, and for the CAMS-R they ranged from 0.20 to 0.75. Most item-total correlations were over 0.3 which indicates the items are measuring the same construct as the total scale. However, for sample A, two items, item 12 in the PHQ-15 and item four in the CAMS-R, had item-total correlations of less than 0.3. In sample B, five items, item two, item three, and item six in the PHQ-15, and items four and ten in the CAMS-R, had item total

correlations of less than 0.3. The GAD-7 item two in sample B had an item-total correlation of over 0.8. However, the four scales used in this study were already established scales. As excluding any items from the analyses would impact on comparability between this study's results with other research, all items were included in the analyses.

3. Spearman's rho correlations among four scales at T1 for sample A and sample B

Spearman's rho correlations revealed multiple significant correlations among the total scale scores at baseline. These findings are presented in Tables 4 and 5. The strength of correlations was determined by the thresholds indicated by Akoglu (2018).

Table 4 demonstrates that, for sample A, the GAD-7 has a low to moderate negative correlation with the CAMS-R. The PHQ-9 has a moderate negative correlation with the CAMS-R. Both correlations are statistically significant ($p < 0.05$). The PHQ-15 has almost no correlation with the CAMS-R and this relationship is not statistically significant. The PHQ-15 has a low to moderate positive correlation with the GAD-7, this is also not statistically significant. The PHQ-15 has a moderate positive, significant correlation with the PHQ-9. The GAD- 7 has a moderate positive, significant correlation with the PHQ-9.

Table 5 demonstrates that, for sample B, the CAMS-R has moderate negative correlations with both the GAD-7 and PHQ-9, which are statistically significant ($p < 0.01$). The CAMS-R has a low to moderate negative relationship with the PHQ-15 but this is not statistically significant. The PHQ-15 has a moderate to strong, significant correlation with the GAD-7 and a moderate correlation with the PHQ-9. GAD-7 scores are positively correlated with the PHQ-9, with a moderate to strong, significant relationship.

Table 4.
Spearman's rho (ρ) correlations between total scale scores at T1 sample A

		PHQ-15	CAMS-R	GAD-7	PHQ-9
PHQ-15	Correlation Coefficient		0.01	0.34	.42*
	N		27	26	26
CAMS-R	Correlation Coefficient	0.01		-.38*	-.42*
	N	27		35	37
GAD-7	Correlation Coefficient	0.34	-.38*		.58**
	N	26	35		34
PHQ-9	Correlation Coefficient	.42*	-.42*	.58**	
	N	26	37	34	

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 5.
Spearman's rho (ρ) correlations between total scale scores at T1 sample B

		PHQ-15	CAMS-R	GAD-7	PHQ-9
PHQ-15	Correlation Coefficient		-0.37	.65**	.52*
	N		20	23	20
CAMS-R	Correlation Coefficient	-0.37		-.58**	-.56**
	N	20		25	22
GAD-7	Correlation Coefficient	.65**	-.58**		.64**
	N	23	25		25
PHQ-9	Correlation Coefficient	.52*	-.56**	.64**	
	N	20	22	25	

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

4. Comparison of median scores on all four measures between T1 and T2 using the Wilcoxon Signed Rank test for sample A and sample B.

Wilcoxon rank scores are presented in Table 6 below. For sample A, the number of negative ranks was higher than positive ranks or ties for all total scale scores, except the CAMS-R where the number of positive ranks was higher than ties or negative ranks. For sample B, the number of negative ranks were higher than positive ranks or ties for the GAD-7 and PHQ-9. For the CAMS-R and PHQ-15 the number of positive ranks were higher than ties or negative ranks. Wilcoxon ranks for the PHQ-15 and PHQ-9 for sample B were not statistically significant.

In sample A, median scores decreased from T1 to T2 for the PHQ-15, GAD-7 and PHQ-9 and median scores increased from T1 to T2 for the CAMS-R. In sample B, median scores decreased from T1 to T2 for GAD-7 and median scores increased from T1 to T2 for the CAMS-R. Median score changes for the PHQ-15 and PHQ-9 for sample B were not statistically significant.

Table 6.
*T2-T1 Wilcoxon ranks total scale scores sample A and B *all significant results in bold*

		N	T1 Median	T2 Median	Z	Sig. (2-tailed)
Sample A						
PHQ-15	Negative Ranks	7a				
	Positive Ranks	1b				
	Ties	3c				
	Total	11	11	8.5	-2.25d	**0.02**
GAD-7	Negative Ranks	11a				
	Positive Ranks	3b				
	Ties	1c				
	Total	15	13	6	-2.68d	**0.01**
PHQ-9	Negative Ranks	9a				
	Positive Ranks	2b				
	Ties	4c				
	Total	15	14	6	-2.54d	**0.01**
CAMS-R	Negative Ranks	4a				
	Positive Ranks	13b				
	Ties	0c				
	Total	17	21	23	-1.93d	**0.05**
Sample B						
PHQ-15	Negative Ranks	5a				
	Positive Ranks	2b				
	Ties	0c				
	Total	7	9	10	-1.10d	0.27
GAD-7	Negative Ranks	10a				
	Positive Ranks	1b				
	Ties	0c				
	Total	11	11	8	-2.85d	**0.00**
PHQ-9	Negative Ranks	7a				
	Positive Ranks	2b				
	Ties	1c				
	Total	10	11	8	-1.84d	0.07
CAMS-R	Negative Ranks	3a				
	Positive Ranks	9b				
	Ties	1c				
	Total	13	23	25	-2.09d	**0.04**

a T2 < T1
b T2 > T1
c T2 = T1
d Wilcoxon Signed Ranks Test

5. Frequency statistics for the Client Satisfaction Questionnaire (CSQ)

Frequency analyses of each item in the CSQ are presented in Appendix 16. Analysis identified that for most items, the majority of participants found it either good or excellent. Only the majority of participants in sample B found item seven 'the degree of improvement from the time of your initial visit' as satisfactory. The mean total score for sample A was 59.67, for sample B it was 54.77, and for the total sample it was 57.61 out of 70, indicating relatively high overall satisfaction with the AMA course for both samples independently and combined.

6. Descriptive statistics for demographic variables of completers and non-completers of the AMA course.

Descriptive statistics are presented in Table 7. The mean age of those who started the course was 42.3, those who completed 44.5, and those who did not complete the course 40.77 years. Percentages suggest that out of male and females, males were more likely to not complete the course (65.38% male non-completers compared to 50% female non-completers). For ethnic groups, Pacifica appear more likely to not complete (75% non-completers) and Asians more likely to complete the course (57.14% completed). Participants who attended the course in-person appeared more likely to complete the course, however the percentage differences are minimal (less than 3% difference). Participants with the highest education level of postgraduate degrees appeared to be more likely to complete the course (57.14% completed) whereas those with the highest level of secondary schooling seemed more likely to not complete the course (57.69% non-completers). Completion rates of participants with no previous meditation experience were very similar to those who had previous meditation experience (44.44% versus 42.75%). These apparent differences between Completers and non-Completers were then tested with Chi-square and T-tests for significance.

Table 7.
Descriptive statistics of completers vs. non-completers of the course

		Started course	Completers	Non-completers
n (%)		70 (100)	31 (44.3)	39 (55.7)
Mean age		42.3	44.5	40.77
Gender	Female	44 (62)	22 (50)	22 (50)
	Male	26 (36.6)	9 (34.62)	17 (65.38)
Ethnic groups	NZ Pākehā	30 (42.3)	15 (50)	15 (50)
	Asian	7 (9.9)	4 (57.14)	3 (42.86)
	European	4 (5.6)	2 (50)	2 (50)
	Indian	13 (18.3)	6 (46.15)	7 (53.85)
	Māori	11 (15.5)	3 (27.27)	8 (72.73)
	Pacific	4 (5.6)	1 (25)	3 (75)
	Other	1 (1.4)	0	1 (100)
Sample	In-person (A)	39 (56.3)	18 (46.15)	21 (53.84)
	Online (B)	30 (42.3)	13 (43.33)	17 (56.67)
Education	Secondary	26 (36.6)	11 (42.31)	15 (57.69)
	Tertiary	35 (49.3)	16 (45.71)	19 (54.29)
	Postgraduate	7 (9.9)	4 (57.14)	3 (42.86)
	Undisclosed	2 (4.2)	1 (50)	1 (50)
Previous meditation	Yes	36 (50.7)	16 (44.44)	20 (55.56)
	No	32 (45.1)	14 (43.75)	18 (56.25)
	Undisclosed	2 (4.2)	1 (50)	1 (50)

7. Independent samples T-test and chi-square analyses for comparison of demographic characteristics of completers and non-completers

An independent samples T-test ($t = 1.35$, $df = 73.84$, $p > .05$) showed a non-statistically significant difference in age between those completing or not completing the AMA course. Chi-square analyses are reported in Table 8. The results from the chi-square analyses demonstrate that there is no difference between samples as none are statistically significant ($p > .05$). Education levels of tertiary and postgraduate degrees were combined to create one “tertiary” category for analysis purposes. All “undisclosed” results were removed for chi-square analysis.

Table 8.
Chi-square Comparisons of characteristics of participants who completed vs. non-completers

		Completed	Non-completed			
			n (%)	df	Chi-square	p =
Gender	Female	22 (50)	22 (50)	1	1.57	0.21
	Male	9 (34.62)	17 (65.38)			
Sample	Sample A	18 (56.3)	21 (53.84)	1	0.02	0.89
	Sample B	13 (43.33)	17 (56.67)			
Education	Secondary	11 (35.48)	15 (40.54)	2	1.82	0.40
	Tertiary	20 (64.52)	22 (59.46)			
Previous meditation	Yes	16 (44.44)	20 (55.56)			
	No	14 (43.75)	18 (56.25)	2	0.03	0.99

Qualitative Findings

The primary focus of the qualitative interviews was to investigate the impact of the AMA course on participants' wellbeing. To provide context, however, the interview guide also included questions about participants' experiences of the course. Of the ten interviewees, three did not complete the AMA course (number of sessions attended bolded in Table 2).

Caitlin (60 years) completed one session as she reported her anxiety became a barrier to attending:

> *"My anxiety. I was, because of being diagnosed with depression, severe depression, and my anxiety, I also found out about my anxiety, I didn't realise I had anxiety to tell you the truth. I didn't feel comfortable because of what I've been through and yeah it's just the anxiety side of it."*

Emily (26 years) did not complete the course after two sessions due to personal and transport issues, and Rebecca (30 years) did not continue after three sessions due to work commitments. These participants were experiencing high levels of somatization according to their PHQ-15 scores and moderate to moderately severe depressive symptoms according to their PHQ-9 scores. According to the GAD-7, Emily and Rebecca's scores reached the threshold for diagnosable GAD.

Previous experience

Most participants had a basic knowledge of mindfulness prior to attending the AMA course. Five of the participants noted they had previous meditation experience with four who had participated in other mindfulness courses. For those who had attended other mindfulness courses, their engagement in AMA was as a refresher for their mindfulness practice or because the previous exposures were brief. Scores on the CAMS-R, at T1, ranged from 18 to 29 (mean =

26) for participants with meditation experience and from 20 to 28 (mean = 24) for those with no meditation experience.

Expectations of the course

Participants were invited to the AMA course through different sources. Some had been referred or recommended by a health professional and some had seen it advertised online and they had self-referred. From the interview data, a few participants had specific outcomes in mind such as reducing their anxiety and creating changes in mindset. Miren (53 years) had hoped that the course would focus more on managing health:

> *"I had hopes it would more focus on wellness, more on health, more sort of on food and things like that as well. Like what's good foods and bad foods that will help with your mood and everything like that as well."*

However, most of the participants had no expectations of the course regardless of their previous mindfulness or meditation experience. Anne (50 years) said:

> *"To be honest, I just went in with an open mind, I didn't really put any expectations on it."*

Similarly, Louise (53 years) said:

> *"I didn't have any, I don't like to have expectations because then you, then they're never met, I like to have an open mind. So I just, yeah, I just kept an open mind about it the whole time."*

Homework

Unlike MBSR, the AMA course simply encourages but does not require participants to engage in homework practices to reduce the potential for burden of failure. Participants are not asked to keep track of the homework they complete, although participants were able to reflect on the mindfulness practices they engaged in between sessions. During the course most of the participants set time aside for formal mindfulness practice every few days or practised shorter breathing exercises every day. Two participants used mobile phone applications to practice meditations similar to those that were taught in the course. A few participants engaged in regular practice but mentioned that other commitments created difficulties with creating time to practice the homework exercises. Ashleigh (34 years) practised formal meditations about three or four times during the week although personal barriers influenced her ability to practice more:

> *"I intended to, I didn't get all of the ones I wanted to done, just because it was just finding the time to actually making sure that you did it, it was quite easy to forget because I've got quite a busy life with a couple of kids and working and things like that. So I really intended to do more than I did I just didn't get that much done, probably about a quarter of what I wanted to done."*

Adverse effects

There was no evidence of significant adverse effects from the AMA course, however, three participants mentioned that experiencing mindfulness and meditation induced certain challenging emotions. Patrick (35 years) found issues staying present:

> *"I suppose that's kind of related to my kind of medication and things, I have a lot of trouble focusing at times. And yeah, while I was doing meditations and things, I was trying to stay there and stay in the present, and not be everywhere in my mind. It was quite difficult and made me abit anxious."*

Caitlin (60 years) also found challenges with anxiety which was the reason she decided not to continue attending the course:

> *"I thought, well I'm struggling and when it came to go again, I just felt I just couldn't go. I felt very, like I was sick, which is part of that anxiety, yeah, so I couldn't attend again."*

Physical comfort

Two participants mentioned issues with the courses physical environment that impacted their practise. Shaun (53 years) mentioned the cold room created barriers to practising:

> *"Yeah, it's not totally relaxed because its cold in that room…It isn't, and you end up tensing up because all you're thinking about is trying to keep warm."*

Miren (53 years) stated that the chairs made it difficult to get completely comfortable during the two and a half hour sessions:

> *"Really hard chairs. Sitting down for that long just didn't work….Um, not, I think it was a bit detrimental, because I have a lot of physical hurts in my body anyway so trying to sit still for that long anyway and on a really uncomfortable chair, and the way the chairs are set out, because your neck's turning and you're on an angle."*

Both participants found benefit from attending the course although they thought these aspects could use improvement to optimise the benefits of attending AMA.

Impact of participation

The overarching aim of the current study was to investigate the impact of the AMA course. Most of the participants, including those who did not complete the course, perceived some benefits from attending AMA. Three participants did not continue with the AMA course after a few sessions, however, two of these still found benefits from attending. Caitlin did not continue due to her anxiety but still continued to use the breathing techniques she learnt in the course. Emily also used the breathing techniques and although she did not find the course generally helpful she would like to try again in the future.

Two themes resulted from the interviews which describe the impact of the course for participants' wellbeing and everyday life: *Slowing down* and *Letting things go.*

Theme One: Slowing down

Participants reported the course improved their ability to "slow down" and, as Anne (50 years) stated, the course helped her with "that pause moment". Participants commented that slowing down enabled them to cope more effectively with stress and orient themselves in the present moment. Ashleigh commented:

> *"Those sorts of practises [mindfulness] and for relaxation and for clearing the mind for slowing down and being able to stop and be in that present moment".*

Miren (53 years) said that not only did the course help her with stress but it opened her awareness to slowing down:

> *"Thinking and dealing with stress in a different way and I think still stress seems to be an amazing thing that's been overlooked and we all need to slow down."*

Four participants also mentioned that slowing down and taking time to focus on their breathing was beneficial, with Shaun (53 years) stating:

> *"Yeah, concentrating on your breathing, that slowing yourself down really does help in regards to stress".*

Caitlin (60 years) did not finish the course but found slowing down helpful for her panic attacks:

> *"Some of the things were useful, some of them were, the breathing side of it, and I've had to use that especially when I've had anxiety attacks I've actually you know, it came back to me and I'd say the breathing. To just slow the breathing down and stuff like that. That actually worked really well."*

Theme two: Letting things go

Participants noted that the course assisted them in "letting things go" which involved decreasing their attachment to thoughts and underlying problems to move on and increase tolerance. Letting things go helped participants to reduce rumination and release body tension. Shaun stated that the breathing exercises helped with his rumination:

> *"I realize that all of a sudden, I'll catch myself holding my breath or I feel internally tense, I think let's step away from this situation and concentrate on my breathing and surprisingly the tension in my arms or my limbs starts to dissipate. It helped in regards to not sort of churning stuff over in my mind you know?"*

Miren commented that the course helped her to let go and accept challenges in everyday life

> *"Yeah. I did certainly feel that parts of it were really good and sort of helpful, in just everyday sort of stuff and I do find that there's a lot more things I can, not tolerate, but just go with the flow with."*

Ashleigh (34 years) said the course helped her with letting go of her thoughts:

> *"Definitely taking those moments of the practice of letting your thoughts come and then letting them go."*

Although Emily (26 years) did not finish the course, she commented that there are some benefits from practising mindfulness including letting things go:

> *"you know you learn to let things go a bit more easier rather than holding onto them."*

This finding was confirmed in participants' answers from the CSQ. For example, when asked what the program had done for them, participant 13 said:

> *"It has helped bring up underlying issues and deep hurt that otherwise I would have buried, and helped me to use techniques such as meditation and breathing to bring it out and let it go."*

Participant 40 also commented:

> *"Look forward to meditate, able to let things go, and trust that everything will be okay."*

The use of mindfulness after the AMA course

After completing the course, most of the participants were still practising mindfulness in some way, regardless of whether they had completed the course. Shaun (53 years) stated he still uses mindfulness techniques to reduce his stress but has altered how he practises to best suit his needs:

> *"Um, in a way, I've taken a different angle at it, it's the same but different. I was reading somewhere that just the power of prayer, so rather than concentrating on my breathing, I practise prayer for about 10 minutes… If I'm feeling a bit stressed it does help me, that key word mindfulness, you know what? Maybe I'm stressed."*

Rebecca (30 years), who did not complete the course due to work obligations, has found other ways that help her since attending the course:

> *"I have this motivation app that I find helps me more where it throughout the day I get these notifications, except it's stuff that reminds me to breathe or think positively, there's kinds of affirmations and stuff I think that's more helpful to me."*

Jane (46 years) found the course beneficial although commented she recognises the need to engage in practices again to make it a habit:

> *"To be honest I'd forgotten about it until you called now. I was thinking this morning I must start focussing on myself again I've got to do work on my back and physio exercises and I've just got to do a reset, and get myself back into the habit of doing that so I will. I will do that."*

Louise (53 years) uses the breathing and occasionally the meditations:

> *"The breathing all the time! Daily. Breathings daily. Breathing I use daily, the different meditations just whenever I feel like I, I won't say daily, definitely weekly."*

Anne (50 years) reported continuing with the breathing exercises is still beneficial for her:

> *"And actually practising all the time, that breathing, while I'm working and whatever I'm doing, I'm now conscious of it, that breathing technique, it creates that mindful gap if you know what I mean."*

Miren (53 years) mentioned that she could benefit from attending the course again as the material was so new for her:

> *"For me really I think I probably need to do it again to get the benefit of it, because it was all sort of, I suppose, so new and so strange I got lost."*

Similarly, Louise stated she would find benefit in attending the course again as she:

> *"really enjoyed it".*

Chapter Four: Discussion and Conclusion

"Yesterday is history. Tomorrow is a mystery. Today is a gift. That's why it's called the present." – (Bil Keane, n.d.)

Findings

This research aimed to explore the impact of Tāmaki Health's AMA course on participants' wellbeing. Due to the lack of research on MMBPs in NZ primary healthcare settings, the broader aim of this study was to expand upon current research. The current study's findings are presented below and are discussed with regards to the existing literature.

Question One – How will the AMA course affect levels of mindfulness, and will this show a relationship with the severity of psychopathology?

The first hypothesis predicted that participants who completed the AMA course would show an increase in mindfulness and that higher mindfulness levels would be related to lower levels of somatization, depression, and anxiety. As hypothesised, it was found that participants were more likely to have increased mindfulness levels after completing the AMA course. This is consistent with the research by Shapiro et al. (2008) who suggest that increases in mindfulness levels are frequent outcomes from attending MMBPs. Additionally, higher levels of mindfulness were found to be related to lower levels of somatization, depression, and anxiety. This is consistent with existing research that suggests attending MMBPs can facilitate higher levels of mindfulness which are correlated with lower levels of psychological distress (Barnes & Lynn, 2010; Brown & Ryan, 2003; Shapiro et al., 2008). The current study's findings are in accordance with the research by Gawrysiak et al. (2018) who suggest that individuals with the highest severity of mental illness symptoms can often have the lowest levels of mindfulness.

However, in the current study, mindfulness levels had no significant correlation with somatization levels. Considering that mindfulness had a correlation with both depression and anxiety in both samples and somatization was correlated with depression in both samples and with anxiety in sample B, it is surprising that there is no significant relationship between mindfulness and somatization. This is incongruous with findings from Masuda and Tully (2012) who found that mindfulness levels are inversely correlated with somatization severity.

The qualitative findings suggest that participants found the course beneficial for slowing down, stress, coping with anxiety, and relaxation. This is in accordance with the findings by Wilson et al. (2014) who report that relaxation is a common outcome of MMBPs. Wilson et

al. note relaxation can result from the reduction of physiological sensations through MMBP techniques such as slowing of breathing which affects the autonomic nervous system and consequently thought processes. Some participants mentioned their reason for attending the AMA course was due to issues with stress. Therefore, as stress reduction and/or stress management was described as a common outcome of slowing down, it supports the use of the AMA course for participants experiencing stress.

Additionally, participants commented that slowing down helped orient them to the present moment. Remaining in touch with the present moment has been associated with better health outcomes due to decreasing attachment with cognitions and emotions (Brown et al., 2015). Baer et al. (2006) describe that 'acting with awareness' involves an individual's ability to focus on current actions and align behaviours to the present moment. Shapiro and Carlson (2017) reported that the essence of mindful awareness is being attentive to the experiences of the present with receptivity and openness. As participants found that the course helped them to access this aspect of mindfulness, this supports the finding that the AMA course effectively increases mindfulness levels.

The qualitative findings suggest that participants found the course beneficial for letting things go. This reflects the mindfulness facets described by Baer et al. (2006) of 'non-reactivity to inner experience', which involves the acceptance of thoughts and feelings and letting them come and go without becoming entangled in them. Watkins (2008) explains rumination as "repetitive, prolonged, and recurrent negative thinking about one's self, feelings, personal concerns and upsetting experiences". Rumination is a common component of multiple psychological disorders including depression, anxiety, insomnia, and psychosis that can exacerbate psychopathology and maintain the physical stress response (Watkins & Roberts, 2020). Participants mentioned the AMA course was beneficial in aiding them to "let go" and reduce rumination. This finding is consistent with the research by Deyo et al. (2009) who found that MBSR increases mindfulness levels and simultaneously decreased rumination and depressive symptoms.

Question Two - How will the AMA course impact levels of somatization?

The second hypothesis predicted that participants who completed the AMA course would have decreased levels of somatization after completion. The current study found that somatization levels are more likely to decrease after attending the AMA course in-person, not online, which partially supports the hypothesis. The findings are consistent with the findings of Fjorback et al. (2013) who found that participants experiencing somatization disorders who attended MBSR showed reduced symptom severity after completion.

Considering that MBSR was originally designed to treat chronic pain (Schreiner & Malcolm, 2008), it is surprising that the AMA course, an adaptation of MBSR, did not produce significant results for sample B somatization scores post-intervention. However, it can be argued that the smaller sample size of the PHQ-15 post-intervention (n = 7) could have influenced the non-statistically significant outcomes as this is common in small samples (Leppink et al., 2016). The findings of the current study support the existing evidence that mindfulness-meditations and programs are beneficial for decreasing severity of somatization when delivered in person. Somatization frequently occurs when an individual's distress is expressed through physical symptoms and somatization is often comorbid with psychological disorders (Dantzer, 2005; Kroenke et al., 2002). Therefore, it is unsurprising that in both samples, higher pre-intervention somatization scores were related to higher pre-intervention scores of depression.

Question Three - How will the AMA course impact levels of anxiety symptoms?

The third hypothesis predicted that participants who completed the AMA course would show a decrease in anxiety symptom levels after completion. As hypothesised, it was found that participants were more likely to have decreased anxiety levels after completing the course. This is consistent with the findings by Arch et al. (2013) who reported that adapted MBSR programs are effective in reducing anxiety disorders in relation to severity levels. Lower levels of anxiety were also found to be related to somatization when delivered online and with lower levels of depression in both samples.

According to qualitative data, some participants started the course due to problems with anxiety and found that the course was useful for dealing with anxiety. Schreiner and Malcolm (2008) write that individuals with anxiety can misinterpret threatening situations leading to chronic hyperarousal. Therefore, the non-judgemental awareness teaching of mindfulness programs can allow individuals to observe situations and experiences without attempting to perceive them as positive or negative (Schreiner & Malcolm, 2008). The current study's findings are consistent with those of Hazlett-Stevens and Fruzzetti (2021) who report that techniques that encourage slower breathing and grounding with the breath can decrease physiological arousal and enhance one's ability to respond to anxiety-provoking situations. In the current study, Caitlin did not continue the course due to her anxiety but still found benefits with coping with anxiety attacks. Additionally, Shaun noted how the AMA course helped with reflecting on his internal tension and that letting things go reduced his body tension. Although mindfulness meditation does not specifically focus on reducing symptoms, symptom reduction is a common by-product of mindfulness-meditation programs and they can reduce muscle tension associated with symptoms of anxiety (Schreiner & Malcolm, 2008).

When asked what the program had done for them, several participants mentioned that the AMA course provided them with tools for dealing with panic and anxiety. This is consistent with the research by Sundquist et al. (2015) who note that MMBPs are beneficial as they can introduce skills to clients that can be used within and outside of the group sessions. However, Patrick noted an adverse effect of the course which incited feelings of anxiety and Caitlin withdrew from the AMA course due to her anxiety. This may be the result of Relaxation Induced Anxiety (RIA) (Newman & Llera, 2011). Despite research supporting the use of MMBPs for anxiety, an adverse treatment outcome that can create barriers to practise and attendance includes RIA (Newman et al., 2018). Newman and Llera (2011) report that individuals with anxiety may attempt to maintain feelings of anxiety and tension to experientially avoid changes in emotions and emotional arousal. Therefore, individuals with persistent Generalised Anxiety Disorder (GAD) and clients who are anxious about being in control of physical and psychological processes are likely to feel vulnerable and unpleasant during relaxation exercises (Newman et al., 2018). These feelings along with being unable to "let go" and engaging in experiential avoidance during relaxation activities can result in RIA (Newman et al., 2018). This can be a barrier for individuals experiencing anxiety to engage in a MMBPs where relaxation activities are a core part of therapeutic change.

Wilson et al. (2014) comment that many MMBPs incorporate teachings to reduce chances of RIA occurring, such as acceptance and willingness, attentive awareness with a non-judgemental attitude, cognitive defusion, and contact with the present moment without evaluation. These teachings have an origin in Kabat-Zinn's (2003) work of practising willingness to accept feelings as they arrive without judging them as negative or positive and letting thoughts move through the mind like leaves on a stream, without attention or holding on. Not only does the AMA course create improvements in participants' anxiety but it can also reduce participants experiencing RIA. Additionally, to assist clients if they become distressed or begin to experience adverse effects related to anxiety, courses offer modifications to relaxation practice. Clients are offered to practise meditations with eyes open or closed, and to identify their own sources of refuge such as grounding, stopping, karakia (prayer), or modifying practises as needed to remain in their learning or comfort zone (Lila O'Farrell, personal communication, September 26, 2021).

Question Four - How will the AMA course impact levels of depressive symptoms?

The fourth hypothesis predicted that participants who completed the AMA course would show a decrease in depressive symptom levels. It was found that participants were more likely to have decreased depression scores when attending in person. These findings are consistent with the findings from Greeson et al. (2015) who found that MBSR in a community medical centre was beneficial in decreasing symptom severity of depression. It can be argued

that the smaller sample size of the PHQ-9 in sample B (n = 10) could have influenced the non-statistically significant change in depression scores.

As mentioned previously, rumination is a frequent issue in multiple psychological disorders that can exacerbate psychopathology and maintain the physical stress response (Watkins & Roberts, 2020). Ramel et al. (2004) explain that rumination is common in individuals experiencing depressive symptoms which can worsen negative views of themselves and the future. Mindfulness-meditation can support individuals experiencing these symptoms to identify and investigate habitual patterns and begin to practise non-judgemental acceptance of thoughts and negative outlooks (Ramel et al., 2004). Findings that the course aided with rumination and that scores of depression decreased for most participants attending in-person courses is consistent with the research by Deyo et al. (2009) who found that MBSR decreased rumination and depressive symptoms.

Wilson et al. (2014) explains techniques involved in MMBPs can involve interrupting cognitive processes that can contribute to psychological distress, such as cognitive defusion exercises, which can also lead to reduced physiological distress and increased relaxation. In session two of the AMA course (see session guide Appendix 1) aspects and activities from MBCT are introduced such as cognitive defusion, experiential avoidance, rumination, and emotional habitual patterns. Qualitative findings in the current study reflect the essence of cognitive defusion and reduction of rumination as participants were able to become “unstuck” from their thoughts as a benefit from practising mindfulness. This is consistent with the findings by Kingston et al. (2007) who found that MBCT significantly reduced depressive symptoms after the course completion which were maintained after a one month follow up. Therefore, the findings in the current study concerning benefits of the course and decreased depression symptom levels may be due, at least in part, to the AMA course’s incorporation of aspects of MBCT.

In both samples when levels of depressive symptoms decrease, so does the severity of anxiety symptoms. These findings are similar to the findings by Arch et al. (2013) that adapted MBSR is effective in reducing comorbid mood and anxiety disorders.

Attrition and retention rates

This study found that only 44.3% of participants completed the course. This is low in comparison to the findings of Baer et al. (2006) from 13 studies that undergraduate psychology student participants who took part in mindfulness programs ranged from 60 to 97% completers with an average completion rate of 85%. Attrition may be a result of multiple factors, such as time demands and social anxiety in the group setting (Dobkin et al., 2012). The AMA course

participants' reasons for non-completion are consistent with research from Anderson et al. (2007) who found that of the participants who did not complete an MBSR course, almost half did not complete due to work interfering with attendance. Attrition rates can be attributed to demographic variables that may influence how mindfulness-meditation impacts an individual's situation (Marjani, 2017). To understand potential influences on the attrition rate of the AMA course, demographic impacts are discussed below.

Age

Participants who completed the AMA course had a mean age of 44 compared with 40 for non-completers, however this difference was not statistically significant. The current study's findings are consistent with the research of Williams et al. (2001) who found no statistically significant differences in age and completion rates of MBSR.

Gender

Of the 36.6% men who started the courses, 34.62% completed whereas of the 62% women starting, 50% completed, although chi-square analyses found these differences were not statistically significant. These findings are congruous with the research by Marjani (2017) and Williams et al. (2001) who found that males were more likely to not complete an MBSR program but findings were not statistically significant. Marjani (2017) speculates that females may be more able to maintain attention over longer time periods than men. However, this speculation should be investigated further before making any conclusions.

Education

Of the 36.6% of those with secondary school education who started the courses, 35.48% completed whereas of the 61.76% of those with a tertiary education who started the courses, 64.52% completed. Findings from this study are in agreement with the research by Marjani (2017) who found that those with lower levels of education were more likely to not complete an MBSR program. Marjani states this relationship may be due to an association between lower levels of education and having inadequate resources that leads to an increase in stressors. However, the current study found no statistically significant differences in education levels and attrition rates through chi-square analyses. This is similar to the research by Williams et al. (2001) who found that higher education levels were correlated with MBSR attrition but the relationship was not statistically significant.

Ethnic groups

Of the 7% of participants who identified as Asian who started the courses, 57.14% completed, whereas of the 4% of those who identified as Pacifica who started the courses, 25% completed it. Hall et al. (2011) states that mindfulness can be an effective treatment for Asian

populations as mindfulness is rooted in Asian philosophy. Although programs such as MBSR have Western influences, many of the key features reflect Asian cultural values and worldviews (Hall et al., 2011). This may support the current research findings that Asian peoples have higher rates of completion.

The current study found that Pacifica were more likely to not complete the courses when compared to other ethnic groups. This is supported by Minster et al. (2018) who reported that compared to other non-Pacific groups, Pacific peoples do not frequently use specialist mental health services. Minster et al. (2018) state that 48% of Pacific peoples would seek support from friends and whānau if they were experiencing mental health issues and over 21% would go to a doctor. This may also explain why Pacifica were one of the lowest represented ethnic groups in this research compared to the total population. Barriers to accessing care may also contribute to the fact that the current study had 5.6% Pacifica who started the course. Although barriers to accessing care are complex, some barriers include lack of culturally appropriate services that align with Pacifica worldviews, underrepresentation of mental health professionals who identify as Pacifica, and socio-economic barriers such as cost (Minster et al., 2018). Similarly, to Māori, Pacific mental health services need to be diverse and culturally responsive. Although Pacifica had the highest rates of attrition in the current study, the small sample size of those who started the course may have influenced the percentage outcome of non-completers. Due to the small sample sizes in each category of ethnicity groups, no statistical analyses were completed.

In person versus online course

Of the 56.3% of those who attended the courses in-person, 46.15% completed whereas of the 42.3% of those who attended online, 43.33% completed. Participants who attended the AMA courses in-person (sample A) were more likely to complete the course than those who attended online (sample B). The online courses began in-person then moved online due to the COVID-19 lockdown in Auckland. Therefore, barriers to continuing attendance such as access to the internet or a device that connects to the internet or privacy issues at home may be reason for participants to not complete the course. Due to the COVID-19 pandemic, many services, including healthcare, created the need for videoconferences and meetings online (Bailenson, 2021). Many meetings moved to the online software, Zoom, and people quickly coined the term "Zoom fatigue" to describe the fatigue felt after attending calls and meetings online. Research by Peper et al. (2021) found that Zoom fatigue could impact attention and the ability to stay present during online courses. Therefore, 'Zoom fatigue' or a difficulty staying present whilst attending the AMA course online may support the current study's findings that attrition is higher with online courses. However, these retention and attrition results, were not statistically significant as per chi-square analysis.

Previous mindfulness experience

Of the 45.1% of those with no previous meditation experience who started the courses, 43.75% completed whereas of the 50.7% of those who had experience who started, 44.44% completed. Individuals with no previous meditation experience were less likely to complete the course than those with previous meditation experience. Further research would be needed to assess if previous meditation experience for participants in the current study correlated with higher levels of baseline mindfulness. However, research suggests that practising mindfulness can increase levels of trait mindfulness which are associated with enhanced psychological benefits (Kiken et al., 2015). Assuming participants in the current study who had no previous experience have lower levels of mindfulness, these attrition findings are congruent with the findings of Gawrysiak et al. (2018) that individuals with low levels of mindfulness may not benefit as much due to the capacity to concentrate and engage with course exercises and material. In the current study's findings, however, attrition differences and meditation experience were not statistically significant as demonstrated through chi-square analysis results.

Strengths and limitations

Although the existing literature supports the use of MMBPs for physical and psychological health conditions, there is less literature on the use of MMBPs in primary healthcare, let alone in a NZ setting. This was the first study (to the researcher's knowledge) to investigate the impact of an MMBP in a primary healthcare setting in NZ.

The current study aimed to recruit 100 participants; however, 70 participants ultimately took part recruited (Figure 1). Due to time limits and the change in course delivery due to COVID-19 restrictions, there was no opportunity to recruit more participants for the study. The attrition rate of over 50% by post-intervention data collection significantly reduced the sample size, however, this is in keeping with previous AMA courses where attrition rates are relatively high. A few participants failed to complete items for the scales in the PHQ-SADs, and to maintain validity we did not impute data into the missing items. Therefore, cases with missing items would not be included in data analysis in SPSS leading to further reductions in the sample size. As a result, post-intervention samples were as low as 7 (Wilcoxon rank scores PHQ-15, sample B). Numerous results from this study were not statistically significant which is common in small samples (Leppink et al., 2016). The current study's use of a mixed-methods approach was beneficial considering the attrition rates for the quantitative sample as qualitative data supported and strengthened the results of the quantitative analyses. However, in future research the sample size would need to be larger to decrease validity limitations and increase generalisability to the wider population.

Originally both samples A and B were to be merged into a total sample and data analyses were to be completed with all participants. However, due to the Auckland COVID-19 lockdown, sample B's course was moved online. As modes of delivery of the course changed, to maintain validity data from samples A and B were analysed separately. Additionally, one group attended under normal societal circumstances and the other attended during a lockdown which may have influenced outcomes other than attendance of the AMA course e.g., more anxiety due to COVID spread. Due to time limits impeding the ability to recruit more participants, sample B's post-intervention sample was relatively small, therefore, increasing the likelihood of non-statistically significant results. The increase of mindfulness scores, decrease in anxiety levels and the non-completion rates were similar for both samples.

Multiple statistical testing involves researchers simultaneously testing more than one hypothesis (Romano et al., 2010) and this was used in the current study. A limitation of using this type of testing is the possibility that some of the true null hypotheses will be rejected by chance (Romano et al., 2010). Rejecting the null hypothesis refers to finding a difference in the relationship between two variables e.g., a statistically significant difference between T1 and T2 mindfulness levels. Multiple statistical testing was not controlled for in the current research, and therefore can become a limitation when reporting significant results that may only be significant by chance.

The researcher who conducted the interviews is a program and referrals coordinator for the AMA course at Tāmaki Health. Although conflicts of interest were disclosed to participants and confidentiality was ensured, participants may have provided more positive feedback than if another researcher with no affiliation to Tāmaki Health had conducted the interviews. Only one researcher conducted the interviews due to the time restrictions and to maintain confidentiality and anonymity. Furthermore, interview data were collected at only one time-point, within four weeks of the first AMA course that finished and no follow up data were taken after this. Therefore, it is unknown if the impact of the AMA course reported by participants was long-lasting.

The findings from this study suggest that generally people improve from attending the AMA course, however, a large proportion of participants did not complete the course. Those who completed the course may have done so due to the benefits they encountered and those who did not complete the course may have found no benefit. Three participants interviewed did not complete the course, therefore interviewing a larger sample of those who did not complete the course may be beneficial to increase validity of further analysis. Participants may have improved from the course due to self-motivation and perceived benefits. Williams et al. (2001) found that self-selected individuals are more likely to complete a Wellness-based Mindfulness

Stress Reduction course. There was no control group for the current research; therefore, the changes in levels of depression, mindfulness, anxiety, and somatization could be caused by the course's impact or external variables. These variables could be symptoms naturally improving over time, a placebo effect, the social support from the course or from becoming more mindful through participating in the group. Therefore, future studies may benefit from employment of an active control group or a wait-list control group.

Clinical implications and future research considerations

The current research has provided a deeper understanding of the impact that an MMBP may have on participants in a primary healthcare setting and may inform future MMBPs. Advantages of mindfulness programs include being cost effective, adaptable, and having less stigma than other treatments (Bowen et al., 2006; Flett et al., 2020; Wrapson et al., 2021). The AMA course is free of charge and is therefore accessible to many participants and support people can attend with participants free of charge. Additionally, some participants in the current study also commented on the benefits of the group support providing a validating and normalising experience. Ezhumalai et al. (2018) state that group interventions can also create a more permanent change to behaviours and mood, can change people easier than at an individual level, and the benefits of the intervention can affect more clients at once making it time and resource efficient. The AMA course is shorter than traditional MBSR programs and so can offer benefits to its participants in a briefer time. Similar benefits have been found in existing literature where adaptations to program duration has been made (Howarth et al., 2019; Wrapson et al., 2021). From frequency analyses of each item in the Client Satisfaction Questionnaire, it is also clear that overall, most participants indicated high satisfaction with the AMA course.

The AMA course promotes itself as a trans-diagnostic treatment approach and it is evident that the course can effectively increase levels of mindfulness which are inversely correlated with depressive and anxiety symptoms. The study showed that the AMA course is beneficial for most participants whether delivered online or in person and across a range of presenting problems. Therefore, AMA is a viable option within a primary healthcare setting.

Generalized Anxiety Disorder (GAD) is considered the least successfully treated among the anxiety disorders (Newman et al., 2008). However, this research found that after attending the AMA course, either in-person or online, participants were more likely to have decreased GAD-7 scores. Therefore, participants experiencing symptoms of anxiety or co-morbid depressive symptoms may benefit from attending the AMA course.

Due to the small sample sizes in each category of ethnic groups, no statistical significance analyses were completed. Marjani (2017) found no statistically significant relationship between ethnic groups and attendance to MBSR. However, this research was conducted overseas and

therefore did not include Pacifica or Māori participants. Māori experience higher levels of mental health disorders and Pacific peoples report higher psychological distress than other groups (Minster et al., 2018; Russell, 2018). Perhaps Māori and Pacifica had the highest attrition rate in the current study as a "one size fits all" model of support is not suitable. Healthcare that is culturally responsive and includes clients' cultural beliefs in intervention plans can assist in engagement of health services and retention (Cram, 2014; Wilson, 2008). The AMA course has introduced a Te Ao Māori enrichment named Mauri Tau Me Te Maramatanga (MTM) and as MBSR follows a holistic view of health through its emphasis on the mind and body connection, this reflects key aspects fostered in Te Ao Māori (Ketu-McKenzie, 2019). Although this course enrichment was not included in the current study, it may be valuable to compare the AMA course and MTM for suitability and differences in retention for different ethnic groups. Differences in retention rates for different demographics were also investigated in the current study but future research could expand on this by investigating differences in baseline scores and post-intervention outcomes and controlling for demographic variables.

Although the nationwide COVID-19 lockdown caused issues with sampling in the current study, it has provided findings that participant mindfulness scores can increase and anxiety scores can decrease after attending AMA online. The global pandemic has increased a demand for interventions that can be accessed from home (Jiang et al., 2021). Virtual healthcare also has advantages for clients with anxiety as consultations can be accessed from the safety of their own space (van Kessel et al., 2016). The findings from the current study provide some preliminary evidence that when delivered online, the AMA course can decrease anxiety levels and increase mindfulness levels. Retention rates were also similar to that of the in-person courses which is a promising outcome given the impacts of the COVID-19 pandemic and the advantages of online delivery. It could be speculated that due to the numerous lockdown restrictions in NZ since 2020, participants made the decision to continue with online courses due to uncertainty of availability of the next in-person courses. Therefore, participants still gained benefit from attending the course online when it was the only delivery mode available to them. It would be beneficial for a future study to investigate if there are differences in outcomes for those who choose to attend an online mindfulness program compared to those who attend an online program when it is their only option, as was the case for sample B in the current study.

Due to the small sample size in this research, future research should investigate the delivery of MMBPs online and in-person with a larger sample size to decrease the possibility of non-statistically significant results and increase generalisability. A follow-up study some months after completion of the AMA course would also be beneficial to determine if the impacts of the course were maintained after completion. Future research could further investigate the impact of

the course with a randomised control trial design to compare the intervention with a control group to reduce the impact of confounding variables on symptom improvement. As attrition rates are high, a large sample size will be needed to complete a randomized control trial.

Although it is assumed that MBSR and adapted programs increase levels of mindfulness, there is limited research supporting this assumption. Deyo et al. (2009) state this may be due to the lack of clinically validated scales to measure mindfulness effectively. However, the mixed methods design of this study allowed for quantitative and qualitative results to answer the research questions and both methods indicate the AMA course has a positive effect on levels of mindfulness. This not only adds to existing research regarding the benefits of attending MMBPs but also provides context that MMBPs are effective in a NZ setting. As the benefits of increased mindfulness levels have been demonstrated in the current study and in previous research, one of the clinical implications of this study's findings is that MMBP programs are trans-diagnostically applicable to patients in NZ.

Although the current research explored variables that contributed to attrition rates, all results were not statistically significant. Existing literature such as that by Williams et al. (2001) and Marjani (2017) also did not find statistically significant differences in demographic variables and retention rates. It is apparent that further research is needed to investigate these factors. Research has also suggested that education levels can affect adherence to treatment for individuals with anxiety disorders (Coles et al., 2004; Santana et al., 2010). Gawrysiak et al. (2018) also found that individuals with low levels of mindfulness may not benefit as much from MMBPs. Additionally, causes of attrition may be a result of other participants experiencing RIA. Therefore, it may be beneficial to investigate influences of attrition such as the prevalence of RIA, demographic influences such as education levels, and the impact of disorders, levels of distress, or mindfulness levels at baseline. Benefits of attending AMA were apparent for those who completed the course, however the impact of the course on those who did not complete the course was not extensively investigated.

Conclusion

The current study aimed to explore the impact of the Mindfulness-meditation based program Aotearoa Mindfulness and Awareness (AMA) on wellbeing for participants aged sixteen and older in the primary healthcare organisation Tāmaki health. Due to the lack of research of MMBPs in NZ primary healthcare settings, the broader aim of this study was to expand upon current research.

Generally, the findings from the current study were in agreement with those in previous research regarding increasing levels of mindfulness from baseline to post-intervention. Correlational analysis found that in both samples, higher mindfulness levels were correlated

with lower levels of anxiety and depressive symptoms. This is consistent with existing research that suggests higher mindfulness levels as a result of MMBPs correlate with lower levels of psychological distress (Barnes & Lynn, 2010; Brown & Ryan, 2003; Shapiro et al., 2008). Additionally, higher depressive symptom levels were significant predictors of higher somatization and anxiety symptom levels in both samples. This was unsurprising as depressive disorders have frequent comorbidities with other disorders (American Psychiatric Association, 2013). Participants in the online course sample also demonstrated that higher anxiety symptom scores were related to higher scores of somatization.

Descriptive analysis and Wilcoxon signed rank tests found that for the in-person courses, the AMA course significantly increased levels of mindfulness and reduced levels of somatization, anxiety, and depressive symptoms, for the majority of participants. The same analysis revealed that for the online courses, the AMA course significantly increased levels of mindfulness and reduced levels of anxiety symptoms. Two major themes were revealed from the qualitative data analysis: *Letting things go* and *Slowing down*, which support the findings that participants considered the AMA course impacted them positively and provided tools to cope with everyday challenges. These findings create additional evidence to previous research suggesting that MMBP's can effectively decrease physical and psychological symptoms (Fjorback et al., 2013; Groves, 2016; Shapiro et al., 2008).

Attrition rates were over 50% from baseline to post-intervention, however, an independent samples T-test of ages and chi-square analyses did not find any significant differences between demographic variables and attrition and retention rates.

In general, this study suggests that those who complete the AMA course online or in-person are likely to find benefits from attending. This study also suggests that those who do not complete the course can still find some benefits from the sessions they attend, as demonstrated in the qualitative interviews. From reviewing previous literature it was obvious there is less literature on the use of MMBPs in NZ. This was the first study (to the researcher's knowledge) to investigate the impact of an MMBP in a primary healthcare setting in NZ. Therefore, by completing the current study in a NZ primary healthcare context, gaps in the literature were identified and addressed. This research has investigated the impact of the AMA course and its impact for participants in a NZ primary healthcare setting and has provided further understanding to this area of research.

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Appendices

Appendix 1 - Aotearoa Mindfulness and Awareness (AMA) Wellness course session guide compared to MBSR guide

Table 9.
AMA course session outline with MBSR session outline

Week One *Mindfulness & Awareness*	Week Two *Minding the Mind*	Week Three *Kia Kaha!* *The Way of Resilience*	Week Four *Mindful Heart*	Week Five *Mindful Relationships*	Week Six *Mindful Life*
Opening Karakia (optional)	*Opening Karakia (optional)*	*Opening Karakia (optional)*	*Opening Karakia (optional)*	*Opening Karakia (optional)*	*Opening Karakia (optional)*
Welcome	Centering Breath experiential review Intro to 3 Min Breathing	Breathing Space (1) Control, Commitment, Challenge invitation Reading: "Stay" Sitting Meditation (20)	3 Min Breathing Space (2)	Teaching on Open Awareness Sitting Meditation with Open Awareness	Participants choose practise (1 hour)
Whakawhānaungatanga/ Getting to know one another Read Group Guidelines Guided reflection on why am I here? First sharing in pairs, then large group sharing	Teaching and Inquiry: *From MBCT: On cognitive fusion, experiential avoidance, rumination and emotional habitual patterns: Seeing Thoughts as Creations of Mind* Clear Seeing (Pohutakawa Tree) Autobiography in Five Short Chapters	What Is Kia Kaha? Keeps Us Strong? (White Board Session) 7 Skills of Resilience Values Exercise with Te Whare Tapa Wha Model and Poutama Model	Teaching, Practise and Inquiry: Self-Compassion Myths of grief Grief and Trauma Strobe and Schut Model & Wise Mind Model with white board	*Poem:* *We are listening each other into being* Teaching, Practise and Inquiry: Mindful Listening	Evaluation Process Certificates and group sharing process
Introduction to Mindfulness and the research supporting its use in healthcare	Savouring Exercise (Taking the Good (Rick Hanson)		Open Heart Practise Poem: Allow		
Mindful (raisin) eating With group inquiry & teachings on autopilot, mindfulness in daily life. Poem: "Mindful"		Teaching on resilience from Te Ao Māori			

TEA BREAK	TEA BREAK	TEA BREAK	TEA BREAK	TEA BREAK	CELEBRATION
Centering Breath Practise Experiential Mindful Gap teaching (cognitive fusion, experiential avoidance) and group inquiry	Chair Yoga Mindfulness of Breath Walking Meditation Poem: Give Thoughts Room	Standing Yoga (Pace so that Body Scan is at least 30 minutes long)	Supine Yoga Loving Kindness Practise	Teaching, practise and inquiry: Personal Space exercise Communications Style Assertive Statements teaching and practise	My Personal Practise / Wellness Plan
Attitudes of Mindfulness	Inquiry: Universality of wandering mind	Teaching and inquiry re body scan			
Between session practise: Centering Breath Mindfulness in daily life Mindful meal	Between Session Practise: Mindfulness of Breath (15 minutes) Chair Yoga	Between Session Practise (30) Yoga Body Scan alternate with Sitting Meditation (30)	Between Session Practise (30) Supine Yoga Open Heart / Kindness Breathing Space (2) Sitting Meditation	T: Communications Style Exercise (Akido model) (depending on group)	Closing Poem: Meditation as an act of Love
Pair sharing: Action Plan for practise	Pair sharing: Action Plan for Practise	Pair sharing: Action Plan for Practise		T: Mindful communication	
Karakia: Loving Kindness (optional)	Karakia: Loving Kindness (optional)	Karakia: Loving Kindness (optional)	Karakia: Loving Kindness (optional)	Karakia: Loving Kindness (optional)	Karakia: Loving Kindness (optional)

1 **MBSR**	2	3	4	5	6	7	8
3 hrs Welcome and intro Opening meditation Definition of mindfulness Guidelines Guided internal reflection Group sharing Standing yoga (few poses) Raisin eating	2.5 hours Standing yoga Body scan Small / large group discuss scan Universality of wandering mind ? Eating one meal mindfully 9 dots puzzle plus discussion of T, F, B around challenges Or young/older woman trompe L'oel	2.5 hours Sitting meditation with AOB and guidance on sitting -Discussion importance of being embodied through sharing of direct experience of that – or of being ungrounded -Walking meditation (optional) -Lying down yoga -Savouring exercise (optional on pleasant event)	2.5 hours Standing yoga Sitting AOB and body sensations Being with the difficult Review of unpleasant events calendar Exploration of being with the difficult Naming stressors	2.5 hours 45 min sit moving into choiceless awareness Guided reflection on being half way Mid way assessment forms Pair sharing Practise inquiry Stress over the week – able to respond vs. react? Default mode Brief sit	2.5 hours Standing yoga Sitting Closing meditations Difficult relationships / Communications Knowing / expressing feelings Expectations / habits Standing yoga Sitting with more silence	2.5 hours Mountain, Lake or Loving Kindness Choiceless awareness blending the above – use breath as an anchor if lost Yoga choice exercise – identify a body part that is challenging & pose that addresses that body part – yoga as everyday experience OR	3 – 3.5 hours Keeping up momentum / discipline Resources Coming "full circle with practise" – body scan, yoga, sitting (mostly silent sit) Option: letter to self Guided reflection: What happened, What do you want to remember?

Abdominal breathing Body scan *Fundamental wholeness* *Trust / community* Nine dots puzzle **Same home practise** *plus puzzle* **MBCT** **Session One** **Awareness &** **Automatic Pilot**	Sitting meditation AOB Discuss **Home Practise:** *Body scan x 6* *AOB 15-20* *Pleasant events* *Choose one daily activity to bring full awareness* **Session Two** **Living in our heads**	-Discussion of pleasant events calendar – pleasantness in body scan … we many miss pleasant moments / relationship aspects / in spite of pain etc. **Home: Yoga with body scan** **AOB 15-20** **Unpleasant events** **Session Three** **Gathering the scattered mind**	Automatic, habitual stress reactivity Definitions of stress / studies Sitting meditation **Home practise** Alternate scan with yoga Sit 20 mins Aware of auto stress/unpleasant in the moment **Session Four** **Recognizing Aversion**	**Home practise**: Alternate practises **Difficult coms calendar** Bring awareness to reacting and exploring alternatives **Session Five** **Allowing** **Letting Be**	Guided reflection from difficult comms calendar – habitual relational patterns in mind, body, behaviour **Home Practise:** Alternate sitting with body scan and or standing / lying down recordings **Session Six** **Thoughts are not facts**	Exploring the unfamiliar – changing seats Discuss retreat Discuss comms Discuss "what we take in" self-destructive or nourishing **Home Practise:** Without recording Aware and awake as possible throughout day **Session Seven** **How can I best take care of myself?**	Not want to forget? Home practise, hints, reminders MBSR checklist Group go around Final meditation and ending of this group Go back to recordings make practise your own **Session Eight** **Maintaining and Extending New Learning**
Orientation Ground rules Pairs then whole group intros What they hope to receive from program Raisin exercise Feedback and discussion Body scan beginning with breath focus Feedback and discussion of body scan	*Getting lost in rumination and worry. Mindfulness of the body = knowing experientially vs. conceptually. Aware of the unpleasant without getting lost in rumination. Letting go of thinking – rumination & connecting with the body.* Body Scan practise Practise review Thoughts and feelings exercise	*Mind is scattered working to complete tasks or future focused – intentionally returning to breath and body* 5 mins just seeing or hearing exercise 30 mins sitting Breath & body Practise review Home practise review Breathing space Mindful stretching	*Experiential exploration of aversion, driven by need not to have these experiences, the root of emotional suffering. Mindfulness = wider perspective and way of relating differently.* 5 min seeing/hearing 30-40 sit – breath, body, sounds, thoughts, choiceless awareness Practise / home review *Territory of depression*	*Relating differently to the unpleasant* *Kindness toward experience – the clear seeing we can choose as needed to change.* 30-40 mins sit Introduce a difficulty Practise review Breathing space + With review *The Guest House* **Home Practise** Working with difficulty practise Day 1,3,5	*Thoughts are merely thoughts, even the ones that say they are not* 30-40 sit Practise plus home practise review Prep for course end Mood, thoughts and alt. view ex. Breathing space and review BS as first step *Relapse signature* **Home Practise**	*Use skilful action to take care of oneself in the face of lowering mood. Recognise our warning signs.* 30-40 min sit Noticing reactivity Practise review Explore links between activity and mood Scheduled activities re mood Nourishing / depleting Pleasure / mastery	*Planning for a new way of living requires clear intention and planning* Body scan Practise review Home practise review with relapse emphasis Whole course review – pairs and group Eval How to keep up momentum, plans

Group discussion of homework obstacles, timing **Home practise assignment** 6 x body scan Mindfulness of routine activity	Pleasant experiences calendar 10 min sit. **Home practise:** 6 Body Scan 6 10 mins breath Calendar Mindful in life	Unpleasant experiences calendar practise **Home practise:** Stretch & breath Alt with mindful movement (40) Unpleasant exp. Calendar 3 x b. space daily	Breathing space Mindful walking Home: Sit x 6 3 x day BS **Responsive BS to difficult feelings**	Then same without instruction 3 x day BS BS for difficult feelings when noticed	30-40 mins practise 3 min BS reg 3 min BS responsive	3 min breathing space as first step in mindful action Actions for relapse 3 min breathing space **Home practise:** Reg practise pattern 3 x BS daily + RBS Action plan	Link plans to positive reasons to continue Concluding meditation Momento gift

Appendix 2 - Ethics Approval Document (HDEC)

Health and Disability Ethics Committees

Health and Disability Ethics Committees
Ministry of Health
133 Molesworth Street
PO Box 5013
Wellington
6011

0800 4 ETHICS
hdecs@health.govt.nz

11 June 2021

Miss April Kerslake
13 Geranium Avenue
Flat bush 2019

Dear Miss Kerslake

Re:	**Ethics ref:**	**21/NTB/141**
	Study title:	A pilot study of a group Mindfulness-based intervention for Tāmaki health patients

I am pleased to advise that this application has been *approved* by the Northern B Health and Disability Ethics Committee. This decision was made through the HDEC-Expedited Review pathway.

Conditions of HDEC approval

HDEC approval for this study is subject to the following conditions being met prior to the commencement of the study in New Zealand. It is your responsibility, and that of the study's sponsor, to ensure that these conditions are met. No further review by the Northern B Health and Disability Ethics Committee is required.

Standard conditions:

1. Before the study commences at *any* locality in New Zealand, all relevant regulatory approvals must be obtained.

2. Before the study commences at *any* locality in New Zealand, it must be registered in a clinical trials registry. This should be a WHO-approved registry (such as the Australia New Zealand Clinical Trials Registry, www.anzctr.org.au) or https://clinicaltrials.gov/.

3. Before the study commences at *each given* locality in New Zealand, it must be authorised by that locality in Online Forms. Locality authorisation confirms that the locality is suitable for the safe and effective conduct of the study, and that local research governance issues have been addressed.

After HDEC review

Please refer to the *Standard Operating Procedures for Health and Disability Ethics Committees* (available on www.ethics.health.govt.nz) for HDEC requirements relating to amendments and other post-approval processes.

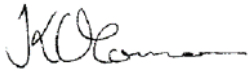
Your next progress report is due by 11 June 2022.

Participant access to ACC

The Northern B Health and Disability Ethics Committee is satisfied that your study is not a clinical trial that is to be conducted principally for the benefit of the manufacturer or distributor of the medicine or item being trialled. Participants injured as a result of treatment received as part of your study may therefore be eligible for publicly-funded compensation through the Accident Compensation Corporation (ACC).

Please don't hesitate to contact the HDEC secretariat for further information. We wish you all the best for your study.

Yours sincerely,



Kate O'Connor
Chairperson
Northern B Health and Disability Ethics Committee

Encl: appendix A: documents submitted
appendix B: statement of compliance and list of members

Appendix A
Documents submitted

Document	*Version*	*Date*
Survey/questionnaire: Patient Health Questionnaire (PHQ-SADs)	1	14 April 2021
Survey/questionnaire: Cognitive and Affective Mindfulness Scale - Revised (CAMS-R)	1	14 April 2021
Survey/questionnaire: Client Satisfaction Questionnaire (CSQ)	1	14 April 2021
CV for CI: Invesitgators CV	1	14 April 2021
CVs for other Investigators: CV for co-investigator Dr Wendy Wrapson	1	11 May 2021
Issues accessing UTN number	1	11 May 2021
Protocol	1	13 May 2021
Demographic Information Sheet	1	13 May 2021
PIS/CF	1	13 May 2021
CVs for other Investigators: CV for co-investigator Professor Richard Seigert	1	13 May 2021
Evidence of scientific review: Favorable Peer Review	1	13 May 2021
Application		16 May 2021
Covering Letter: Cover letter addressing amendments	1	07 June 2021
Protocol: Research protocol tracked changes	1	07 June 2021
Protocol: New Research Protocol	1	07 June 2021
Data management plan	1	07 June 2021
Protocol: Verbal consent protocol	1	07 June 2021
PIS/CF: PIS/CF with tracked changes	1	07 June 2021
PIS/CF: NEW PIS/CF	1	07 June 2021

Appendix B
Statement of compliance and list of members

Statement of compliance

The Northern B Health and Disability Ethics Committee:

- is constituted in accordance with its Terms of Reference
- operates in accordance with the *Standard Operating Procedures for Health and Disability Ethics Committees*, and with the principles of international good clinical practice (GCP)
- is approved by the Health Research Council of New Zealand's Ethics Committee for the purposes of section 25(1)(c) of the Health Research Council Act 1990
- is registered (number 00008715) with the US Department of Health and Human Services' Office for Human Research Protection (OHRP).

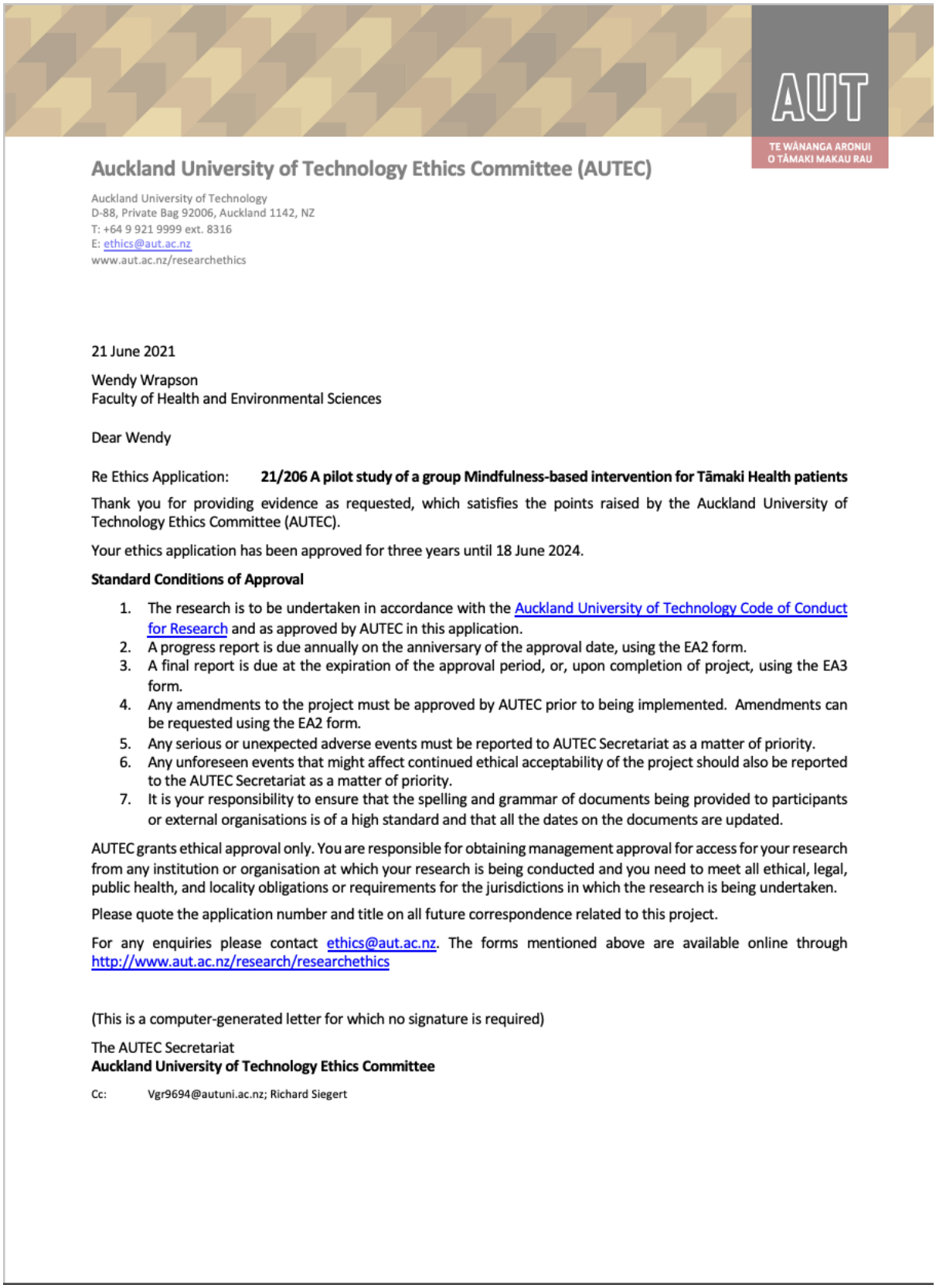
List of members

Name	*Category*	*Appointed*	*Term Expires*
Mr John Hancock	Lay (the law)	14/12/2015	14/12/2018
Dr Nora Lynch	Non-lay (health/disability service provision)	19/03/2019	19/03/2026
Miss Tangihaere Macfarlane	Lay (consumer/community perspectives)	20/05/2017	20/05/2020
Mrs Kate O'Connor	Lay (ethical/moral reasoning)	14/12/2015	14/12/2018
Mrs Stephanie Pollard	Non-lay (intervention studies)	01/07/2015	01/07/2018
Mrs Leesa Russell	Non-lay (intervention studies), Non-lay (observational studies)	14/12/2015	14/12/2018
Ms Susan Sherrard	Lay (consumer/community perspectives)	19/03/2019	19/03/2022
Mrs Jane Wylie	Non-lay (intervention studies)	20/05/2017	20/05/2020

Unless members resign, vacate or are removed from their office, every member of HDEC shall continue in office until their successor comes into office (HDEC Terms of Reference)

http://www.ethics.health.govt.nz

Appendix 3 - AUTEC ethical approval



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

21 June 2021

Wendy Wrapson
Faculty of Health and Environmental Sciences

Dear Wendy

Re Ethics Application: **21/206 A pilot study of a group Mindfulness-based intervention for Tāmaki Health patients**

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 18 June 2024.

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.

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: Vgr9694@autuni.ac.nz; Richard Siegert

Appendix 3 - Participant Information Sheet and consent form

Participant Information Sheet
A mindfulness-based intervention for Tāmaki Health patients

You are invited to take part in a research study because you have registered for the Aotearoa Mindfulness and Awareness (AMA) Wellness course. This research is being conducted by April Kerslake ("the researcher") as part of the course for a master's degree in Health Science (Counselling Psychology) at Auckland University of Technology (AUT). April is being supervised for this study by Dr Wendy Wrapson and Professor Richard Siegert, also of AUT.

It is your choice if you would like to take part in the study or not. If you don't want to take part, you don't have to give a reason, and it won't change the care you get. If you want to take part now, but change your mind later, you can pull out of the study at any time.

This Participant Information Sheet will help you decide if you'd like to take part. It tells you why we are doing the study, what your participation would involve, what the benefits and risks might be, and what happens when the study ends. We will go through this information with you and answer any questions you have. You do not have to decide today if you will take part in this study. Before you decide you may want to talk about the study with other people, such as family, whānau, friends, or healthcare providers. Feel free to do this. You can also ask to have a face-to-face discussion with the researcher prior to agreeing to take part, if you have any questions.

If you agree to take part in this study, you will be asked to sign the Consent Form on the last page of this document. You will be given a copy of both the Participant Information Sheet and the Consent Form to keep.

This document is 5 pages long, including the Consent Form. Please make sure you have read and understood all the pages.

What is the purpose of the study?
The aim of this study is to find out how the AMA Wellness course impacts participants' wellbeing. The AMA Wellness course is based on Mindfulness-Based Stress Reduction, a structured self-care program that has helped clients of Tāmaki Health for over seven years. The study will help us find out how the AMA Wellness course works in primary health care, why people stay or leave the course, how many sessions people attend, and how many participants would be needed for a larger study in the future.

Who can take part in the study?
Participants need to be 16 years or older and registered for the AMA Wellness course.

How many people will be in the study?
There will be about 100 people in this study.

What will my participation in the study involve?
As a participant in the AMA Wellness course, you will be asked to complete a number of questionnaires for Tāmaki Health's own records.

You will then attend the AMA Wellness course once per week for 2.5 hours for six weeks in total. The course is taught by one of the mindfulness-trained educators. At the end of the six weeks, you will complete some more questionnaires.

The above process is the same for all AMA Wellness course participants, regardless of whether or not they participate in this research study. If you consent to participate in this study, however, you will be asked to complete one brief additional questionnaire. Your responses on all of the questionnaires will be used to find out what impact the AMA course has on participants' wellbeing. All your questionnaire responses will be kept confidential.

Ten participants will also be randomly invited to take part in a telephone interview so that the researcher can ask about participants' experience of taking part in the course. This interview will be audio-recorded and transcribed. You will have the opportunity to check your transcript before it forms part of the study data if you would like to do so. You can choose on the Consent Form whether you would like to take part in an interview. If more people volunteer for this phase of the study than are needed, you may not be invited for an interview. If you do take part, you will need to give verbal consent at the commencement of the interview which will form part of the audio-recording.

What is the time span for this study?
The study will start in June 2021 and data collection will finish by November 2021. Your involvement will be just for the 6 weeks of the AMA Wellness course during this time.

How will the study affect me?
Taking part in this study will take the same amount of time as if you just attended the six-week AMA Wellness course. If you take part in a telephone interview with the researcher, this interview will take approximately 20 minutes of your time. There are no known risks caused by this study and your normal care will not be changed in any way by participating in the study, or by deciding not to take part in or withdrawing from the study at any time.

Will any costs be reimbursed?
There are no costs involved in taking part in the study. If you take part in the telephone interview, you will receive a $10 voucher as koha for your time and participation.

voluntary participation and withdrawal from this study
Taking part in this study is voluntary (your choice). You may choose not to answer any items in the questionnaires or withdraw from the study at any time and this will in no way affect your participation in the AMA Wellness course or your future health care.

What will happen to my information?
During this study, information will be recorded about you and your study participation. This includes data from the questionnaires you will complete. Identifiable information is any data that could identify you (e.g. your name, date of birth, or address). Only the research team will have access to your identifiable information. To make sure your personal information is kept confidential, information that identifies you will not be included in any report or other materials generated from the study. Instead, de-identified information will be used, where you will be identified by a code. The researcher will keep a list linking your code with your name, so that you can be identified by your coded data if needed.
Your identifiable information will be held in a locked filing cabinet at AUT, North Shore campus or on secure AUT computers during the study. After the study it will remain at AUT

for at least 10 years, then destroyed. All storage will comply with local and/or international data security guidelines.
Although efforts will be made to protect your privacy, absolute confidentiality of your information cannot be guaranteed. Even with coded and anonymised information, there is no guarantee that you cannot be identified. The risk of people accessing and misusing your information (e.g. making it harder for you to get or keep a job or health insurance) is currently very small, but may increase in the future as people find new ways of tracing information.
You have the right to request access to your information held by the research team. You also have the right to request that any information you disagree with is corrected. If you have any questions about the collection and use of information about you, you should ask the researcher or her supervisor, Dr Wendy Wrapson, whose contact details are at the bottom of this information sheet.
You may withdraw your consent for the collection and use of your information at any time, by informing the researcher. If you withdraw your consent, your study participation will end, and the study team will stop collecting information from you. If you agree, information collected up until your withdrawal from the study will continue to be used and included in the study. You may ask for it to be deleted when you withdraw, unless you withdraw after the study analyses have been undertaken.

conflicts of interest

Whilst April Kerslake ("the researcher") is a student at AUT and is undertaking this study as part of a degree qualification, she is also employed at Tāmaki Health as a coordinator for the AMA course. This potential conflict of interest will be managed by ensuring that a range of staff will be involved in recruiting and registering participants for this study and that April will not be involved in tasks related to course attendance and follow-ups.

Compensation

In the unlikely event that you become injured in this study, you would be eligible to apply for compensation from ACC just as you would be if you were injured in an accident at work or at home. This does not mean that your claim will automatically be accepted. You will have to lodge a claim with ACC, which may take some time to assess. If your claim is accepted, you will receive funding to assist in your recovery. There is no cover for mental health injury unless it is as a result of physical injury. If you have ACC cover, generally this will affect your right to sue the investigators. If you have any questions about ACC, contact your nearest ACC office.

If you have private health or life insurance, you may wish to check with your insurer that taking part in this study won't affect your cover.

Who has approved the study?

This study has been approved by a group of people called the Health and Disability Ethics Committee (HDEC), who check that studies meet accepted ethical standards. If you would like more information about the study, please contact April Kerslake at vgr9694@autuni.ac.nz.

Who do I contact for more information or if I have concerns?

If you have any questions, concerns, or complaints about the study at any stage, you can contact:

Dr Wendy Wrapson, Senior Research Fellow
Auckland University of Technology
wwrapson@aut.ac.nz

If you want to talk to someone who isn't involved with the study, you can contact an independent health and disability advocate on:

Phone: 0800 555 050
Fax: 0800 2 SUPPORT (0800 2787 7678)
Email: advocacy@advocacy.org.nz
Website: https://www.advocacy.org.nz/

You can also contact the health and disability ethics committee (HDEC) that approved this study on:

Phone: 0800 4 ETHIC
Email: hdecs@health.govt.nz

Consent Form

A mindfulness-based intervention for Tāmaki Health patients

I have read/had explained to me, and understand, the information sheet for participants taking part in this study. I have had the chance to discuss this study. I am happy with the answers I have been given.
I understand that taking part in this study is optional. I may choose not to answer any questions or withdraw from the study at any time, and this will in no way affect my future health care.
I have had the opportunity to use family/whānau support or a friend to help me ask questions and understand the study.
I understand that my participation in this study is confidential and that no material that could identify me personally will be used in any reports on this study.
I understand the compensation provisions in case of injury during the study.
I have had time to consider whether to take part in this study.
I know who I can talk to if I have any questions about the study.
I consent to being invited to take part in a telephone interview to give feedback on the AMA Wellness course. *(Please circle)* ***Yes/ No***
I would like to have a summary of the results from the study. I understand that there may be a period of time between when I participate in the AMA Wellness course and when I can get the results of the study. *(Please circle)* ***Yes/ No***

Declaration by participant:
I hereby consent to take part in this study.

Participant's name (in full): _____

Signature: _____ Date: _____

Project explained by:

Project role: _____

Signature: _____ Date: _____

Note: A copy of the consent form is to be retained by the participant and a copy is to be retained by Auckland University of Technology

Appendix 5 - Demographic Information Sheet

Demographic Information Sheet

A mindfulness-based intervention for Tāmaki health patients

1. Participant's name (in full): _____

2. Age: _____ years

3. Gender: ◯ Male
◯ Female
◯ Other *[please specify]* _____

4. Ethnicity: *Please indicate which ethnic group/s you belong to. Select all that apply to you*

◯ NZ Pakeha
◯ Māori
◯ Pacific
◯ Asian
◯ Indian
◯ Other - *please specify*, e.g., Dutch, Japanese, Tokelauan

_____

5. What is your highest level of *completed* education:

◯ Secondary school
◯ University undergraduate (or other tertiary)
◯ Postgraduate

6. Have you ever done any meditation before? *Please circle Yes or No* Yes / No

7. Reason for referral to the AMA Wellness course

_____

Signature: Date:

Appendix 6 - Poster invitation to participate in the current study

AUT

Invitation to participate in a research study

April Kerslake, a master's degree student at Auckland University of Technology, is conducting a research study to investigate the impact of the Aotearoa Mindfulness and Awareness (AMA) Wellness Course.

You are invited as you are registered to attend the AMA Wellness Course!

What does this study involve?

Every participant in the AMA course, regardless of whether they take part in the study, will fill in some forms at the first and last sessions of the course. Those who take part in the study will just have one short additional questionnaire to complete. Your information will be completely de-identified on all forms so your answers and information will not be able to personally identify you in the research.

Your participation is voluntary and whether you take part or not will not affect your participation in the AMA Wellness course or any of your usual health care.

Further information is contained in the attached Participant Information Sheet. If you are interested, please fill in the consent form and hand it in at your first session.

For more information, please contact April Kerslake at:
Vgr9694@autuni.ac.nz

Approved by the Health and Disability Ethics Committee on 11th June 2021, Application reference 21/NTB/141, submission code NZ/1/401A18. Approved by Auckland University Ethics Committee on, 21st June 2021 AUTEC reference number # 21/206

Appendix 7 - Patient Health Questionnaire (PHQ-SADs)

Name: _____ Tāmaki Health Date: _____

Patient Health Questionnaire: PHQ-SADS

1. Stomach pain			
2. Back pain			
Feeling tired or having little energy			
7. Pain or problems during sexual intercourse			
Headaches			
9. Chest pain			
10. Dizziness			
11. Fainting spells			
12. Feeling your heart pound or race			
13. Shortness of breath			
15. Nausea, gas, or indigestion			

1. Feeling nervous anxiety or on edge				
2. Not being able to stop or control worrying				
3. Worrying too much about different things				
4. Trouble relaxing				
5. Being so restless that it is hard to sit still				

	NO	YES
a. In the last 4 weeks, have you had an anxiety attack – suddenly feeling fear or panic?.....		
if you checked "NO", go to question "D"		
b. Has this ever happened before?.....		
c. Do some of these attacks come suddenly out of the blue – that is, in situations where you don't expect to be nervous or uncomfortable..		
d. Do these attacks bother you a lot or are you worried about having another attack?.....		
e. During your last bad anxiety attack, did you have symptoms like shortness of breath, sweating, heart racing, pounding, or skipping?..		

D. Over the last 2 weeks, how often have you been bothered by any of the following problems?

	Not at all (0)	Several Days (1)	More than half the days (2)	Nearly every day (3)
1. Little interest or pleasure in doing things.....				
2. Feeling down, depressed, or hopeless.....				
3. Trouble falling or staying asleep, or sleeping too much.....				
4. Feeling tired or having little energy.....				
5. Poor appetite or overeating.....				
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down.....				
7. Trouble concentrating on things, such as reading the newspaper or watching television.....				
8. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual.....				
9. Thoughts that you would be better off dead of or hurting yourself in some way.....				
PHQ-9 Score = ☐		____ +	____ +	____

E. If you checked off any problems on this questionnaire, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult

Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute.

Appendix 8 - Cognitive and Affective Mindfulness Scale – Revised (CAMS-R)

Mindfulness Scale (CAMS-R)

We want to know more about what you think, how you feel, and what you do. **Read** each sentence. Then, tick the box that tells **how often each is true for you.**

	Rarely/ Not at All	Sometimes	Often	Almost Always
1. It is easy for me to concentrate on what I am doing.				
2. I can tolerate emotional pain.				
3. I can accept things I cannot change.				
4. I can usually describe how I feel at the moment in considerable detail.				
5. I am easily distracted.				
6. It's easy for me to keep track of my thoughts and feelings.				
7. I try to notice my thoughts without judging them.				
8. I am able to accept the thoughts and feelings I have.				
9. I am able to focus on the present moment.				
10. I am able to pay close attention to one thing for a long period of time.				

Total Score:

Appendix 9 - Client Satisfaction Questionnaire

Aotearoa Mindfulness and Awareness: CLIENT SATISFACTION QUESTIONAIRE

Name: _____(optional) Date:

Your Facilitator: Location:

Thank you for taking the time to complete this survey. As part our commitment to providing the highest quality of service, we value your feedback regarding the services you received, and any ideas you have regarding ways we could improve.

CIRCLE ONE NUMBER FOR EACH

How would you rate the following:	**Poor**	**Fair**	**Satisfactory**	**Good**	**Excellent**
1. Convenience of the location **Comments:**	**1**	**2**	**3**	**4**	**5**
2. Convenience of the time **Comments:**	**1**	**2**	**3**	**4**	**5**
3. Comfort/ atmosphere of the office/ facility **Comments:**	**1**	**2**	**3**	**4**	**5**
4. Competence/ knowledge of the facilitator **Comments:**	**1**	**2**	**3**	**4**	**5**
5. Quality of care and services **Comments:**	**1**	**2**	**3**	**4**	**5**
6. Amount of help you received from attending this group **Comments:**	**1**	**2**	**3**	**4**	**5**
7. Degree of improvement from the time of your initial visit **Comments:**	**1**	**2**	**3**	**4**	**5**
8. Degree to which you were helped to deal more effectively with your concerns **Comments:**	**1**	**2**	**3**	**4**	**5**
9. Improvement in how you feel compared to the initial visit **Comments:**	**1**	**2**	**3**	**4**	**5**
10. Overall satisfaction with the treatment **Comments:**	**1**	**2**	**3**	**4**	**5**
11. Friendliness/ courtesy of your facilitator **Comments:**	**1**	**2**	**3**	**4**	**5**
12. Attention and respect provided to you as a participant **Comments:**	**1**	**2**	**3**	**4**	**5**
13. Your comfort in referring a friend or relative to Mindfulness **Comments:**	**1**	**2**	**3**	**4**	**5**
14. You comfort in returning if you needed help again **Comments:**	**1**	**2**	**3**	**4**	**5**

Please turn the page …

What would you tell others about the programme?

What has this programme done for you?

Do you give permission for us to share your comments to promote this programme (please circle either) with / without using your name or any identifying details about you? Please circle below:

Yes **No**

Would you be willing to be interviewed and filmed in order to share your positive experience with others? Please tick below.

Yes **No**

_____ Signature **_____ Date**

Thank you.

Appendix 10 - Consent protocol for telephone interview

Verbal consent of participant
(Telephone interview)
A mindfulness-based intervention for Tāmaki Health patients

Participants will be asked to verbally agree with the following statements prior to the telephone interview commencing. The reading out of these statements and the participant's verbal consent will be included on the interview audio-recording.

1. I have read/had explained to me, and understand, the information sheet for participants taking part in this study. I have had the chance to discuss this study. I am happy with the answers I have been given.
2. I understand that the interview will be audio-taped and transcribed.
3. I understand that taking part in this study is optional. I may choose not to answer any questions or withdraw from the study at any time, and this will in no way affect my future health care.
4. I have had the opportunity to use family/whānau support or a friend to help me ask questions and understand the study.
5. I understand that my participation in this study is confidential and that no material that could identify me personally will be used in any reports on this study.
6. I understand the compensation provisions in case of injury during the study.
7. I have had time to consider whether to take part in this study.
8. I know who I can talk to if I have any questions about the study.

I would like to check the transcript of my interview prior to my interview data being used in the study. ***Yes/ No***

I would like to have a summary of the results from the study. I understand that there may be a period of time between when I participate in the interview and when I can get the results of the study. **Yes/No**

I verbally agree to take part in this research. ***Yes/ No***

Project explained by: Project role:

Signature: Date:

Appendix 11- Interview Schedule

A mindfulness-based intervention for Tāmaki Health patients

Telephone Interview Schedule

The interview aims to explore:

- The participants experience of the AMA Wellness Course
- What benefits the course offered them
- If they found the course useful for the problem that brought them to the course

Introduction

Background Information

- Introduce self and Auckland University of Technology
- Purpose of study – to understand the client's experience of the AMA Wellness course, what benefits the course offered them and if it was helpful for the problem that brought them to the course

Interview Format

- Format of semi-structured interview (Open questions, follow up questions, hearing their views)
- No right or wrong answers – their views are important as they are the experts in their field
- Withdrawal at any time from interviews as whole, or in not answering particular questions
- Timing of interview (around 20 minutes)

Recording of Interview

- Digital and written recording of interviews – check they are alright with this
- Report, use of quotations, identifiable information will not be used
- Check if they have any questions
- Check if they are happy to proceed

Consent

- Obtain verbal consent

Questions

- Before doing the AMA Wellness course, had you previously had any experience of mindfulness?
- What were your expectations of the course?
- Were there any difficulties in attending AMA because of your daily routine?
- Did you do the homework practises in between the sessions? If so, how often/duration?
- Did you find the course useful for the problem that brought you to the course?
- Now that the mindfulness course is over, are you still practising mindfulness? How? (What aspects of mindfulness?)
- What benefit do you think you get from practising mindfulness?
- Did you experience any unpleasant effects from the course?
- Are there any improvements that could be made to the course?

Closing questions

Opportunity for the participant to add anything
E.g., *'We discussed many aspects of your experiences during the AMA Wellness Course, is there anything else you would like to mention?'*

- Is there anything else you would like to add?

Any other comments/questions?

- Thank participant for their time
- Reassure their confidentiality in this research
- Ask participant if they would like to see a copy of their transcript before it is included in the study analyses
- Check if participant has any questions concerning participation
- Ask how they would like to receive the koha e.g., in person, via mail

Appendix 12 - Postgraduate Research Proposal (PGR1) acceptance

11 May 2021

April Kerslake
13 Geranium Ave
Flat Bush
Auckland 2019

Dear April,

Thank you for submitting your PGR1 Research Proposal for the Master of Health Science in Psychology.

Your proposal has been reviewed and approved by the Faculty of Health and Environmental Sciences, which will be noted at the Postgraduate Research Committee June 2021 meeting.

Your research details are:

Programme:	Master of Health Science in Psychology
Paper enrolment:	PSYC997 Practice Research Project
Student ID:	15914339
Working title:	A pilot study of a group Mindfulness-based intervention for Tāmaki healthcare patients
Primary supervisor:	Dr Wendy Wrapson
Secondary supervisor:	Prof Richard Siegert
Mentor supervisor:	Prof Richard Siegert
Start date:	1 March 2021
Expected completion date:	5 November 2021

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

The AUT website for forms and handbooks is:
https://sdw.aut.ac.nz/postgraduate-research/pg-forms-policies-and-processes

Yours sincerely

Professor Susan Crowther
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 9999 extension 7912

Cc Primary supervisor Dr Wendy Wrapson

Appendix 13 - Kolmogorov Smirnov tests

Table 10.
Kolmogorov-Smirnov statistics of PHQ-15, GAD-7, PHQ-9, and CAMS-R total scores T1

		N	Statistic	Sig.
PHQ-15	Sample A	27	0.12	.20*
	Sample B	23	0.12	.20*
GAD-7	Sample A	35	0.13	0.14
	Sample B	29	0.12	.20*
PHQ-9	Sample A	37	0.11	.20*
	Sample B	25	0.9	.20*
CAMS-R	Sample A	39	0.18	0
	Sample B	27	0.18	0.02

* this is the lower bound of the true significance

Appendix 14 - Box and Whisker plots for Sample A and B total scale scores for four scales at baseline

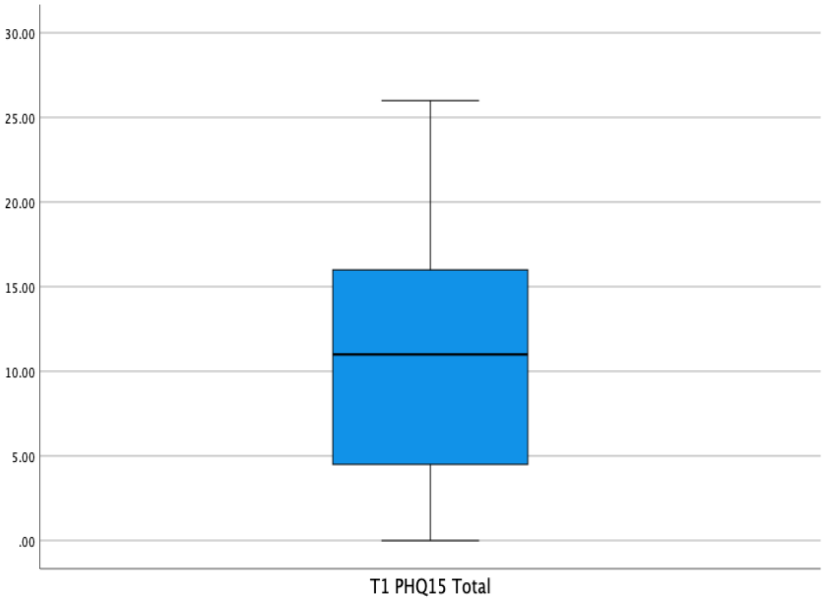


Figure 2.
Data distribution PHQ-15 scores sample A

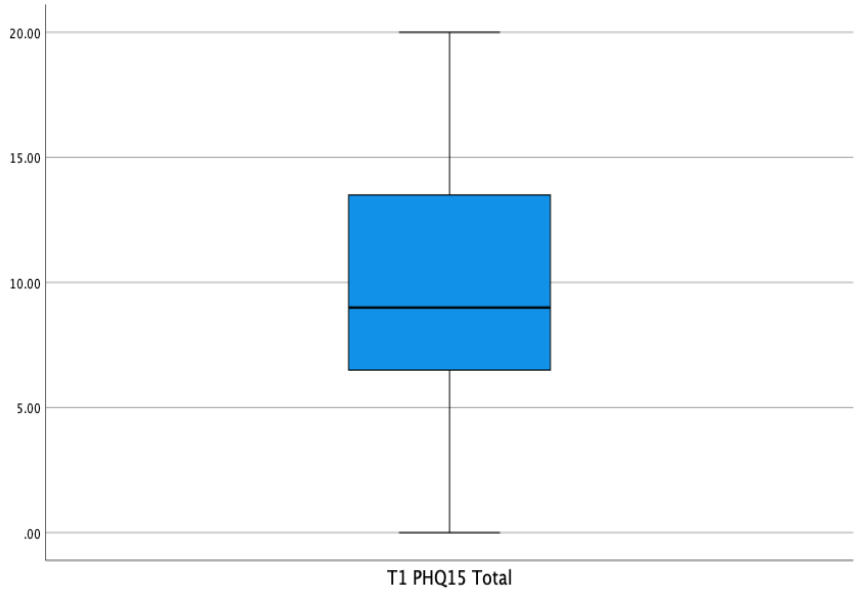


Figure 3.
Data distribution PHQ-15 scores sample B

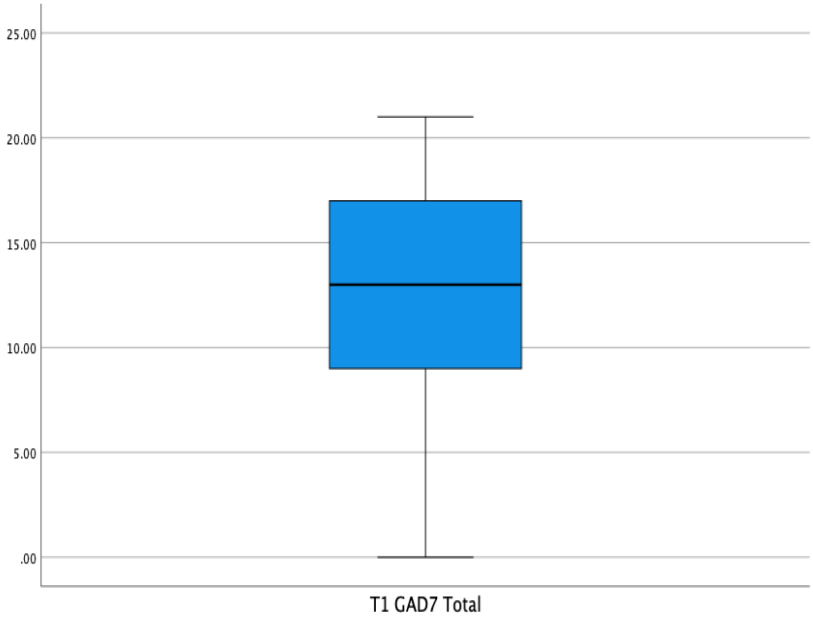


Figure 4.
Data distribution GAD-7 scores sample A

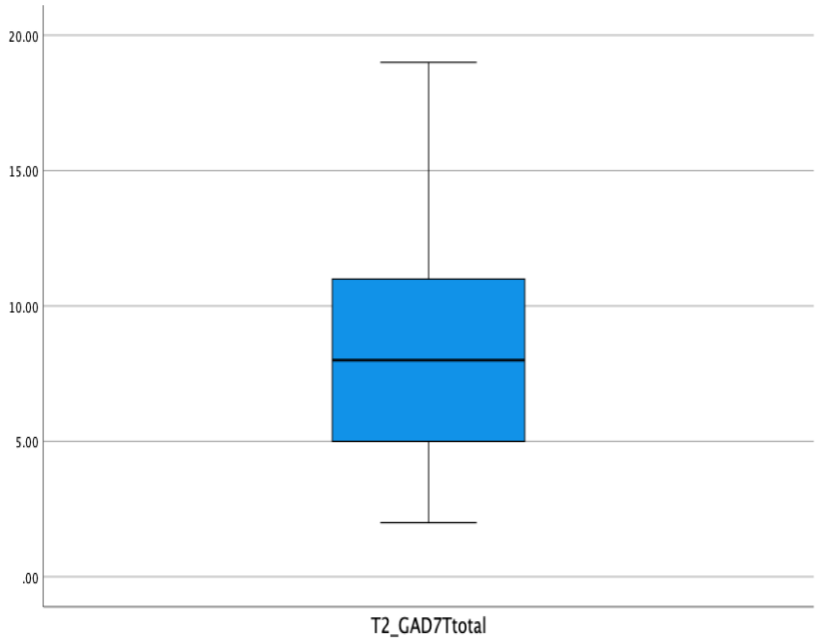


Figure 5.
Data distribution GAD-7 scores sample B

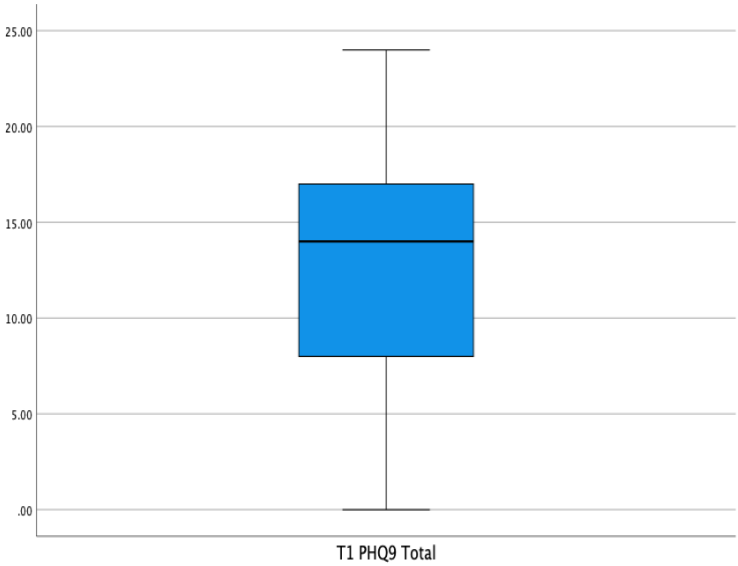


Figure 6.
Data distribution PHQ-9 scores sample A

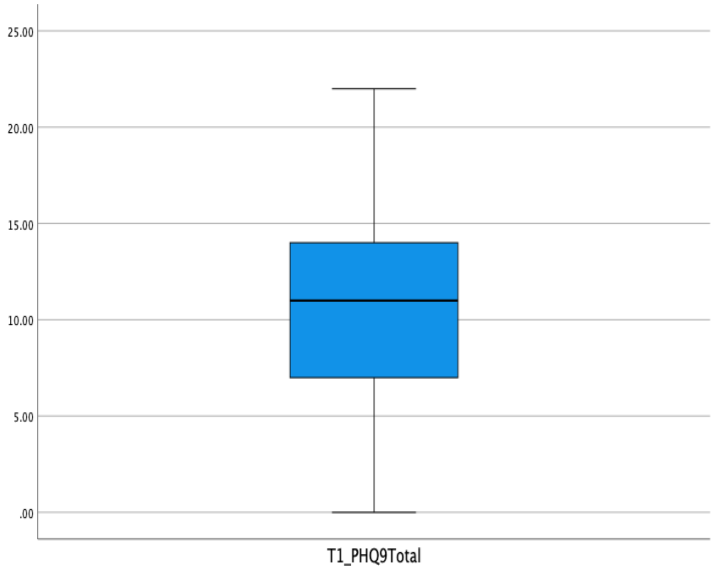


Figure 7.
Data distribution PHQ-9 scores sample B

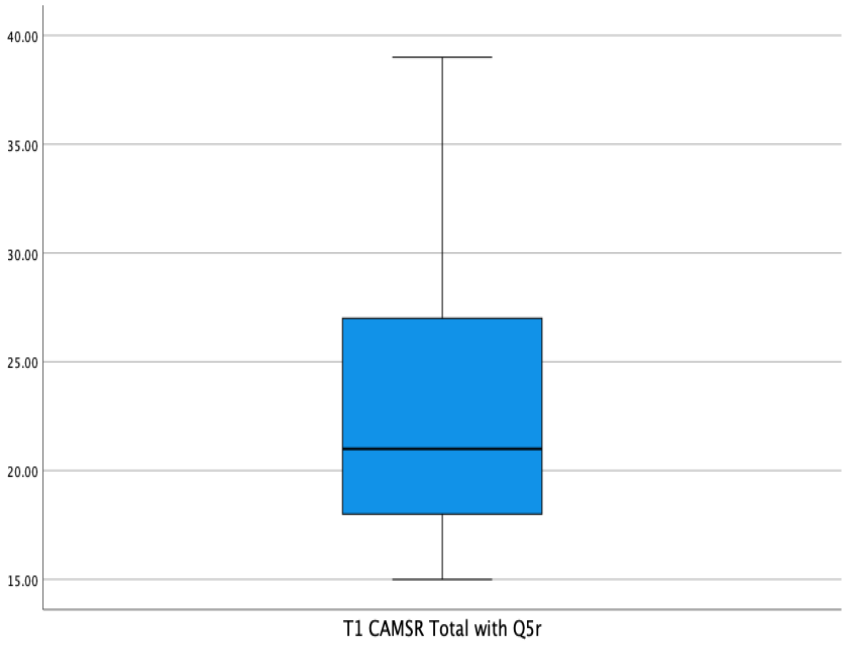


Figure 8.
Data distribution CAMS-R scores sample A

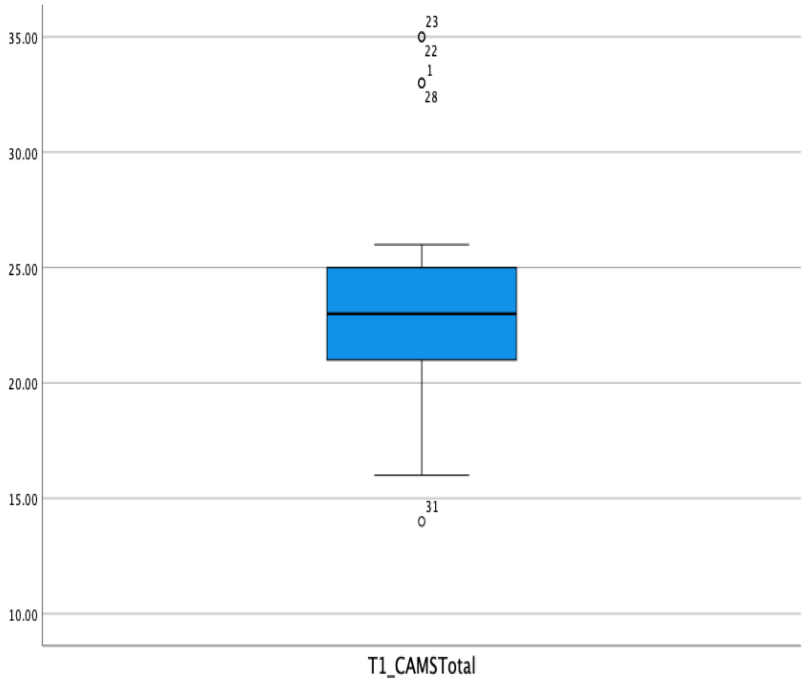


Figure 9.
Data distribution CAMS-R scores sample B

Appendix 15 - Item-total correlations for each item in the PHQ-15, GAD-7, PHQ-9, and CAMS-R for sample A and B

Table 11.
Individual Item Analyses for all PHQ-15, GAD-7, PHQ-9, CAMS-R at baseline sample A (in person)

	Mean	Std. Deviation	Item-Total Correlation	N
Q4. Tiredness	1.41	0.75	0.73	27
Q5. Sleep issues	1.37	0.74	0.47	27
Q2. Back pain	1.04	0.85	0.74	27
Q3. Arm pain	0.96	0.85	0.39	27
Q8. Headaches	0.81	0.83	0.80	27
Q12. Heart racing	0.81	0.74	0.13	27
Q13. SOB	0.70	0.72	0.66	27
Q10. Dizziness	0.63	0.79	0.70	27
Q14. Bowel movements	0.63	0.88	0.60	27
Q15. Nausea	0.63	0.69	0.58	27
Q1. Stomach pain	0.56	0.75	0.66	27
Q6. Menstrual cramps	0.56	0.75	0.68	27
Q9. Chest pain	0.30	0.67	0.56	27
Q7. Intercourse pain	0.26	0.59	0.49	27
Q11. Fainting	0.15	0.53	0.53	27
GAD-7				
Q3. Multiple worries	2.11	0.90	0.79	35
Q1. Nervousness	2.00	0.84	0.58	35
Q4. Trouble relaxing	2.00	1.06	0.74	35
Q2. Controlling worry	1.86	1.06	0.80	35
Q6. Irritability	1.74	0.98	0.43	35
Q7. Fear of something happening	1.57	1.09	0.58	35
Q5. Restlessness	1.40	1.06	0.51	35
PHQ-9				
Q4. Energy changes	2.05	1.00	0.50	37
Q3. Sleep issues	1.81	1.10	0.65	37
Q2. Depressed mood	1.76	0.98	0.79	37
Q6. Feelings of failure	1.65	1.16	0.59	37
Q5. Appetite changes	1.59	1.26	0.72	37
Q1. Reduced interest	1.43	1.07	0.76	37
Q7. Concentration issues	1.35	1.11	0.35	37
Q8. Psychomotor changes	0.78	0.92	0.50	37
Q9. Suicidal ideation	0.49	0.84	0.33	37

CAMS-R				
Q3. Acceptance	2.46	0.97	0.65	39
Q6. Thought tracking	2.44	0.94	0.57	39
Q1. Concentration	2.41	0.88	0.50	39
Q8. Acceptance of thoughts	2.38	0.94	0.52	39
Q2. Tolerance emotional pain	2.31	0.98	0.54	39
Q4. Describing feelings	2.26	0.94	0.28	39
Q9. Mindfulness	2.21	0.83	0.70	39
Q5. Distraction (reverse coded)	2.18	0.91	0.34	39
Q7. Nonjudgement	2.10	0.85	0.74	39
Q10. Attention	2.03	1.01	0.77	39

Table 12.
Individual Item Analyses for all PHQ-15, GAD-7, PHQ-9, CAMS-R at baseline sample B (online)

	Mean	Std. Deviation	Item-Total Correlation	N
Q4. Tiredness	1.52	0.59	0.43	23
Q5. Sleep issues	1.39	0.78	0.46	23
Q12. Heart racing	0.87	0.87	0.62	23
Q2. Back pain	0.83	0.78	0.13	23
Q3. Arm pain	0.83	0.83	0.20	23
Q8. Headaches	0.78	0.67	0.62	23
Q15. Nausea	0.61	0.84	0.37	23
Q10. Dizziness	0.57	0.59	0.42	23
Q13. SOB	0.57	0.66	0.52	23
Q14. Bowel movements	0.48	0.73	0.41	23
Q9. Chest pain	0.39	0.58	0.51	23
Q1. Stomach pain	0.35	0.57	0.46	23
Q7. Intercourse pain	0.35	0.65	0.51	23
Q6. Menstural cramps	0.30	0.70	0.20	23
Q11. Fainting	0.17	0.39	0.38	23
GAD-7				
Q3. Multiple worries	1.93	1.03	0.77	29
Q1. Nervousness	1.86	1.03	0.69	29
Q4. Trouble relaxing	1.79	1.08	0.80	29
Q2. Controlling worry	1.72	1.13	0.82	29
Q5. Restlessness	1.45	1.02	0.63	29
Q6. Irritability	1.45	0.99	0.49	29
Q7. Fear of something happening	1.41	1.09	0.56	29
PHQ-9				

Q3. Sleep issues	1.80	1.12	0.45	25
Q4. Energy changes	1.60	0.96	0.54	25
Q2. Depressed mood	1.44	1.16	0.65	25
Q7. Concentration issues	1.44	1.16	0.78	25
Q1. Reduced interest	1.40	0.96	0.49	25
Q5. Appetite changes	1.20	1.12	0.59	25
Q6. Feelings of failure	1.12	1.09	0.58	25
Q8. Psychomotor changes	0.96	1.02	0.63	25
Q9. Suicidal ideation	0.16	0.37	0.37	25
CAMS-R				
Q4. Describing feelings	2.67	0.92	0.20	27
Q3. Acceptance	2.63	1.01	0.58	27
Q2. Tolerance emotional pain	2.56	1.01	0.31	27
Q10. Attention	2.56	0.93	0.27	27
Q1. Concentration	2.37	0.84	0.34	27
Q6. Thought tracking	2.33	0.88	0.39	27
Q7. Nonjudgement	2.26	0.98	0.55	27
Q5. Distraction (reverse coded)	2.19	0.88	0.75	27
Q8. Acceptance of thoughts	2.19	0.74	0.72	27
Q9. Mindfulness	1.96	0.85	0.48	27

Appendix 16 - Frequency analyses of each item in the Client Satisfaction Questionnaire (CSQ)

Table 13.
Frequency of answers for CSQ post-intervention for sample A and B

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	Item 13	Item 14
Sample A														
Poor	0	0	0	0	0	0	1	1	1	0	0	0	0	0
Fair	2	1	1	0	0	1	3	1	2	2	0	0	0	1
Satisfactory	4	3	2	0	0	2	2	3	1	0	0	0	2	0
Good	1	7	10	5	6	10	11	9	11	6	2	3	2	6
Excellent	11	7	5	13	12	5	1	4	3	9	16	15	14	11
Total	18	18	18	18	18	18	18	18	18	17	18	18	18	18
Sample B														
Poor	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fair	4	1	4	2	2	3	3	4	4	3	1	0	1	1
Satisfactory	2	4	2	0	2	3	5	4	3	3	1	2	2	2
Good	4	5	5	1	1	1	1	1	2	2	2	2	1	1
Excellent	3	3	2	10	8	6	4	4	4	5	9	9	9	9
Total	13	13	13	13	13	13	13	13	13	13	13	13	13	13

Appendix 17 - Referral reasons as participants identified in the demographic information sheet

Table 14.
Referral reason as identified in the demographic information sheet

Referral reason
• Depression • Depression, want to engage in CBT • Father suffered heart attack recently, have been suffering from anxiety and depression since December last year GP suggested this course to learn better coping and relaxation skills • Struggling with past and father commit suicide • Depression/ Grief • GP referral due to depression and stress • Low mood • Severe anxiety and depression, maladaptive daydreaming • Recommended by therapist for anxiety/depression help • To become stable and at ease in daily living, finding better ways to cope with anxiety, depression, stress, suicidal thoughts, and feelings • PTSD - Zahra • Anxiety and depression x6 • Anxiety • Anxiety, worry, unable to relax • Anxiety and stress • Anxiousness • Major anxiety • Anxiety and Sleeplessness • To manage stress, anxiety, relaxation • Increase in anxiety, trouble sleeping, exhaustion, overall, just feeling overwhelmed and not in a positive way • Anxiety. I cannot go to GP to check my BP heart racing. • Panic attacks • To help with anxiety • Via doctors. Extreme stress, anxiety, and coming out of an abusive relationship • Anxiety issues • Stress x4 • Stress among other things • Doctor for help with stress awareness • By Doctor for stress • Mindfulness and stress management • Stress, Anxiety, Poor sleep • Changes in life circumstances has created stress and lack of self-care • Came with my daughter but I got interested and joined for myself • I saw it online • Come as a guest with my mum • Well we are not properly understand with my wife • Referral • Therapist referral • Referred by GP • My therapist told me to attend • Doctor

- Chronic pain
- Manage pain and chronic fatigue
- General health and open mindness to mental wellbeing
- Manage and improve wellbeing
- Gain the course
- Dr Referral
- Was just struggling a bit after losing my dad and having a very busy household and life. Have a lot on my plate.
- Recommended by Wellness Coach
- To better myself
- Suffering from a condition called Nocturis
- I could benefit from it
- To be healthy, to get well overall, to go forward in life etc.
- Peace, concentration, and happiness. Also achieve a sense of purpose
- Doctor
- Stage 4 Melanoma Diagnosis
- Help with dealing with mental health issues
- To check and assess my own mindfulness mind frame
- See if it can help me
- I wanted to do marae one but had just missed last one
- To know more about the course
- Need an alternative method of self-management without drugs. Have stopped taking venlafaxine 3 weeks ago, after 5 years of ingestion of this drug.
- Thinking too much
- To feel better about myself

Appendix 18 - Client Satisfaction Questionnaire (CSQ) qualitative comments

Table 15.
Client Satisfaction Questionnaire (CSQ) qualitative data

What would you tell others about the program?
• Yes, I have invited a friend tonight • I have already told others. Even though we all know in our heads to not stress and become anxious - we all do, this class helped a lot to see that most of us are all the same (think the same) • It helped me a lot and I would suggest all my friends and family to attend it once • I highly recommend this program to my friends/family. This is a very helpful program for those who are wanting to raise their awareness mindfulness and want a better quality of life. • You will learn some great tools to practise mindfulness and reduce stress • A great program to learn new tools to help you in daily life. • Great insight into mindfulness, how to deal with worries, very friendly, worth doing. • Good x2 • It's very good • Yes x3 • Definitely worth pursuing • I would recommend it • It's okay • Good strategies for meditation, being present in a moment, enjoying moments, breathing, importance of self-compassion, relaxation/ A fantastic facilitator, non-judgmental platform, caring environment • A wonderful introduction to mindfulness, meditation, and a friendly, welcoming environment. Lots of great information. • Would really recommend to take the time out to listen to yourself and everything is over conseale through acceptance • The exercises are helpful in dealing with difficulty in life • That there are some great learnings for life to be had and learnt in this course • It makes you think about yourself, it helps you understand yourself; I would do it again, explains mindfulness and how to bring it into your lifestyle • I think, I could be more beneficial, if there's no COVID lockdown • I feel a lot of the information provided in this course I previously knew about or had already found my own ways to deal with it, so this didn’t end up as helpful as I was hoping • No difference as such • It’s certainly worth checking out, its free and could give you a new perspective on a number of things • It’s a safe place, feel comfortable, can relax, helpful techniques, learn a lot about the body and yourself • I am happy and more confident now • Meditation/breathing techniques • I’d recommend this course, I loved the meditation, and group tasks, and zoom was new to me, but i loved not having to get dressed and be warm and cozy at home, but able to still learn and listen to others points of views😬 • Provided me with tools and skills to manage anxiety and depression • An excellent, knowledgeable facilitator. Certainly, a lot to help anyone in physical, mental, chronic pain etc. Benefit from all the courses. • Very relaxing and if this could build your habit, that would help. • It is helpful but ok not great

- good class to know about our values in life and great sessions for people who are low in life.
- Quite Helpful
- I am happy with the information provided to me and it made me feel much confident
- Breathing techniques work for me

What has this program done for you?

- Started a journey.
- Given me time to focus on myself.
- Got me mixing with others. TIME for myself.
- I have become more calm and patient I know how to put myself in front of others now and I am more at peace
- Taught me skills to practise mindfulness more effectively
- Provided me with tools.
- Refreshed my knowledge and reminded me how beneficial meditation is, even simply returning to the breath. I have also learned how to breathe more fully which has helped with exercise!
- This program has raised my calmness in responding to situations and life in general. I have been easily practising mindfulness now and the resource book given is quite such which I can refer at home and review my concerns again when I forget it.
- I haven't put much into practise as yet only because of the frame of mind I've been in, however, I plan to go through the whole book at my leisure
- Increased tool to stay focused and to refocused when thinking drift
- Help me with my panic attacks and sleeping
- It has given me more tools for dealing with panic
- Provided me with tools and skills to manage anxiety and depression
- Stress
- Less stress
- To help take the foot off the accelerator of life and take time to smell the roses
- Helped with relaxing my mind, even find myself telling my daughter to slow down, and deep breathe
- Relaxed and given me ways to destress and go to a peaceful place, either in meditation or walking, gardening etc, more coping skills to my emotional, physical, and spiritual needs😇🙏
- Helped me appreciate the small things, relax, don't stress about what is out of your control, if you find yourself stressing - meditate
- Taught me to appreciate small moments to be mindful during aspects of the day. To take time to meditate/relax, to give my brain a break and appreciate small moments.
- It has helped bring up underlying issues and deep hurt that otherwise I would have buried and helped me to use techniques such as meditation and breathing to bring it out and let it go.
- Look forward to meditate, able to let things go and trust that everything will be okay
- Started to change way of thinking, introduction to yoga and dealing with stress
- Learnt breathing and practising on dissect the past occurrences to make them memories.
- It makes you think about yourself, it helps you understand yourself
- Given scientific basis of self-improvement, as well as practical guides and skills to assisting with health and life issues
- Very little control on my thoughts
- Few changes

Appendix 19 - Australian New Zealand Clinical Trials Registry (ANZCTR) registration

Dear Wendy Wrapson and April Kerslake,

Re: A pilot study of a group Mindfulness-based intervention for Tamaki Health patients

Thank you for submitting the above trial for inclusion in the Australian New Zealand Clinical Trials Registry (ANZCTR).

Your trial has now been successfully registered and allocated the ACTRN: ACTRN12621001110875

Web address of your trial: https://www.anzctr.org.au/ACTRN12621001110875.aspx
Date submitted: 9/07/2021 11:24:41 AM
Date registered: 23/08/2021 9:27:37 AM
Registered by: Wendy Wrapson
Principal Investigator: April Kerslake

****Please note that as your trial was registered after the first participant was enrolled, it does not fulfil the criteria for prospective registration and will therefore be marked as being Retrospectively Registered on our website.****

If you have already obtained Ethics approval for your trial, please send a copy of at least one Ethics Committee approval letter to info@actr.org.au or by fax to (+61 2) 9565 1863, attention to ANZCTR.

Note that updates should be made to the registration record as soon as any trial information changes or new information becomes available. Updates can be made at any time and the quality and accuracy of the information provided is the responsibility of the trial's primary sponsor or their representative (the registrant). For instructions on how to update please see https://www.anzctr.org.au/Support/HowToUpdate.aspx.

Please also note that the original data lodged at the time of trial registration and the tracked history of any changes made as updates will remain publicly available on the ANZCTR website.

The ANZCTR is recognised as an ICMJE acceptable registry (http://www.icmje.org/about-icmje/faqs/clinical-trials-registration/) and a Primary Registry in the WHO registry network (https://www.who.int/ictrp/network/primary/en/index.html).

If you have any enquiries please send a message to info@actr.org.au or telephone +61 2 9562 5333.

Kind regards,
ANZCTR Staff
T: +61 2 9562 5333
F: +61 2 9565 1863
E: info@actr.org.au
W: www.ANZCTR.org.au

ANZCTR
Australian New Zealand Clinical Trials Registry

Appendix 20 – HDEC and AUTEC amendment acceptance letters

Health and Disability Ethics Committees

Health and Disability Ethics Committees
Ministry of Health
133 Molesworth Street
PO Box 5013
Wellington
6011

hdecs@health.govt.nz

14 July 2021

Miss April Kerslake
13 Geranium Avenue
Flat bush 2019

Dear Miss Kerslake

Re:	**Ethics ref:**	**21/NTB/141/AM01**
	Study title:	A pilot study of a group Mindfulness-based intervention for Tāmaki health patients

I am pleased to advise that this amendment has been *approved* by the Northern B Health and Disability Ethics Committee. This decision was made through the HDEC Expedited Review pathway.

Please don't hesitate to contact the HDEC secretariat for further information. We wish you all the best for your study.

Yours sincerely,

Mrs Kate O'Connor
Chairperson
Northern B Health and Disability Ethics Committee

Encl: appendix A: documents submitted
appendix B: statement of compliance and list of members

Appendix A
Documents submitted and approved

Document	Version	Date
Flyer	1	07 July 2021
Post Approval Form	AM01	07 July 2021

Appendix B
Statement of compliance and list of members

Statement of compliance

The Northern B Health and Disability Ethics Committee:

- is constituted in accordance with its Terms of Reference
- operates in accordance with the *Standard Operating Procedures for Health and Disability Ethics Committees*, and with the principles of international good clinical practice (GCP)
- is approved by the Health Research Council of New Zealand's Ethics Committee for the purposes of section 25(1)(c) of the Health Research Council Act 1990
- is registered (number 00008715) with the US Department of Health and Human Services' Office for Human Research Protection (OHRP).

List of members

Name	*Category*	*Appointed*	*Term Expires*
Mr John Hancock	Lay (the law)	14/12/2015	14/12/2018
Dr Nora Lynch	Non-lay (health/disability service provision)	19/03/2019	19/03/2026
Miss Tangihaere Macfarlane	Lay (consumer/community perspectives)	20/05/2017	20/05/2020
Mrs Kate O'Connor	Lay (ethical/moral reasoning)	14/12/2015	14/12/2018
Mrs Stephanie Pollard	Non-lay (intervention studies)	01/07/2015	01/07/2018
Mrs Leesa Russell	Non-lay (intervention studies), Non-lay (observational studies)	14/12/2015	14/12/2018
Ms Susan Sherrard	Lay (consumer/community perspectives)	19/03/2019	19/03/2022
Mrs Jane Wylie	Non-lay (intervention studies)	20/05/2017	20/05/2020

Unless members resign, vacate or are removed from their office, every member of HDEC shall continue in office until their successor comes into office (HDEC Terms of Reference)

http://www.ethics.health.govt.nz

A - 21/NTB/141 – Approval of Amendment – 14 July 2021 Page 3 of 3

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

22 July 2021

Wendy Wrapson
Faculty of Health and Environmental Sciences

Dear Wendy

Re: Ethics Application: **21/206 A pilot study of a group Mindfulness-based intervention for Tāmaki Health patients**

Thank you for your advice of the amendment to your ethics approval.

The amendment to the recruitment protocol as approved by HDEC has been noted.

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.

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. When the research is undertaken outside New Zealand, you need to meet all ethical, legal, and locality obligations or requirements for those jurisdictions.

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: Vgr9694@autuni.ac.nz; Richard Siegert

Appendix 21 – Data Management Plan

DATA MANAGEMENT PLAN

Version: 1
Date: 4 June 2021

Protocol: A pilot study of a group Mindfulness-based intervention for Tāmaki Health patients

Sponsor: Auckland University of Technology

Site: Auckland University of Technology (AUT)/Tāmaki Health

Co-ordinating Investigator: April Kerslake

Introduction

This Data Management Guide outlines how data will be handled during the study '*A pilot study of a group Mindfulness-based intervention for Tāmaki health patients*' and after its completion.

Study Structure

TABLE 1. STUDY STRUCTURE

Sponsor	Auckland University of Technology Private Bag 92006, Auckland 1142
Contract Research Organisation	Not applicable
Lead Site (New Zealand)	Auckland University of Technology 90 Akoranga Drive, Northcote Auckland 0627 With data collection at Tāmaki Health P.O. Box 61150, Otara 2023, Auckland
Co-ordinating Investigator	April Kerslake 13 Geranium Avenue, Flat Bush, Auckland 2019
Imaging Vendor	Not applicable

Organisational Data Governance Oversight

The following institutional data policies apply for the Study:

- Auckland University of Technology (AUT) data policies.

Consent for Data Collection and Use

All participants will be informed of, and provide consent for, the collection and use of their data for the purposes of this study, and for any mandatory secondary uses.

Data Collection

Data will be collected from the following sources:

- Direct communication with the participant
- Study assessments, including questionnaires and interviews.

Data will be collected primarily by the Co-ordinating Investigator or designated study staff. All study personnel involved in data collection will be trained in the study protocol, and collection requirements.

Collection of data will be limited to that necessary for the specified purposes of the study.

Privacy and confidentiality

Participants' privacy and confidentiality will be respected through the protection of their data as outlined in this plan. The Investigator will comply with legal and regulatory requirements regarding the privacy and confidentiality of participants' data.

Participants have the right to access and correct personal data held by AUT.

Breach of Privacy / Confidentiality

A breach of privacy means unauthorised or accidental access to, or disclosure, alteration, loss, or destruction of a participant's information.

In the event participant privacy and confidentiality is breached during the study, the following steps will be taken:

- Action will be taken to reduce the risk of harm following the breach. Where possible, the recipient will be contacted and asked to destroy or return any electronic copies of the disclosed material.
- The participant will be informed of the breach as soon as practicable (unless the participant is under the age of 16 and notification would be contrary to his/her interests; or notification would be likely to prejudice the health of the participant (after consultation with the participant's health practitioner, where practicable), and provided with support as required.
- The approving HDEC will be informed.
- For notifiable privacy breaches of privacy under the Privacy Act 2020, the New Zealand Privacy Commissioner will be notified in accordance with that Act.

Forms of Data
Identifiable Data
Some study data will be collected in identifiable form.
Source documents refer to identifiable data collected for the purposes of this study. Source documents will be held at AUT in identifiable form. These will consist of the study Consent Form and the Demographic Questionnaire which will contain names and other identifying features.

De-identified Data
De-identified data in this study includes but is not limited to:

- Hard copies of questionnaire forms which will have any identifying features removed (for example, if a participant has written their name on a questionnaire, this will be photocopied without the name visible and the photocopy will be held at AUT). The original will be stored in a secure location in a filing cabinet at Tāmaki Health's Starcare centre.
- Questionnaire responses entered into the analysis data set.
- Interview recordings which will be identified by ID only, with the interviewee's name not referred to once the recording has commenced.

De-identified data will carry the participant's unique study code. The research team will retain a log linking the participant code with identifiers.

Anonymous / Anonymised Data
Not applicable.

Access to and Use of Data
Collected data will be used to answer the research questions and fulfil the study requirements described in the study protocol.

Identifiable Data

Identifiable data may be accessed by the following groups:

- The Investigator and designated study staff, to fulfil protocol requirements.
- The Sponsor and its authorised representatives, in the event of a compensation claim by a participant.
- The Health and Disability Ethics Committee, for legal and regulatory purposes.
- Health, regulatory, or government agencies, for legal and regulatory purposes.

Rarely, it may be necessary for the Investigator to share identifiable data with people or groups not listed above – for example, in the event of a serious threat to public health or safety, or to the life or health of the participant or another person; or if the data is required for certain legal situations.

De-identified Data
De-identified data may be accessed and used by the following groups:

- The Investigator and suitably trained and experienced study staff, to conduct the study.
- The Health and Disability Ethics Committee, to comply with legal and regulatory duties.
- Health, regulatory, or government authorities, to comply with legal and regulatory duties.

De-identified data may be included in published study results including, but not limited to, peer-reviewed publications, clinical trial registry websites, scientific meetings, and regulatory / marketing submissions.

[Anonymous/Anonymised] Data
Not applicable.

Sending of Data Overseas
Not applicable.

Future Use of Data
Not applicable.

Commercial Use of Data
Not applicable.

Data Linking
Not applicable.

Databank / Registry
Not applicable.

Storage and Destruction of Data
Identifiable Data and Source Documents
During the study, hardcopy study-specific source documents containing identifiable information will be maintained in a locked filing cabinet in a locked office at AUT, North Shore campus. These will be stored separately from hard copy (de-identified) questionnaires.

Electronic documents will be stored on password-protected computers at AUT. Only the members of the research team will have access to these documents.

Post-study, study-specific source documents will be retained at AUT, North Shore campus. Source documents will be retained for at least 10 years, then destroyed by shredding in the case of hard copies, and deletion in the case of electronic files.

All storage will comply with local and/or international data security guidelines.

De-identified Data
Identifiable data will be converted to a de-identified form at AUT, at which point questionnaire responses will be entered into an Excel spreadsheet and/or SPSS database. These electronic formats will be maintained on the AUT secure computer network. This will include interview recordings with the digital consent of participants. Data entry will be limited to designated study staff trained and experienced in transcribing data for this purpose.

De-identified data will carry a unique ID number. The Investigator will retain a log linking participant codes with identifiers. This log will only be available to the research team.

De-identified data is stored long-term by the Sponsor on its own secure computer network.

De-identified data will be retained for 10 years, then destroyed by shredding in the case of hard copies, and deletion in the case of electronic files.

Consultation
Consultation will be undertaken as indicated below.

Māori Data Sovereignty
During the study, data may be collected from participants identifying as Maori.
Personal and health information is a tāonga (treasure) and will be treated accordingly.
Formal Māori consultation for this study will be completed as part of the Locality Approval Process for New Zealand study site(s). Any recommendations for additional measures to improve Māori rights and interests in relation to data will be acted upon.

Return of Results
Participants have the right to request a lay summary of study results.

Incidental Findings
Not applicable.

Results Arising from Future Research
Data
No future unspecified research is planned for data collected in this study.

Databank / Registry
Not applicable.

Withdrawal of Data
Participants may withdraw consent for the collection of data at any time, without providing a reason.
Should a participant withdraw consent, no further data will be collected by study staff.
Data collected prior to the participant's withdrawal will continue to be used and analysed with their consent.

APPENDIX
Not applicable.