Mindfulness in contemporary health care: findings from the literature and frontline practice

by

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Glossary

ACT – Acceptance and commitment therapy

CAM – Complementary and alternative medicine

CMSP – Chronic musculoskeletal pain

COREQ – Consolidated criteria for reporting qualitative research

JKZ – Jon Kabat-Zinn

MBI – Mindfulness based interventions

MBSR – Mindfulness based stress reduction

MBCT – Mindfulness based cognitive therapy

QD – Qualitative descriptive

Abstract

Mindfulness meditation was developed within a Buddhist setting around 500BCE. Over the past few decades, the popularity of mindfulness has soared. However, despite the increasing popularity of mindfulness, there remain key knowledge gaps regarding its effectiveness, interpretation, and application in clinical practice. These knowledge gaps may relate to how traditional and modern systems of mindfulness are defined, applied, and evaluated.

This thesis aimed to address the abovementioned knowledge gaps by determining how mindfulness is understood and practiced across various settings in Australia. To address these knowledge gaps, two distinct but related research studies were undertaken. In the first stage of this research, an umbrella review (systematic review of systematic reviews) was conducted to synthesise the best available evidence of the effectiveness of mindfulness for chronic musculoskeletal pain (CMSP). This review included 19 systematic reviews that investigated the effectiveness of mindfulness-based interventions on adult populations with CMSP.

The second stage of this research was a qualitative descriptive study. Semi-structured interviews were conducted to explore mindfulness practitioners' perspectives and practices of mindfulness. The research focussed on disciplines that were known to use mindfulness as part of their routine service provision; this included practitioners of biomedical and allied health disciplines (e.g., psychiatry, psychology, physiotherapy), complementary and alternative medicine disciplines (CAM) (e.g., acupuncture, and naturopathy) and traditional meditation systems (e.g., Buddhist teachers, meditation instructors). A total of 16 practitioners participated in a face-to-face, online, or phone interview.

This thesis has revealed for the first time, the complexities when seeking to answer the question, "what constitutes mindfulness?". The answer seems to be nuanced and influenced by a range of factors, including the ideological perspectives, training, and disciplinary background of practitioners. While rich diversity and broad application of mindfulness practices may be a strength, it also may be a weakness as the value of mindfulness may be diluted by plurality of understanding and multiplicity in use. The findings of this research require careful and considered actions from mindfulness stakeholders. The findings also highlight the need for further development of standardised protocols where possible, and for further qualitative research, expanding on these findings by capturing the perspectives and practices used by a wider range or mindfulness practitioners.

Declaration

This thesis presents work carried out by myself and does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; to the best of my knowledge, it does not contain any materials previously published or written by another person except where due reference is made in the text; and all substantive contributions by others to the work presented, including jointly authored publications, are clearly acknowledged.

Paul David Cardle



27 November 2023

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1. CHAPTER ONE - Background

1.1 Introduction

Mindfulness is believed to have originated in India around 500BCE, although an understanding of mindfulness may have existed prior to this (Singh, 2023). The practice of mindfulness has been heavily influenced by the teachings of Buddhism. While Buddhism has evolved since its origins, mindfulness continues to be a central practice within the traditional system of Buddhism (Singh, 2023). Over the past 2.5 millennia, Buddhism spread throughout Asia and the Middle East, growing in popularity. It was only in the past 300 years that Buddhism, and therefore mindfulness practices, reached the western world (Heirman & Bumbacher, 2007; Singla, 2011), and only recently (1960s) has there been a surge in its popularity (Coleman, 2005). This chapter introduces the reader to mindfulness, including its origins and applications, and concludes with an overview of the thesis aims and structure.

1.1.1 Mindfulness

In 1979, Jon Kabat-Zinn defined mindfulness as "awareness that arises from paying attention, on purpose, in the present moment and non-judgmentally" (Selva, 2019; Willekens et al., 2018; Williams & Kabat-Zinn, 2013). The definition of mindfulness can be further broken down into three categories: trait mindfulness, state mindfulness and mindfulness practice. Trait mindfulness is a generally stable characteristic of one's enduring tendency towards mindfulness (Carpenter et al., 2019). State mindfulness refers to an individual's tendency to maintain awareness in reaction to a given moment, situation or condition. (Medvedev et al., 2017). Mindfulness practice simply refers to the deliberate engagement in exercises that foster a state of mindfulness (Carpenter et al., 2019). Some examples of these exercises include mindful breathing, Tai Chi and mindful yoga practice.

As mindfulness gained prominence in the western literature following Jon Kabat-Zinn's definition in 1979, variations to mindfulness practice became popular. These practices can be broadly classified as traditional and modern systems. The traditional systems include the meditative practices used in Hinduism, Buddhism, Yoga and Qigong. Of the modern practices, the most common are mindfulness-based stress reduction (MBSR), mindfulness-based cognitive therapy (MBCT), and acceptance and commitment therapy (ACT).

Although modern and traditional forms of mindfulness practice are often presented separately, they do share many commonalities. In fact, the modern systems of mindfulness were originally derived from traditional Buddhist practices (Singh, 2023; Heirman & Bumbacher, 2007). Figure 1 depicts the chronology of mindfulness through different time periods and cultures (Selva, 2019; Willekens et al. Singh, 2023; Heirman & Bumbacher, 2007). The figure illustrates important points throughout history where mindfulness evolved into new areas and was adopted into communities with differing belief systems and social structures. While mindfulness-based interventions such as MBSR, MBCT and ACT are known to have developed from Buddhist practices, they are not believed to be the same (Singh, 2023; Heirman & Bumbacher, 2007).

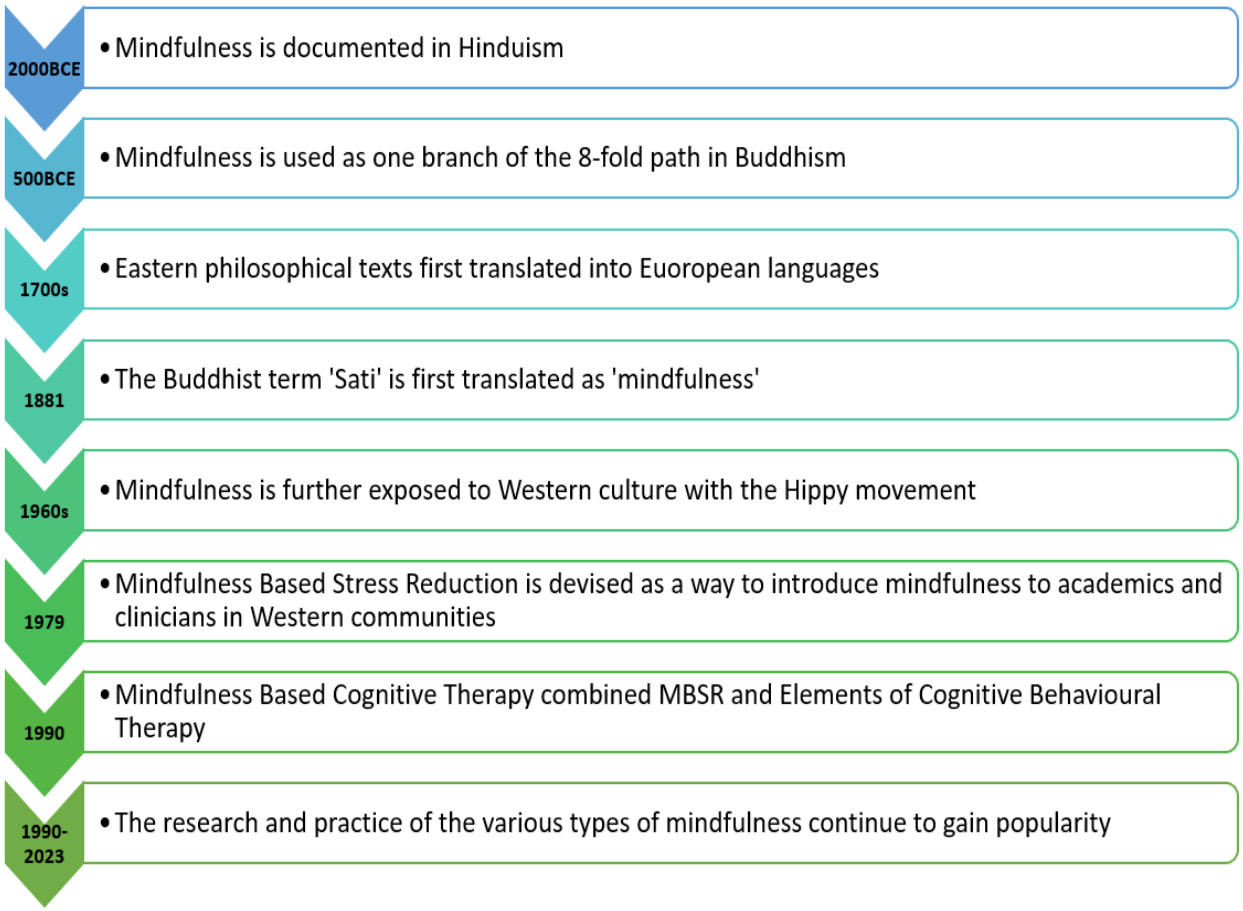


Figure 1: The chronology of mindfulness

1.1.2 Mindfulness and Chronic Pain

People may engage in mindfulness for a variety of reasons related to their health and wellbeing, with a common reason being the management of intransigent conditions such as chronic pain. Several systematic reviews have examined the effectiveness of mindfulness for chronic pain.

A common theme within such research is that mindfulness has often been used as an adjunctive treatment to usual care, or as a waiting group comparator. These systematic reviews often report these issues as potential biases given that many participants (often the majority) in both intervention and control groups also receive other forms of treatment for their pain during the research study. Although several reviews have reported results supporting the use of mindfulness for chronic pain management, other reviews have shown no effect or have been inconclusive. The inconsistent findings reported across systematic reviews to date warrants further investigation to determine whether the conflicting results can be explained by differences in methodological design (including selection criteria), definitions of chronic pain and mindfulness, and/or the application and practice of mindfulness (DiRenzo et al., 2018; Feruglio et al., 2021; Pilla et al., 2020).

Historically, research into both mindfulness and meditation suffers from a lack of consistency surrounding the taxonomies and definitions of these concepts (Pilla et al., 2020). This may have led to the conflation of several elements of mindfulness meditation, such as trait and state mindfulness, and the practices of mindfulness (Nash & Newberg, 2013; Pilla et al., 2020). This thesis aims to explore these differences further.

1.1.3 Interpretation and Application of Mindfulness Practices

Mindfulness based interventions are currently used by a diverse group of practitioners, including allied health clinicians, complementary and alternative medicine (CAM) practitioners, meditation teachers, and Buddhist teachers, although the differences in understanding and practice between these various groups are not yet well understood.

Practices included in studies of mindfulness (as a category of meditation) vary widely, which has raised questions about the definition of mindfulness and the set of practices referred to as mindfulness (Coffey et al., 2010; Lutz et al., 2015). The practices that fall within the realm of mindfulness also appear to differ between professions. For example, within the meditative traditions found in Buddhism, Buddhist teachers differentiate between mindfulness-based practices and focus-based practices and use these practices for different reasons. The Dalai Lama outlines a spectrum of mental activity that has at one extreme, mental tension, and at the other, mental laxity. In this system, Buddhists often use mindfulness practice (in this context sometimes referred to as ‘open monitoring’) to move the mind towards a state of laxity, by relaxation of mental tension. Buddhists also use focus-based practices (sometimes referred to as ‘focused attention’) to move the mind towards tension or firmness with the aim of sharpening

the mind. The goal here is to work between these two sets of practices to find a perfect balance in the centre of this spectrum between mental tension (e.g., anxiety, anger) and mental laxity (e.g. apathy, depression) (Lama, 2007).

It is unclear whether these important distinctions in mindfulness use are well known or have any implications for contemporary clinical practice. There are some indications that modern mindfulness-based practices refer to both open monitoring (mindfulness) and focused attention (focus-based meditation) collectively as mindfulness. For example, Lutz et.al. (2008) suggests that focused attention meditation, and open monitoring meditation are both subcategories of mindfulness practice (Lutz et al., 2008). These differences are both interesting and important because they serve as an example of two separate definitions and uses of mindfulness within two distinct modalities. This illustrates that the term mindfulness can mean different things to different groups of people. These differences in how mindfulness is interpreted and applied have to date not been mapped across the many professions using these practices. This thesis addresses these knowledge gaps by exploring differences in the definitions, philosophical frameworks, and practices of mindfulness among practitioners of different disciplines.

1.2 Niche of the research

This thesis endeavoured to address many of the knowledge gaps identified above by exploring how mindfulness is understood and applied within both the academic literature and the disciplines that typically provide mindfulness. In identifying several differences in the variety of ways in which mindfulness is understood and applied, this thesis seeks to propose some rationale to explain these important differences.

1.3 Research Aim

The aim of this thesis is twofold: (a) to synthesise the best available research evidence of the effectiveness of MBI for adults living with CMSP across a range of outcomes (i.e. pain, sleep quality, depression, quality of life, physical functioning, and mindfulness), and (b) to explore the perspectives and practices of mindfulness practitioners.

1.4 Thesis Structure

This thesis comprises four chapters. The first chapter has introduced mindfulness and its associated practices, as well as the aim of the research. The second chapter presents an umbrella review of the best available evidence of the effectiveness of mindfulness for the management

of CMSP. The third chapter describes a qualitative descriptive study, which used semi-structured interviews to explore the perspectives and practices of mindfulness practitioners working across a range of biomedical, CAM, and traditional/spiritual disciplines. The fourth chapter discusses the learnings from this body of work and puts forward a set of recommendations for future research and practice.

The next chapter addresses the first stage of this thesis, an umbrella review synthesising the available evidence for mindfulness in the management of chronic musculoskeletal pain.

2. CHAPTER TWO – Umbrella Review

2.1 Overview

This chapter presents the first stage of this thesis, an umbrella review of the best available evidence of the effectiveness of mindfulness for CMSP. While several systematic reviews have been published on this topic, the findings from these reviews have been mixed or inconsistent. To provide much needed clarity on the state of the art, this systematic review of systematic reviews aimed to collate and summarise these findings. This umbrella review was published in the Journal of Multidisciplinary Healthcare, as outlined below.

2.2 Citation Details

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REVIEW

Mindfulness and Chronic Musculoskeletal Pain: An Umbrella Review

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Background: Chronic musculoskeletal pain (CMSP) disorders are a leading cause of disability globally, affecting up to one in three people. Mindfulness-based interventions (MBI) have become a popular treatment for CMSP. The aim of this umbrella review was to synthesise the best available research evidence for the effectiveness of MBI for adults with CMSP.

Methods: Eight databases were searched from inception to 30th June 2021 for systematic reviews that examined the use of MBI in CMSP (pain experienced >3 months) in adult populations. Two reviewers independently conducted screening and selection, data extraction, and assessment of methodological quality using The Assessing the Methodological Quality of Systematic Reviews tool (AMSTAR 2). Outcomes examined were pain, sleep quality, depression, quality of life, physical functioning, and mindfulness. Furthermore, definitions of mindfulness, and intervention parameters (mindfulness practices used, length, frequency of sessions, duration) were also reported.

Results: Nineteen systematic reviews (n = 1 rated high quality, n = 1 moderate quality, n = 2 low quality and n = 15 critically low quality) examining 194 primary studies met the review criteria. Although some promising evidence was identified for the use of MBI in CMSP, the general low quality and widespread heterogeneity of included SRs and made it difficult to reach a definitive conclusion. Differences in results and outcomes amongst systematic reviews that, in many cases, had a high overlap of included RCTs, suggests fundamental differences in critical design elements that make data difficult to compare.

Conclusion: This umbrella review found mixed results on the effectiveness of MBI for the management of CMSP across a range of outcomes (pain, sleep quality, depression, quality of life, physical functioning, mindfulness). Definitions of MBI varied as did parameters, which may have contributed to these mixed results. More rigorous research with stringent MBI protocols is required.

Keywords: mindfulness, chronic pain, musculoskeletal disorders, chronic musculoskeletal pain, systematic reviews

Background

Musculoskeletal disorders (MSD) are one of the leading causes of disability globally, second only to mental health disorders[1] to which MSD are also a contributor[2]. Musculoskeletal disorders relate to conditions of the joints, bones, muscles, spine, and regional pain areas and are comprised of over 150 conditions, typically categorised by pain and disorders of physical functioning.[2] For the purposes of this review, chronic musculoskeletal pain (CMSP) refers to any chronic MSD that causes persistent or recurring pain lasting three months or longer. It is estimated that 1.17 billion people suffer from CMSP globally, with a greater prevalence reported in higher income countries;[2] although, both prevalence and burden of CMSP are likely to be underestimated.[1]

The international association for the study of pain defines pain as "an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage".[3] This definition is supported by a growing body of knowledge that suggests chronic pain may have multiple contributing factors that include elements relating to the three domains (biological, psychological, social) of the biopsychosocial model.[4] The biopsychosocial approach to disease examines how these elements of biology, psychology, and sociology intersect to affect the experiences and presentations of disorders such as chronic pain.[5]

Several biopsychosocial interventions have been trialled for the management of CMSP, with varying degrees of success.[6] One intervention that has shown promise in many aspects associated with CMSP is mindfulness,[7–9] a type of

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meditation practice that has its origins in Buddhism.[10] Mindfulness has been defined as "the awareness that arises from paying attention, on purpose, in the present moment and non-judgmentally".[11] There is evidence to indicate that mindfulness-based interventions (MBI) may positively impact a range of biological, psychological, and social outcomes. For example, some research has shown that MBI may improve immune function, increase regional brain grey matter density,[12] support early childhood self-regulation, and reduce early childhood anxiety leading to the development of greater moment-to-moment awareness, and improved socioemotional competence.[13] There is also evidence supporting the use of MBI for diverse health conditions such as anxiety, depression, and chronic pain.[14–16]

There have been many systematic reviews examining the effectiveness of MBI for CMSP. Although several of these reviews reported positive results supporting the use of MBI, other reviews have been inconclusive or have shown no effect.[17–19] For example, while seemingly investigating the same interventions for the same conditions, Chiesa et al[32] reported finding no benefits for the use of MBI for pain, Cramer[18] et al reported mixed findings and Veehof et al[43] reported a clear benefit to pain outcomes. The inconsistent findings warrant further investigation to determine whether the conflicting results can be explained by differences in methodological design, definitions of chronic pain and mindfulness, and the application, and practice of MBI. These inconsistencies can pose a barrier to evidence implementation[22] which could in turn, delay improvements in clinical practice and patient outcomes. Gaining further clarification of the parameters and methodologies to explore inconsistencies in the effectiveness may add greater confidence for clinicians in where and how mindfulness interventions may be most effectively included in management. This umbrella review aims to address this barrier by synthesising the findings of systematic reviews to answer two research questions:

1. What parameters and methodologies are used within systematic reviews to investigate the effectiveness of MBI for CMSP?
2. What is the evidence of the effectiveness of MBI for the treatment of CMSP and its sequelae?

Methods

Design

This was an umbrella review of systematic reviews investigating the effectiveness of MBI for CMSP. The review protocol was registered with Prospero (CDR number CRD42021246913).

Participants

This review included adults (aged ≥18 years) suffering from CMSP. For the purposes of this umbrella review, chronic pain was defined as pain persisting for >3 months, beyond the normal tissue healing time.[23] Participants aged <18 years, with acute pain, and types of pain not included in the World Health Organisation (WHO) classification of CMSP (eg, pelvic or cancer pain) were excluded.

Types of Exposure

Interventions needed to be a form of mindfulness training and/or practice specifically used to manage pain. This could include, but was not necessarily limited to, mindfulness-based stress relief (MBSR), acceptance and commitment therapy (ACT), mindfulness-based cognitive therapy (MBCT), traditional or spiritual mindfulness practice, secular mindfulness practices, Yoga, Tai qi (Tai chi) and Qigong. Other forms of meditation and practices, such as compassion-based interventions, analytical type meditation, and cognitive behavioural therapy (CBT) were excluded. Mindfulness used for the purposes of improving academic or physical performance (eg, athletics) was also excluded.

Context

MBI that were taught/practiced within a health care, religious or traditional setting were included; practitioner must have been trained in mindfulness practice(s) to be included. Mindfulness practiced in an education or athletic context, (eg, martial arts clubs, primary schools) were excluded.

Comparators

Eligible comparators included waitlist control, education support group, no treatment, active treatment, relaxation, and stretching.

Outcomes

Outcomes examined in this review were pain, sleep quality, depression, quality of life, physical functioning, mindfulness, definitions of mindfulness, and intervention parameters (eg, mindfulness practices used, duration of intervention, frequency of sessions).

Types of Studies

The review included systematic reviews, with and without meta-analyses. For the purposes of this research, systematic reviews were defined as any review that uses explicit, systematic methodology to collate evidence that fits pre-specified eligibility criteria in order to answer a specific research question.[24]

Search Strategy

Databases

A preliminary search was initially conducted to determine whether there were any systematic reviews on this topic. Initial keywords were identified following analysis of the text words contained in the title and abstract, and of the index terms to describe relevant reviews. The following electronic databases were searched from inception to 30th June 2021; MEDLINE, EMBASE, EMCARE (OVID), PsycINFO, the Cochrane Library, and the PROSPERO register. A grey literature search of non-commercially published literature or reports was undertaken using ProQuest Dissertations, Scopus, and Google Scholar. The Google search engine was also searched (up to the first 10 pages). No search limits were applied. Secondary searching of reference lists in all included studies was also undertaken. Table 1 details the search terms used for the search in the Medline database, on which all other searches were based.

Selection Process

The initial search was undertaken by two reviewers (PC, YV). Search results were initially imported into EndNote™[25] as a referencing management tool. Citations were then exported into Covidence™[26] to assist with citation screening and deduplication. Title/abstract and full-text screening were undertaken by two reviewers (PC, YV), with the arbitration of disputes carried out by a third reviewer (SK, ML, MM).

Table 1 Medline Search Terms

#	Search Term
1	Chronic Pain/
2	((chronic or persist* or recur* or long term) adj5 pain*).tw, kf.
3	Musculoskeletal Pain/
4	Mindfulness/
5	Mindful*.mp.
6	(MBSR or mindfulness or zen or vipassana or zazen or MBCT or meditate* ACT).tw, kf.
7	(systematic adj (review$1 or overview$1)).tw.
8	1 or 2 or 3
9	4 or 5 or 6
10	7 and 8 and 9

Methodological Quality Assessment

The AMSTAR 2 (Assessing the Methodological Quality of Systematic Reviews) was used to critically appraise the included systematic reviews. The AMSTAR 2 tool uses a confidence rating score of sixteen items from high, moderate, low, and critically low. Higher scores on this critical appraisal tool are indicative of higher methodological quality. Two independent reviewers (PC, YV) critically appraised each included study and then compared their results. Disagreements between reviewers were discussed until consensus was reached; any disagreements that could not be resolved were discussed, and determined by the rest of the review team (SK, ML, MM).

Data Extraction

A customised data extraction form was developed à priori and conducted in duplicate in accordance with the JBI Manual for Evidence Synthesis.[27] The form was also pilot tested on three studies. The extraction form was designed to capture the following data from each included study: author, date, country, study design, participants, sample size, description of intervention/mindfulness practice, description of comparator, parameters of mindfulness interventions and comparator, outcomes, context, effectiveness of MBI for the treatment of CMSP, definitions of mindfulness, and definitions of chronic pain. Two reviewers (PC, YV) independently conducted data extraction of all the included reviews and compared the results. Disagreements between reviewers were discussed and any conflicts were resolved through consensus. These findings were then shared with the rest of the review team (SK, ML, MM) and any outstanding disagreements were resolved as team. This process ensured the entire review team had oversight of the data extraction process and final decisions were made as a team.

Data Synthesis

Given the nature of the review (umbrella review), a meta-analysis was not feasible and hence a descriptive synthesis was undertaken using summary tables of review characteristics and findings. Data were synthesised into one of three categories based on the strength of the evidence for each of the six outcomes: pain, quality of life (QoL), depression, sleep quality, physical functioning, and mindfulness measures. A "Green" classification was indicative of positive findings across all included studies (within the systematic review), including all comparators (both inactive and active) and at all time points. A "Red" classification indicated that all included studies found no effects or negative effects. An "Amber" classification represented mixed findings, where some studies reported positive findings, and some studies reported inconclusive findings, negative findings, or no significant difference between groups. This included reviews where positive results were found when compared with inactive controls and no difference was found when compared with active comparators. This also included differences in findings at different time points.

As a means of bringing together these diverse bodies of research, we also used the National Health and Medical Research Council (NHMRC) FORM framework.[28] This framework was chosen as it has been previously used in other umbrella reviews,[29] and it provides a well-established, consistent, and transparent process for data synthesis. The FORM framework comprises five components that are used to formulate and grade recommendations. These components include: (1) evidence base, (2) consistency, (3) clinical impact, (4) generalisability, and (5) applicability (for the purpose of this review, the applicability component was excluded as this review was not confined to Australian contexts). Each component could be rated as follows: A (excellent), B (good), C (satisfactory) or D (poor). The components were rated by two reviewers (PC and SK) and discussed until consensus was reached on each of the component scores and an overall recommendation.

Results

Search Findings

A total of eight-hundred and thirty-two records were identified from databases and the reference lists of included records. Of these, one-hundred and forty-eight duplicates were removed in Endnote™, and twenty-nine duplicates were removed in Covidence™. Five-hundred and ninety-six records were excluded at the title and abstract screening stage. Full text review of the remaining fifty-nine articles resulted in the exclusion of a further forty articles. Reasons for exclusion included: incorrect study design (n = 9), incorrect population (n = 17), incorrect intervention (n = 8), and duplicates (n = 6). As a result, nineteen systematic reviews[17–19,30–45] were included in this umbrella review. Figure 1 provides an overview of the study selection process.

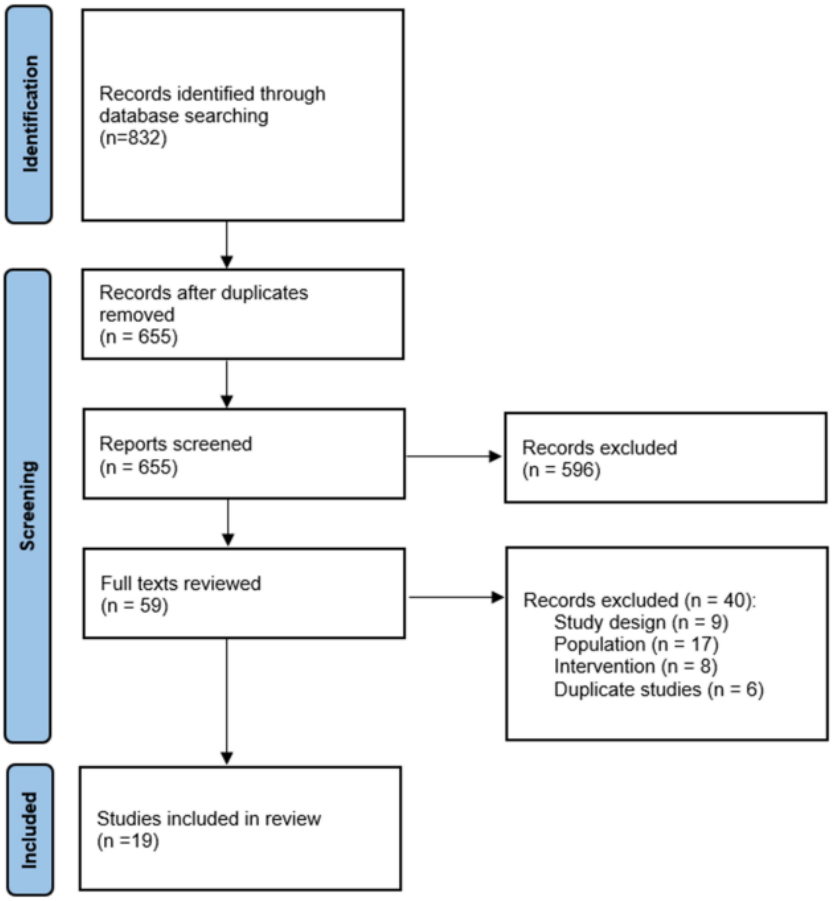


Figure 1 PRISMA flowchart.

Review Characteristics and Description of Included Studies

The systematic reviews originated from 10 countries and were published between 2011 and 2021. Reviews included only adult populations (eg, aged >18 years). A broad range of chronic pain conditions were included within the umbrella category of CMSP such as, chronic low back pain, chronic back pain, fibromyalgia, headache, rheumatoid arthritis, osteoarthritis, failed back surgery syndrome, spine or joint pain, migraine headache, somatization, functional somatic syndrome, and temporomandibular disorder. Two hundred and seventeen randomized controlled trials were included in this review, and one hundred and twelve of these were unique and not repeated across the included systematic reviews. In nine reviews, there was a meta-analysis of at least one included outcome.

Methodological Quality of Included Reviews

Overall, the confidence rating of the critical appraisal scores were critically low (n = 15), low (n = 2), moderate (n = 1) and high (n = 1). Seven reviews did not report a research protocol, partial protocols were reported by eight reviews, and only four reviews reported complete protocols. The only criterion that was met by all included systematic reviews was the inclusion of a complete PICO question. By contrast, fifteen systematic reviews did not report inclusion criteria, eleven studies did not conduct a comprehensive search, eight systematic reviews conducted only a partial search, and fourteen systematic reviews did not report the impact of publication bias. Table 2 provides an overview of the AMSTAR 2 critical appraisal scores for the 19 included systematic reviews.

Table 2 Methodological Quality of the Included Systematic Reviews

Authors*/ Year	PICO	Protocol	Inclusion Criteria	Comprehensive Search	Duplicate Selection	Duplicate Data Extraction	List of Excluded Studies	Description of Included Studies	Assess ROB	Funding of Included Studies	Statistical Combination of Results	Assess ROB Impact on Statistical Combination	ROB in the Discussion	Discussion for the Heterogeneity	Publication Bias Impact	Conflict of Interest, Funding	Overall Quality
Albajes 2021[30]	Yes	Partial Yes	Yes	Partial Yes	No	No	No	Partial Yes	Yes	Yes	No Meta-analysis	No Meta-analysis	No	Yes	No	No	Critically Low
Bahnamiri 2020[17]	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No Meta-analysis	No Meta-analysis	Yes	No	No	No	Critically Low
Bawa 2015[31]	Yes	No	No	No	No	No	No	Partial Yes	Partial Yes	No	Yes	Yes	Yes	Yes	No	No	Critically Low
Chiesa 2011[32]	Yes	Partial Yes	No	No	Yes	No	Yes	Partial Yes	No	No	No	No	No	No	No	No	Critically Low
Cramer 2012[18]	Yes	Yes	No	Partial Yes	No	Yes	Yes	Partial Yes	Yes	No	No Meta-analysis	No Meta-analysis	Yes	Yes	No	Yes	High
Eccleston 2014[19]	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No Meta-analysis	No Meta-analysis	Yes	Yes	Yes	Yes	Low
Garmon 2014[33]	Yes	No	Yes	No	Yes	Yes	No	Partial Yes	No	Yes	No Meta-analysis	No Meta-analysis	No	Yes	No	Yes	Critically Low
Hilton 2017[34]	Yes	No	Yes	Partial Yes	Yes	Yes	No	Partial Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Critically Low
Jackson 2019[35]	Yes	No	No	No	Yes	Yes	No	No	No	No	No Meta-analysis	No Meta-analysis	No	No	No	No	Critically Low
Khoo 2019[36]	Yes	Yes	No	No	Yes	Yes	Yes	Partial Yes	No	Yes	No Meta-analysis	No Meta-analysis	Yes	Yes	No	Yes	Critically Low
Lauche 2013[37]	Yes	Partial Yes	No	Partial Yes	Yes	Yes	No	Partial Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Critically Low
Niknejad 2018[38]	Yes	Partial Yes	No	Partial Yes	Yes	Yes	No	Partial Yes	Partial Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Critically Low

Pei 2021[39]	Yes	No	No	Partial Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Critically Low
Rajguru 2015[40]	Yes	No	No	No	No	No	No	No	No	No Meta-analysis	No Meta-analysis	No	Yes	No	Critically Low
Smith 2020[41]	Yes	No	No	No	No	No	No	No	Yes	No Meta-analysis	No Meta-analysis	No	No	No	Critically Low
Theadom 2015[42]	Yes	Partial Yes	No	No	Yes	Yes	Yes	Partial Yes	Yes	No Meta-analysis	No Meta-analysis	Yes	No	Yes	Critically Low
Veehof 2016[43]	Yes	Partial Yes	No	Partial Yes	No	No	Yes	No	No	Yes	Yes	Yes	No	Yes	Moderate
Williams 2020[45]	Yes	Partial Yes	No	No	Yes	No	Yes	Partial Yes	Yes	Yes	Yes	Yes	Yes	Yes	Low
Zou 2019[44]	Yes	Partial Yes	No	Partial Yes	Yes	No	No	No	No	Yes	No	No	No	Yes	Critically Low

Abbreviations: PICO, patient/population, intervention, comparison, outcomes; ROB, risk of bias. *First author name only.

Definitions, Interventions, and Parameters

A wide variety of unique definitions for mindfulness were utilised across all included systematic reviews, with few similarities. Six reviews[18,32,33,39,40,44] did not provide a complete definition of mindfulness but did describe the included MBI. Four reviews[19,30,38,45] did not report a definition. Where definitions provided an outline of included MBI in the reviews, there was a large variation. Many reviews opted to approach mindfulness from a complementary and alternative medicine perspective, with the inclusion for example of Tai chi and Qigong, while others adopted a more conventional approach by focusing on more clearly defined interventions such as MBSR and ACT. Table 3 summarises the definitions of mindfulness reported in the included systematic reviews.

Across all nineteen included reviews, there were no standardised interventions; and even for MBI such as MBSR, there were wide variations reported across reviews. Table 4 summarises the specific parameters of the interventions reported in each of the nineteen included systematic reviews. Fourteen reviews[17,18,31–38,40,41,43,45] used MBSR alone as a treatment or in combination with at least one other treatment. Other MBI reported across multiple reviews included

Table 3 Definitions for Mindfulness Reported in the Included Systematic Reviews

Authors*/Year	Number of Included Studies	Definition of Mindfulness
Albajes 2021[30]	**7**	None
Bahnamiri 2020[17]	**9**	Two concepts in mindfulness: self-regulation of attention and to the present moment with curiosity, openness, and acceptance.
Bawa 2015[31]	**11**	Mindfulness-based cognitive therapy (MBCT) blends features of cognitive therapy with the techniques of MBSR
Chiesa 2011[32]	**10**	MBSR comprises three different techniques including (1) "body scan (2)" sitting meditation, (3) "Hatha yoga"
Cramer 2012[18]	**3**	From Buddhist spiritual tradition, mindfulness has been secularized and integrated into treatment approaches. Common approaches: MBSR- sitting meditation, walking meditation, hatha yoga and body scan, a sustained mindfulness practice life, MBCT- Cognitive behavioural therapies- Other MBI- mindful exercise and acceptance and commitment therapy
Eccleston 2014[19]	**2**	None
Garmon 2014[33]	**13**	MBSR includes three techniques: 1) a "body scan", 2) "sitting meditation", and 3) yoga stretching and breathing to strengthen and relax the musculoskeletal system.
Hilton 2017[34]	**38**	Based on ancient Eastern meditation practices, mindfulness facilitates an attentional stance of detached observation. It is characterized by paying attention to the present moment with openness, curiosity, and acceptance. Mindfulness meditation is thought to work by refocusing the mind on the present and increasing awareness of one's external surroundings and inner sensations, allowing the individual to step back and reframe experiences.
Jackson 2019[35]	**15**	Acceptance and Commitment Therapy and Mindfulness Based Stress Reduction (MBSR), is to cultivate the patient's ability to accept and observe experiences in the present moment (eg, pain) in a nonjudgmental manner
Khoo 2019[36]	**21**	MBSR is a group-based intervention that focuses on building awareness and acceptance of moment-to-moment experiences, including physical discomfort and difficult emotions. Core components of MBSR include increasing awareness of one's body, emotions, sensations, thoughts as well as learning self-regulation strategies and more adaptive responses to stress
Lauche 2013[37]	**6**	Key components of MBSR include different formal mindfulness practices (sitting meditation, walking meditation, body scan, and yoga exercises), daily homework, and also informal mindfulness practice aiming to increase awareness during routine activities in everyday life

(*Continued*)

Table 3 (Continued).

Authors*/Year	Number of Included Studies	Definition of Mindfulness
Niknejad 2018[38]	**2**	None
Pei 2021[39]	**8**	MBCT integrates key elements from cognitive-behavioural technique (CBT) and mindfulness-based stress reduction (MBSR)
Rajguru 2015[40]	**6**	Mindfulness meditation uses mental techniques traditional to meditation. Mindfulness-based stress reduction (MBSR) can use mindfulness meditation in conjunction with yoga. They are often associated with each other because both techniques primarily use mindfulness to elicit the beneficial response
Smith 2020[41]	**12**	MBSR techniques embrace the whole person and employ capacities along a spectrum from the purely cognitive to the purely physical. The cognitive end of mindfulness is meditation. It is the practice of conscious awareness of one's own thoughts, then the observation of those thoughts without judging them or experiencing them in a subjective manner
Theadom 2015[42]	**3**	Mindfulness means having awareness of thoughts, feelings, and bodily sensations. All mind-body therapies make the link between thoughts, behaviour, and feelings to help people to cope with their symptoms
Veehof 2016[43]	**28**	Mindfulness is defined as intentional and non-judgmental awareness. It can be conceptualized as a multifaceted construct, consisting of the facets: observe, describe, act with awareness, non-judge and non-react. These last two facets are strongly related to acceptance. Although ACT, MBSR and MBCT can be differentiated theoretically, they share an underlying focus on the concepts of acceptance and mindfulness
Williams 2020[45]	**6**	None
Zou 2019[44]	**17**	Tai Chi, Qigong (eg, Baduanjin, Yijingjin, and Wuqinxi), and Yoga, also known as mindful exercises, are light-to-moderate intensity physical activities and have recently been popularized in both the fitness industry and clinical setting for disease prevention and symptomatic management

Abbreviations: ACT, acceptance and commitment therapy; MBSR, mindfulness-based stress reduction; MBCT, mindfulness-based cognitive therapy; MBI, mindfulness-based interventions; CBT, cognitive behavioural therapy. *First author name only.

Table 4 Parameters of the Interventions Reported in the Included Systematic Reviews

Authors*/Year	Type of Treatment	Session Length	Number of Sessions	Frequency of Sessions	Duration of Treatments
Albajes 2021[30]	Mindfulness interventions, ACT	1–3 hours	7–12	Weekly or bi-weekly	6–9 weeks
Bahnmiri 2020[17]	MBSR, MBCT, combined MBI	90 min to 2 hours 45 min	8 full sessions 48 homework sessions	Weekly Homework 6 days per week	8 weeks
Bawa 2015[31]	MBSR, MBCT	2 hours 45 min homework	8–10 48–60 homework sessions	Weekly Homework 6 days per week	8–10
Chiesa 2011[32]	MBI, MBSR, Qigong	90, 120, 150 min 20–45-min homework Whole day retreat	8–10 48–60 homework sessions	Weekly Homework 6 days per week	8–10

(*Continued*)

Table 4 (Continued).

Authors*/Year	Type of Treatment	Session Length	Number of Sessions	Frequency of Sessions	Duration of Treatments
Cramer 2012[18]	MBSR, MBCT	90 min −3.5 hours One whole day retreat 45-min homework	8 sessions 48 homework sessions	Weekly Homework 6 days per week Retreat at the end of treatment period	8 weeks
Eccleston 2014[19]	CBT + mindfulness, ACT, (Psychological therapies)				
Garmon 2014[33]	MBSR				
Hilton 2017[34]	MBSR, MBCT				3–12 weeks
Jackson 2019[35]	MBSR	1.5–3.5 hours			8–12 weeks
Khoo 2019[36]	MBSR	MBSR- 2 to 2.5 hours One full-day intensive session 45 min homework. CBT 8–12 sessions with a > 15 hours total	8–12	Weekly sessions Daily homework One full day	8–12 weeks
Lauche 2013[37]	MBSR	2–3.5-hour sessions Homework 30–40 min One all day retreat	8–10	Weekly sessions Homework up to daily	8–10 weeks
Niknejad 2018[38]	MBSR, ACT				6–34 weeks
Pei 2021[39]	MBCT	2 hours			6–8 weeks
Rajguru 2015[40]	MBSR, Mindfulness meditation	30–45-min sessions Homework 30–45 min		Homework 5–6 days per week	8 weeks
Smith 2020[41]	MBSR				8 weeks average
Theadom 2015[42]	Body and mind intervention	0.5–2.5 hours			1 day-25 weeks
Veehof 2016[43]	MBSR, ACT, MBCT, MBPM, FSMT	1.0 to 2.5 hours	6–12		4–12 weeks
Williams 2020[45]	MBSR, Mindfulness meditation				
Zou 2019[44]	Mindful exercises	40–90 min per session		1–3 times per week	1–24 weeks

Abbreviations: ACT, acceptance and commitment therapy; MBSR, mindfulness-based stress reduction; MBCT, mindfulness-based cognitive therapy; MBI, mindfulness-based interventions; CBT, cognitive behavioural therapy; MBPM, mindfulness-based pain management; FSMBT, four step mindfulness-based therapy. *First author name only.

MBCT (n = 5 reviews) and ACT (n = 3 reviews). Where reported, session lengths varied from 1 to 3.5 hours, the number of sessions varied from 6 to 12, the frequency of sessions was either weekly or bi-weekly, and the duration of the intervention ranged from 1 day to 34 weeks.

NHMRC FORM Framework

The findings from the NHMRC FORM framework,[28] which was used to formulate and grade the results, are described in Table 5. These results should be interpreted with caution as several methodological concerns were noted, thereby

Table 5 NHMRC FORM Framework Analysis

Component	Grade	Comments
Evidence Base[a]	B – Good One or two level II studies with a low risk of bias or an SR/several level III studies with a low risk of bias	Quantity: 19 reviews; 1 SR high quality; 1 moderate quality; 2 low quality; 15 critically low quality.
Consistency	C – Satisfactory Some inconsistency reflecting genuine uncertainty around clinical question	Some consistency that mindfulness when compared to no intervention was effective. Several inconsistencies for outcomes can be explained (eg different definitions of mindfulness, intervention parameters and variability in measurement).
Clinical impact	C – Satisfactory Moderate	Most reviews reported improvements in outcome when mindfulness was compared to no intervention/ control. However, this was not the case for other similar interventions (such as CBT). Risk of harm was low, and no adverse effects reported.
Generalisability	B – Good Population studied in the body of evidence are similar to the target population	Population in the SR was >18 years old, inclusive of range of health conditions and broad international coverage. Mindfulness was broadly defined to account for different treatment approaches and geographical contexts.
Grade of recommendation	C- Satisfactory Body of evidence provides some support for recommendation(s), but care should be taken in its application	Overall, there is some evidence to indicate mindfulness may have positive impacts for individuals with chronic musculoskeletal pain. While the population included was broad and inclusive, there was heterogeneity in terms of definitions of mindfulness, intervention parameters and outcome measures.

Note: [a]Evidence-based levels determined from the NHMRC Evidence Hierarchy.
Abbreviations: NHMRC, National Health and Medical Research Council; SR, systematic review.

lowering the grade of the evidence base. The fifth element of the FORM framework, applicability, was not used as the scope of this review was international and not restricted to an Australian population.[28]

Evidence of Effectiveness

A range of outcome measures were used to determine the impacts of MBI on CMSP. Table 6 highlights the variability of six outcomes (pain, quality of life, depression, sleep quality, physical functioning, and mindfulness measures) measured in the nineteen included studies. While some studies used comparable instruments to measure outcomes, the constructs and data analysis methods were heterogeneous. Pain was measured across eighteen systematic reviews. Of these, six systematic reviews[30,32,33,39,40,42] demonstrated negative outcomes, six[17–19,31,34,36] demonstrated inconclusive outcomes and six[37,38,41,43–45] reported positive outcomes. With regard to QoL, five systematic reviews[18,30,31,37,43] showed inconclusive outcomes, two[19,33] reported negative outcomes and three[32,34,41] demonstrated positive outcomes. Depression was measured across ten systematic reviews. There were two studies each that reported negative[31,37] and positive outcomes,[34,43] and six systematic reviews[30,32,33,36,39,41] that showed inconclusive outcomes. Sleep quality was measured across six systematic reviews, with three demonstrating negative outcomes[31,37,42] and three reporting positive outcomes.[18,30,33] Physical functioning was measured by eight systematic reviews. Of these, three showed negative[35,36,42] and positive outcomes[18,30,33] and in two reviews,[31,32] the outcomes were inconclusive.

Pain

Eighteen reviews[17–19,30–34,36–45] measured the effect of MBI on various domains of pain, including pain intensity, perceived pain, pain interference, and pain acceptance. Studies that formed part of these reviews measured pain using psychometrically sound outcome measures (such as the Brief Pain Inventory and McGill Pain Questionnaire). Lauche et al[37] (five studies), Niknejad et al[38] (two studies), Smith and Langen[41] (twelve studies), Veehof et al[43] (twenty-eight studies), and Zou et al[44] (seventeen studies), all reported that MBI were beneficial for pain. The studies included in these

Table 6 Overview of Outcomes Reported in the Included Systematic Reviews

Authors*/Year	Pain	QoL	Depression	Sleep Quality	Physical Functioning	Mindfulness Measures
Albajes 2021[30]						
Bahnamiri 2020[17]						
Bawa 2015[31]						
Chiesa 2011[32]						
Cramer 2012[18]						
Eccleston 2014[19]						
Garmon 2014[33]						
Hilton 2017[34]						
Jackson 2019[35]						
Khoo 2019[36]						
Lauche 2013[37]						
Niknejad 2018[38]						
Pei 2021[39]						
Rajguru 2015[40]						
Smith 2020[41]						
Theadom 2015[42]						
Veehof 2016[43]						
Williams 2020[45]						
Zou 2019[44]						

Notes: Negative; Positive; Inconclusive.

reviews collectively provided evidence of benefit. In addition to this, the review by Williams et al[45] (six studies related to mindfulness) found that psychological interventions, of which mindfulness was an intervention, were beneficial in reducing pain. However, outcome data specific for mindfulness were not provided. Smith and Langen[41] found that MBSR may provide relief from pain in the long-term. While the findings of Lauche et al[37] were similar, these were confined to short-term relief in people with fibromyalgia. The findings by Zou et al[44] also suggested there were long-term benefits for chronic low back pain when using mindful exercises (Tai Chi, Qigong, Yoga) compared to other non-active and active controls. Veehof et al[43] reported a small effect size for pain intensity, and a moderate effect size for pain interference, compared with a waitlist, education/support group, CBT, or relaxation control. Niknejad et al[38] also found statistically significant positive results in pain intensity and pain interference compared with a waitlist and a health education control.

These findings are in stark contrast to reviews by Albajes et al[30] (eleven studies), Chiesa et al[32] (seven studies), Garmon et al[33] (eleven studies), Pei et al[39] (seven studies), Rajguru et al[40] (six studies), and Theadom et al[42] (three studies), who each reported no benefits of MBI for CMSP. While individual studies within these reviews may have reported some benefits, which may have contributed to small gains, collectively the authors highlight lack of sufficient and robust evidence to support MBI. For example, Albajes et al[30] focused on psychological therapies for fibromyalgia and found eight studies that related to MBI. Of these, four studies assessed pain as an outcome with only one reporting positive outcomes.

Six reviews reported mixed results for the effectiveness of MBI for pain, including Bahnamiri et al[17] (nine studies), Bawa et al[31] (eight studies), Cramer et al[18] (three studies), Eccleston et al[19] (two studies), Hilton et al[34] (thirty-eight

studies), and Khoo et al[36] (sixteen studies). Results were often mixed as MBI were reported to have an impact on one aspect of pain but not on another (such as a positive impact on perceived pain but no impact on pain intensity). The review by Bawa et al[31] found a positive effect of MBI on perceived pain but no evidence of any benefit on pain intensity. In some instances, MBI were no better than other interventions (such as CBT), as highlighted by Khoo et al.[36] In one review, Eccleston et al[19] found that internet-delivered psychological therapies, which included MBI, reduced headache pain and non-headache related pain with a small effect size, although it was reported that there was insufficient evidence to make a firm conclusion. Similarly to Williams et al,[45] we found that data specific to MBI was not able to be extracted separately. For these reasons, we found that Eccleston et al[19] provided mixed evidence. The review by Bahnamiri et al[17] reported positive benefits of MBI for chronic low back pain and found MBI reduced pain intensity in both the short-term and long-term when compared to inactive controls. However, Bahnmiri et al[17] also showed that MBI reduced pain intensity as efficiently as CBT and there were no statistically significant differences between the two approaches; accordingly, these findings provided mixed evidence. The conflicting nature of the evidence-base, coupled with concerns about methodological quality and heterogeneity within the primary research, means an unequivocal finding about the effectiveness of MBI on pain cannot be made. Collectively, the literature provides mixed evidence regarding the effectiveness of MBI for pain.

Quality of Life

Ten reviews[18,19,30–34,37,41,43] measured the effectiveness of MBI on Quality of life (QoL). Studies that formed these reviews measured QoL using various psychometrically tested outcome measures, such as the Short-form health survey (SF-36), and EuroQoL. Albajes et al[30] identified that MBI might be beneficial for QoL-related outcomes. Of the seven studies included in the review by Albajes et al,[30] six studies found significant benefits from the intervention, and one found a non-significant difference between the three treatment groups: MBSR, treatment as usual and Multicomponent intervention (FibroQoL). Bawa et al[31] also found mixed results regarding the impact of MBI on QoL and concurred with Albajes et al[30] that the effect of MBI was generally found to be equivalent to an active comparator. Overall, Albajes et al,[30] Bawa et al,[31] Cramer et al,[18] Lauche et al,[37] and Veehof et al[43] all provided mixed or conflicting evidence of benefit. By contrast, Chiesa et al,[32] Hilton et al,[34] and Smith and Langen[41] all reported significant improvements in QoL when MBI were compared to both active and inactive comparators. These comparators included treatment as usual, support groups, education, stress management, and waitlist controls. On the other hand, Eccleston et al,[19] and Garmon et al,[33] both reported that there was insufficient evidence to suggest that MBI improve QoL in people living with chronic pain. Collectively, the literature provides mixed evidence regarding the effectiveness of MBI on QoL.

Depression

Ten reviews[30–34,36,37,39,41,43] measured the effectiveness of MBI for depression. Studies that formed these reviews measured depression using various psychometrically tested outcome measures, such as the Hospital Anxiety and Depression Scale, and the Beck Depression Inventory. Hilton et al,[34] and Veehof et al,[43] both identified that MBI were beneficial for depression as the studies included in the reviews collectively provided evidence of benefit. The review by Hilton et al[34] reported positive effects when comparing MBI with different comparators (eg treatment as usual, support, education, stress management, waitlist control), finding that MBI significantly lowered depression scores, both post treatment and later after follow-up. This was in contrast to reviews by Bawa et al[31] (6 studies), and Lauche et al[37] (five studies), that collectively reported no benefits when MBI were compared to active and inactive controls,[31] both in the short-term and long-term.[37] While some individual studies included in these reviews did demonstrate small improvements in depression, collectively there was insufficient evidence to support the effectiveness of MBI.

Six reviews[30,32,33,36,39,41] reported mixed findings. Khoo et al[36] undertook a meta-analysis of three studies and reported a significant change in depression symptoms in favour of MBSR over controls; however, when MBSR was compared to CBT, the differences between treatments were no longer significant. While Albajes et al[30] reported that ACT may be a promising intervention for depression based on percentages of success (eg 100% success rate for studies using ACT vs 67% success rate for MBI), an overall lack of robust data prevented a conclusive verdict. Chiesa et al[32] reported that in three of four studies comparing MBI with wait list control, and one study comparing MBI to progressive muscle relaxation, MBI was found to be significantly more effective in improving depression. However, in two studies

comparing MBI to active treatment (eg qigong, educational support group, cognitive behavioural therapy, educational group), the difference between treatments was not shown to be statistically significant. Garmon et al[33] reported similarly mixed findings according to the type of control group. In two studies, MBI were found to be effective in reducing depression when compared with waitlist controls, but not when compared to active controls (eg education, multidisciplinary pain intervention CBT). Data from two further studies[38,42] that examined the effect of MBI on depression in chronic pain were not included, as MBI formed part of a battery of psychological interventions, and data for the specific effects of MBI on depression could not be separated. Collectively, the literature provides mixed evidence regarding the effectiveness of MBI on depression.

Sleep Quality

Six reviews[18,30,31,33,37,42] measured the effectiveness of MBI on sleep quality. Sleep quality was assessed using a range of outcome measures, including the Pittsburgh Sleep Quality Index, Epworth Sleepiness Scale and Visual Analogue Scale. Albajes et al[30] identified that MBI may be beneficial for sleep-related problems as the four studies included in their review collectively provided evidence of a significant improvement. These purported benefits were reported for a range of sleep parameters, including sleep quality, sleep problems, sleep disturbances and sleep latency. These findings were supported by Cramer et al[18] and Garmon et al[33] who included one and two studies respectively, with both reporting improvements in sleep quality. This was in contrast to reviews by Bawa et al[31] (two studies), Lauche et al[37] (two studies) and Theadom et al[42] (one study), which reported no benefits of MBI on sleep quality. Collectively, the included reviews provide conflicting evidence regarding the effectiveness of MBI on sleep quality.

Physical Functioning

Eight reviews[18,30–33,35,36,42] measured the effectiveness of MBI on physical functioning. Studies that formed part of these reviews used various measures of physical functioning, such as the Short Physical Performance Battery and Roland Morris Disability Questionnaire. Albajes et al,[30] Cramer et al,[18] and Garmon et al,[33] all identified that MBI were beneficial for physical functioning related problems as the eight unique studies (of which one study was repeated) included in the reviews collectively provided evidence of benefit. The review by Albajes et al reported positive benefits in the short to medium term (at twelve weeks) as well as long term (eighteen months). This contrasted with reviews by Jackson et al[35] (fifteen studies), Khoo et al[36] (fifteen studies), and Theadom et al[42] (two studies), that collectively reported no benefits of MBI on physical functioning. While some of the individual studies included in these reviews did demonstrate small improvements in physical functioning, collectively there was insufficient evidence to support the effectiveness of MBI. Two reviews[31,32] reported mixed findings. Bawa et al[31] undertook a meta-analysis of five studies and reported a combined positive small effect size. This effect was particularly noticeable when MBI were compared to inactive controls, but not when compared with active controls. Collectively, the literature provides mixed evidence regarding the effectiveness of MBI on physical functioning.

Mindfulness Measures

Three reviews[18,31,39] measured the effectiveness of MBI on measures of mindfulness. Studies that formed these reviews used an array of outcome measures, including the Mindful Attention and Awareness Scale (MAAS), Five Facet Mindfulness Questionnaire (FFMQ), and 14-item short form of the Freiburg Mindfulness Inventory (FMI). Pei et al[39] (three studies) identified that MBCT increased mindfulness in the short-term. However, when these data underwent meta-analysis, there was limited evidence to suggest that MBCT has a positive impact on mindfulness when compared with non-MBCT in the short-term. This contrasted with reviews by Bawa et al[31] (four studies), and Cramer et al[18] (one study), that collectively reported no statistically significant benefits of MBI on mindfulness. However, Bawa et al[31] suggest that the MAAS measurement tool used in three of the four studies included in their review may be inappropriate for use with novice meditators as it lacks the necessary sensitivity to measure changes in this population. Referring to MAAS as unidimensional, Bawa et al[31] recommend that a multidimensional tool be used in future research, such as the FMI measurement tool. The review by Cramer et al[18] included only one study. This study was also included in the review by Bawa et al.[31] Both reviews are in agreeance regarding this study and so no additional data of importance was found.

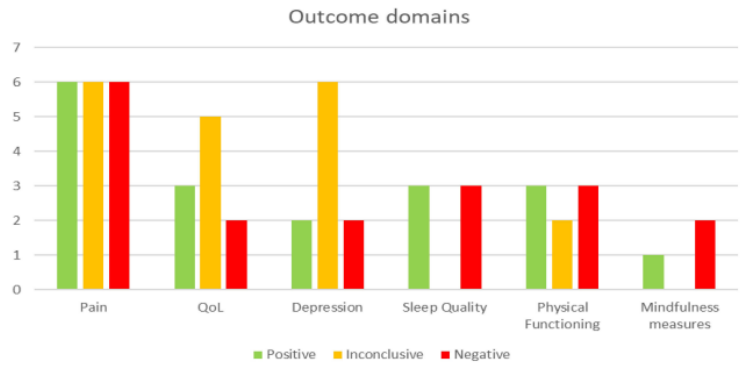


Figure 2 Overview of outcomes and results from the included systematic reviews.

While some of the individual studies included in these reviews did support small improvements in mindfulness, the evidence was largely insufficient. Collectively, the literature provides mixed evidence regarding the effectiveness of MBI on mindfulness outcomes.

Summary of Results

An overview of the volume and direction of the evidence regarding the effectiveness of MBI for CMSP is illustrated in Figure 2. Overall, across the included systematic reviews and across all outcomes, the evidence remains mixed, and is therefore inconclusive.

Discussion

This umbrella review set out to provide a synthesis of the best available research evidence regarding the effectiveness of MBI for adults suffering from CMSP. Given the rising popularity of MBI, and the plethora of research investigating the effectiveness of these techniques in recent decades, it is important to keep abreast of this evidence-base in order to adequately inform clinical practice, and to guide future research. While the available evidence for this umbrella review was predominantly low-quality and mixed, there are some outcomes for which MBI shows some promise (eg, pain, quality of life and depression).

An important finding of this review was the variability in the definitions of mindfulness reported across included studies. While there were some commonalities, there was also marked differences. For example, the review by Khoo et al[36] defined mindfulness in the context of MBSR, that is as "a group-based intervention that focuses on building awareness and acceptance of moment-to-moment experiences, including physical discomfort and difficult emotions. Core components of MBSR include increasing awareness of one's body, emotions, sensations, thoughts as well as learning self-regulation strategies and more adaptive responses to stress". This definition suggests there is a fundamentally judgemental element to mindfulness practice where one becomes aware of a sensation or thought, acknowledges it, and employs adaptive strategies to alter their response to the sensation. However, Veehof et al[43] defines mindfulness as "intentional and non-judgmental awareness. It can be conceptualized as a multifaceted construct, consisting of the facets: observe, describe, act with awareness, non-judge and non-react". This definition suggests a non-judgemental, non-reactive approach to mindfulness. This appears to be in line with the standard definition for mindfulness within MBSR as originally coined by John Kabat-Zinn,[11] which describes mindfulness as essentially non-judgemental. This is an important consideration as these varying philosophical approaches to MBI likely influence treatment approaches and hence outcomes.

The variability in the definitions of MBI also seems to extend to the parameters of these interventions as shown in Table 4. Heterogeneity was found in session lengths, number of sessions, frequency of sessions and duration of

treatments. For example, Garmon et al[33] included body scan, sitting meditation, yoga, stretching and breathing, while Lauche et al[37] included walking meditation and informal practice during activities of daily living as part of MBSR intervention parameters. Similarly, session duration and frequency in Lauche et al[37] were 2–3.5 hours weekly for 8–10 sessions, with homework 30–40 min for 8–12 weeks, while Rajguru et al[40] included 30–45 min weekly sessions with 30–45 min homework 5–6 days per week for 8 weeks. It is unknown why such heterogeneity exists in the literature given that many of these techniques have internationally standardised training programs, such as Transcendental Meditation® and MBSR. Indeed, the official curriculum guide for MBSR stipulates that MBSR should be conducted as an 8-week, 10 session course, which includes 31 hours of direct instruction.[11] The content of each session is clearly outlined in this guide. Although the authors of the original guide welcome adaptation of new mindfulness systems, they do suggest the term MBSR only be used in line with such guides.[11]

An interesting finding from this umbrella review was that for all outcomes, MBI was shown to be more effective than inactive controls, but comparable to active controls, particularly when the active comparator was CBT. This was consistent across reviews that included both inactive and active controls, or active controls only. There are several possible explanations for this finding. First, it is possible that MBI has a positive effect on a range of outcomes in persons living with CMSP, when compared to no intervention. Second, as MBI reported in this review often included MBSR techniques, which share commonalities with CBT, it is not surprising that both interventions reported comparable findings. The comparable findings for MBI and CBT may have implications for practice. For example, as CBT is generally provided by qualified health professionals, MBI may be an easily accessible, cost-effective alternative to CBT given that MBI does not require specialist training and credentialing.[46,47]

Recent research using functional magnetic resonance imaging investigated the physiological mechanisms for potential benefits of MBI on pain.[20] There was variation in the changes in the neural mechanisms of pain attenuation across those with varying levels of experience in mindfulness practice.[20] Findings from the research indicate that in novice meditators, with less than 10 hours of practice, higher order regulation occurred across the orbitofrontal cortex and rostral anterior cingulate cortex (brain areas that are involved with the processing of pain), which regulated low-level neural targets in the thalamus and primary somatosensory cortex suggesting the activation of reappraisal mechanisms.[20] Further to this, more experienced meditators, having practiced MBI for greater than 1000 hours, showed deactivation of the prefrontal cortex, and an increased activation in the somatosensory cortex which shows an increased ability to reduce appraisals of arising sensory events.[20] It is suggested that these changes and differences in the neural activity across the differing experience levels of mindfulness practitioners may be due to neural plasticity, which is affected by practice frequency.[20] The outcome of this is first a change in state mindfulness, the part of mindfulness that is controlled moment to moment, and a progression, amongst more experienced practitioners, towards a change in trait mindfulness, which is the normal, underlying level of mindfulness experienced by an individual, regardless of their deliberate control.[20,21]

While this umbrella review identified 19 reviews, which on face value seems to indicate a large body of evidence, there were concerns about the methodological quality of this evidence base. Using the AMSTAR 2 critical assessment tool, fifteen of the nineteen reviews were rated as critically low. This finding is not unique to this umbrella review and is shared by other research. For example, a recent qualitative content analysis reviewed the current literature related to both mindfulness and meditation, with the aim to develop a framework and guideline for reporting mindfulness and meditation research.[48] The study reported that the underlying evidence base related to mindfulness and meditation was heterogeneous in terms of study designs, lacked comparisons or controls, lacked appropriate randomization, follow-up assessments, reporting of treatment dose, and consideration for potential biases.[48] One way to address this shortcoming is through the use of reporting guidelines. The CONSORT (Consolidated Standards of Reporting Trials) statements are established reporting guidelines commonly used for studies reporting social and psychological interventions. The extension CONSORT-SPI 2018 has been recently proposed as a useful tool for the reporting of MBI; although, it does not currently provide specific guidance for meditation-based interventions.[48] A further extension of this CONSORT statement may help improve the rigour, transparency, and consistency of reporting of interventions in future meditation research.

Strengths and Limitations of This Review

As the popularity of MBI increases, it is important to map and establish the evidence base of this practice. This review has mapped for the first time, the definitions of mindfulness as reported in systematic reviews. The methodology was also informed by best practice standards and was conducted in accordance with established protocols (PRISMA[49] and JBI[27]). The evidence was synthesised using a well-established and widely used framework (NHMRC FORM framework).[28] Nevertheless, as with any research, this umbrella review too has limitations. The search strategy was limited to reviews published in the English language, which may have possibly introduced language bias. There were also limitations that are inherent to umbrella reviews. For example, given that an umbrella review is a review of reviews, the primary focus is on the data reported within the systematic reviews and not on the data from the primary research studies included in those reviews. This means that it is often necessary to rely upon the interpretations of primary data that were made within the systematic reviews, which may or may not have been undertaken using a rigorous process. Another important limitation to consider is the differentiation between different types of pain (such as persistent and recurrent pain). The reviews included in this umbrella review often did not differentiate between persistent and recurrent pain (which may be common in musculoskeletal disorders). Given different types of pain may respond differently to MBIs, this lack of differentiation may have contributed to the mixed results.

Recommendations for Practice and Future Research

Based on the findings of our review, we propose three key recommendations. First, heterogeneity was found across several aspects of the practice and delivery of MBI in both primary and secondary research. We therefore recommend development and implementation of standardised protocols for MBI to ensure consistency in its application and facilitate comparison between research. Second, as mindfulness is used as an umbrella term that includes many different types of interventions, such as MBSR, ACT, and mindful exercise, further investigations of the differences in effect between the various types of MBI is recommended. These differences may provide a more nuanced understanding of the role of different MBI in different clinical contexts. Finally, while MBI was found to be comparable to CBT (and better than no treatment) for people with CMSP, caution is required in its application due to the generally low quality of the evidence. Further research is required to substantiate these findings through the use of standardised and replicable protocols.

Conclusion

The aim of this umbrella review was to synthesise the best available research evidence for the effectiveness of MBI for adults living with CMSP across a range of outcomes (pain, sleep quality, depression, quality of life, physical functioning, mindfulness), and to explore the parameters and methodologies used in the systematic reviews. Collectively, across the 19 included reviews, there was mixed results to support the effectiveness of MBI. A potential reason for these mixed results may be due to heterogeneity of parameters underpinning MBIs reported in the reviews including varying techniques, intensity, duration, and frequency. This, combined with concerns about methodological quality, means an unequivocal recommendation to support MBI for adults living with CMSP cannot be made and caution is required in interpreting these results. With increasing interest in the clinical use of MBI in the management of CMSP, development and testing of standardised protocols for MBI through further research is warranted.

Data Sharing Statement

All relevant data are within the paper and its supporting information files.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation. All authors gave final approval of the version to be published, have agreed on the journal to which the article has been submitted, and agreed to be accountable for all aspects of the work.

Disclosure

The authors have declared that no competing interests exist.

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2.3.1 Chapter Summary

This chapter presented the findings of an umbrella review of systematic reviews investigating the effectiveness of mindfulness for the management of musculoskeletal pain, as well as the parameters and methodologies used to investigate mindfulness within the published reviews. Evidence from the literature suggests that, although mindfulness may be beneficial for a range of outcomes, concerns about methodological quality, as well as heterogeneity of the evidence base, makes it difficult to draw any definitive conclusions. This research also highlights opportunities for further research, including the need to understand mindfulness practitioners' perspectives of what constitutes mindfulness. The next chapter responds to this recommendation by presenting the second stage of thesis, a qualitative descriptive research exploring the perspectives and practices of mindfulness practitioners.

3. CHAPTER THREE - Qualitative Descriptive Study

3.1 Chapter Overview

This chapter presents the second phase of this thesis, a qualitative descriptive study. The study used semi-structured interviews to explore the perspectives, language, descriptions, and practices of practitioners who identify as using mindfulness techniques for a range of health and clinical conditions. In order to capture a range of views and experiences, mindfulness practitioners were recruited from different professional backgrounds across Australia, including those from biomedicine, allied health, CAM, and traditional/spiritual disciplines.

This chapter has been submitted as a manuscript for publication with the journal 'Complementary Therapies in Clinical Practice'. The chapter reflects the formatting of the submitted manuscript. The Contribution of Authors is outlined in Appendix 8.

3.2 Submitted Manuscript

"Diluting its value as a word by applying it to everything": a qualitative study exploring perspectives and practices of mindfulness practitioners

Abstract

Objectives

The aim of this research was to explore the perspective, language, description, and practices of practitioners who identify as using mindfulness techniques for a range of health and clinical conditions.

Methods

This study was guided by a qualitative descriptive methodology. Mindfulness practitioners from a variety of backgrounds that included medical, allied health, complementary and alternative medicine, and traditional Buddhism from across Australia were invited to share their perspectives. Semi-structured interviews were conducted via zoom, telephone, and face-to-face which were audio-recorded and transcribed verbatim. The transcripts were thematically analysed.

Results

Sixteen mindfulness practitioners from Australia self-nominated to participate in this study. Overall, the interviews revealed similarities, differences and even disagreements between participants from the different modalities regarding mindfulness. Participants from similar disciplines also reported differing perspectives and nuanced opinions. Differences appeared to stem from both participant background, training, and the overall aims of their practice.

Conclusions

This research highlights the complexities of what constitutes mindfulness. This study, for the first time, has highlighted that for mindfulness practitioners, their beliefs, aims, and practices are varied and influenced by a range of factors including their ideological perspectives. While the diversity and broad application of mindfulness may be one of its strengths, it may also be its weakness as its value may be diluted due to plurality of understanding and multiplicity in use. This requires careful and considered actions from mindfulness stakeholders.

Key Words:

mindfulness, mindfulness practices, mindfulness practitioners, mindfulness perspectives

1.1 Background

Mindfulness is a form of meditation practice used in both traditional and healthcare settings that aims to facilitate present moment awareness. The concepts and practices of mindfulness originated in 5th century BCE in India, which arose from Buddhist contemplative practices that focus on spiritual growth, psychological health and wellbeing [1]. While mindfulness existed within Buddhism, mostly in eastern communities, it then evolved into a secular

therapeutic intervention with the development of mindfulness-based stress reduction (MBSR) in 1979 [2].

Jon Kabat-Zinn developed MBSR as a structured intervention to be used within healthcare settings for the management of chronic pain [3]. Since the advent of MBSR, the popularity of mindfulness has continued to grow in the west, and with this came the development of variations to mindfulness practices [4]. These adaptations came largely from combinations of MBSR and cognitive behavioural therapies, which saw the development of mindfulness-based cognitive therapy (MBCT) [5]. Collectively, these systems of practice are commonly referred to as Mindfulness-based interventions (MBI) [6].

Although modern and traditional forms of mindfulness practice are often presented separately, they do share many commonalities in their origins. Research shows that modern systems of mindfulness are thought to have been originally derived from traditional Buddhist practices [7, 8]. While MBI such as MBSR and MBCT are thought to have been developed from Buddhist practices, particularly Theravāda and Japanese Zen Buddhism, they are not believed to be the same [7-9].

Recent discourse [10-12] on mindfulness-based practices has pointed to considerable heterogeneity regarding the definition, descriptions, practices, and intervention protocols of mindfulness. Many terms used to describe mindfulness have been broad, consisting of words such as “open”, “curious”, “present”, “accepting”, “compassionate” and “contemplative”; while some terms, such as “judgemental” and “non-judgemental”, appear contradictory and controversial [6, 12]. A recent umbrella review examining the use of MBI for the management of chronic musculoskeletal pain similarly reported significant heterogeneity related to the protocols (e.g., treatment duration, number of sessions) and

definitions of mindfulness [9], as well as how professions practice mindfulness. The review findings suggested that the term ‘mindfulness’ can mean different things to different groups of people.

Based on recommendations from the abovementioned umbrella review, and recognising the current knowledge gap in the literature, the aim of the current research was to explore the perspective, language, description, and practices of practitioners who identify as using mindfulness techniques for a range of health and clinical conditions.

2.1 Methods

2.1.1 Design

A qualitative descriptive (QD) approach, together with semi-structured interviews, were used to explore the beliefs and practices of mindfulness practitioners in a clinical or professional setting [13]. This approach and method were chosen to provide a rich description of participant’s experiences of mindfulness and to present the provider’s reality in everyday language [14, 15]. A QD approach is appropriate when a firsthand description of a phenomena is desired that focuses on the who, what, when and where of events or phenomena [16, 17]. QD can also provide a framework to carefully examine clinical interventions to ensure they are tailored to the needs of the populations that use them [18] Accordingly, QD is an appropriate methodology to investigate how mindfulness is understood and practiced in professional settings. The consolidated criteria for reporting qualitative research (COREQ) checklist was used to guide the reporting of this study [19].

2.1.2 Research Questions

The study was designed to answer the following research questions:

1. What are the underlying philosophies/beliefs/aims of the practitioners of mindfulness?
2. How are the different types of MBI practiced in a clinical or professional context?

2.1.3 Participants

This study aimed to capture diverse views and experiences by recruiting practitioners from various disciplines (i.e. biomedical, allied health, complementary and alternative medicine (CAM), traditional meditation, spiritual disciplines). Practitioners were eligible to participate if they were (a) aged 18 years and over, (b) resided in Australia, (c) completed training in mindfulness practice, and (d) practiced mindfulness as part of their routine service provision when managing any health condition. Excluded were practitioners for whom mindfulness was not a primary focus of their practice. The word 'practice' in this study referred to the specific mindfulness practices or strategies used by practitioners, and not to the practitioner's clinical or professional practice overall, for example 'Physiotherapy Practice'.

2.1.4 Recruitment and Sampling

Participants were recruited using three sampling techniques: (a) *Non-probability, purposive sampling* (i.e. selecting participants based on their ability to provide information-rich data) [20]; (b) *Quota sampling* (i.e. selecting participants from different biomedical and allied health streams, CAM disciplines, and other traditional backgrounds such as Buddhist teachers); and (c) *Snowball sampling* (i.e. identifying participants through personal recommendations by others working within the same discipline) [21] Potential participants were identified via public directories of pertinent professional associations (e.g. Australian Traditional Medicine Society), social media sites (e.g. TCM Acupuncture South Australia,

Women's, Men's and Pelvic Health Physiotherapy Group Australia, both on Facebook), internet searches, and networks of the research team, and were subsequently invited to participate via email or telephone. Each potential participant was provided with a Participant Information Sheet, which outlined the aims, purpose and nature of the research, and the background of each member of the research team. Participants were also informed that participation was voluntary, they could withdraw from the study at any time without consequence, and there was no payment for participation.

As there are no definitive guidelines for sample sizes in QD research [22], sample size was guided by similar research in other fields, as well as practical considerations (e.g. timeframe, and resource limitations). The sample size for the current study was estimated to be around 16 participants [23, 24].

2.1.5 Interviews

Data were collected using semi-structured interviews, which enabled flexibility with the phrasing and order of questions depending on the responses of each participant [25]. Interview questions were informed by recent reviews of MBI [10, 11], and discussions with the research team, which were subsequently drafted into an interview guide [26]. The interview guide outlined the list of open-ended questions, as well as prompt questions, to enable participants to convey the depth of their own understanding and personal experience with the clinical use of mindfulness. The interview questions were piloted prior to the start of the study (n=3) [27]. No changes were made to the interview guide (see appendix 1) following the pilot test.

2.1.6 Data collection

Semi-structured interviews were conducted virtually via Zoom, or in person in a closed office, by the chief investigator (PC). Interviews were undertaken between 23rd May and 15th July 2023, and ranged in duration from 35 minutes to 135 minutes. All interviews were audio recorded with the participant's consent. Field notes were also documented during and after the interviews [28]. Audio recordings of each interview were transcribed verbatim and de-identified using pseudonyms [28].

2.1.7 Data analysis

NVivo 14 software™ was utilised to manage data and assist with data analysis. Data were analysed using thematic analysis, in accordance with the six phases of Braun and Clarke (i.e. familiarisation with data, systemic coding of data, searching for themes, reviewing themes, defining themes, and production of the report) [29]. Each phase of the analysis was reviewed by members of the research team to ensure the codes/themes were an accurate representation of the raw data. Rigour was maintained [30-32] by ensuring credibility (i.e., using two coders [PC, YV]), transferability (i.e., using rich description of the methods), dependability (i.e., triangulation of the data and field notes) and confirmability of the data (i.e., identifying the limitations and biases of the study), thus ensuring trustworthiness [33].

2.1.8 Researcher role

The lead researcher (PC) is a masters by research candidate with prior experience in mindfulness research. He also has considerable practical experience with meditation traditions, including the use of various forms of Buddhism, and internal Kung Fu traditions. PC is also an Acupuncturist and Wing Chun Kung Fu instructor. As these professional, experiential, and educational biases could not be eliminated or controlled for, strategies

were put in place for their management. These included adhering to the study design and interview schedule, regularly consulting with the research team, and undertaking training in the appropriate conduct and reporting of QD research.

2.1.9 Ethics

Ethical approval was obtained from the University of South Australia Human Research Ethics Committee [Protocol number – 205109].

3.1 Results

3.1.1 Participant demographics

Sixteen individuals participated in the interviews (Table 1), and fourteen participants returned the demographics questionnaire. Most of the participants were female (56.25%). Participants represented several disciplines and backgrounds, which were categorised into four groups of practitioners: Medical, Allied Health, CAM, and traditional Buddhism. Ages of the participants ranged from 31 years to over 60 years. Seven participants reported holding a master's degree or doctorate (43.75%), followed by a Bachelor degree (37.5%). More than one-half of participants (56.25%) had been practicing mindfulness for 11 years and more. Participants comprised a mix of practitioners that identified with biomedical and allied health disciplines (50%) and traditional practices (50%), with several participants indicating that they practiced across multiple modalities.

Table 1 Participant Demographics (n=14)

Demographic Characteristics	n (%)
Gender	
Male	5 (31.3)

Female	9 (56.3)
Not reported	2 (12.5)
Age Group	
31-40 years	2 (12.5)
41-50 years	3 (18.8)
51-60 years	5 (31.3)
>60 years	4 (25.0)
Not reported	2 (12.5)
Level of qualification	
Mindfulness certificate	1 (6.3)
Bachelor degree	6 (37.5)
Masters degree	5 (31.3)
Doctorate	1 (6.3)
RANZCP fellowship	1 (6.3)
Not reported	2 (12.5)
Professional background*	
Buddhist teacher	5 (31.3)
Physiotherapist	3 (18.8)
Yoga teacher	2 (12.5)
Acupuncturist	2 (12.5)
Ayurvedic practitioner	1 (6.3)
Naturopath	1 (6.3)
Psychiatrist	1 (6.3)
Psychologist	1 (6.3)

Social Worker	1 (6.3)
Tai Chi teacher	1 (6.3)
Tuina massage practitioner	1 (6.3)
Wing Chun Kung Fu teacher	1 (6.3)
Not reported	2 (12.5)
Type of mindfulness practices*	
Yoga	4 (25.0)
MBCT	3 (18.8)
Buddhism	3 (18.8)
Qigong	3 (18.8)
Mindfulness within a Buddhist context	2 (12.5)
Physical Therapy Based	2 (12.5)
MBSR	1 (6.3)
Clinical Hypnosis	1 (6.3)
Tai Chi	1 (6.3)
Wing Chun Kung Fu	1 (6.3)
Self-directed Learning System	1 (6.3)
Not reported	2 (12.5)
Years of mindfulness practice	
0-5 years	4 (25.0)
6-10 years	1 (6.3)
11-15 years	5 (31.3)
>15 years	4 (25.0)
Not reported	2 (12.5)

* Participants were able to select multiple responses

3.1.2 Findings

Analysis of the data resulted in the identification of two broad themes: Plurality of understanding, and Multiplicity in use. Plurality of understanding refers to the varied perspectives of the theoretical underpinnings of mindfulness, and the transformation of mindfulness over time. Multiplicity in use relates to the varied perspectives of the indications and contraindications for mindfulness, and the adaptation of mindfulness to clinical practice.

3.2 Plurality of understanding

Plurality of understanding relates to the range of theories that underpin the practice of mindfulness in a clinical or professional context; it also refers to the associated breadth of interpretations that may transform in a variety of ways based on the background of the professional, their personal journey and the evolution of mindfulness over time.

Theoretical underpinnings of mindfulness

Participants shared a variety of perspectives on their understanding and use of mindfulness. Concepts ranged from those that aligned with Jon Kabat-Zinn's (JKZ) definition of mindfulness, to specific traditional Buddhist scriptures, and physiological or practice-based explanations.

The definition of mindfulness coined by JKZ was mostly used by allied health and medical practitioners as compared with CAM practitioners or traditional mindfulness practitioers. The most polarised views on definitions were between allied health or medical practitioners

and Buddhist teachers. One psychiatrist expressed her belief that we should be very precise in using the JKZ definition verbatim,

> *"Jon Kabat-Zinn's definition of mindfulness was paying attention in a particular way on purpose in the present moment and non-judgmentally…the idea is that you're being non-judgmentally accepting of whatever's happening in the present moment, in your experience in the moment…you've got to be really specific about…what you mean by mindfulness and how you're applying it to a condition and is there a theoretical rationale for that, and then does it work?" (Participant 7)*

Another allied health practitioner who reported using JKZ's definition also adapted and added her own understanding of the JKZ definition, citing additional characterisations that she had developed through personal experience,

> *"…an extra provision I often put on that…is…bringing attention to what is happening in your body, in your mind, in the world around you with curiosity and kindness. So that's my little extra bit…I think the curiosity and kindness are really important elements"* (Participant 15)

Five participants from a Buddhist background characterised mindfulness in a traditional context. Of these, three practitioners were teachers of Buddhism and taught mindfulness within the Buddhist context, and two participants were trained to provide mindfulness within the Buddhist context but not trained to provide other Buddhist practices or philosophies. The former group reported using definitions from certain traditional Buddhist scriptures (Sutras and Tantras), primarily the Satipatthana sutra, which literally translates to

"awareness of mindfulness" (Participant 3). This group reported a traditional definition using 4 levels or foundations of mindfulness,

> *"the four foundations of mindfulness…are contemplation of body, contemplation of feeling…contemplation of mind…and…contemplation of objects of mind"* (Participant 3)

Interestingly, the group that taught mindfulness at Buddhist centres without necessarily incorporating Buddhist doctrines, had a slightly different approach and were more likely to characterise mindfulness using rich descriptive terms. For participant 1, this was to create a quiet, relaxed and calm mind to optimise the likelihood of students having an experience of mindfulness,

> *in those first few sessions…my aim…is to get them in a state of physical and mental relaxation so that they can experience what it's like to have a mind that's not buzzing with thoughts…and emotions. And if we can achieve that within an hour…we've given people a taste of, what it might be like to be mindful…it's a very slow process, and you've really got to start with the first few steps"* (Participant 1)

For participant 8, this approach was to understand mindfulness in the context of life in general,

> *"…Buddhism…is…a truth…that we as human beings have this innate wisdom and insight already…It's all there…what happens as we journey through life, …the world out there…is uncontrollable, unknowable…vast…and could be pretty scary… the adaptation … as human beings…from a very early age, is to find ways to adapt to the kind of insults…and…*

experience of injuries...And so…for me…mindfulness…is about coming home…to the present moment, [to the] experience of life as we perceive it now, because that's all there is" (Participant 8)

Some practitioners provided a simplified characterisation, *"…mindfulness to me is focusing specifically on the breath"* (Participant 12). An Acupuncturist/qigong teacher defined mindfulness *as "…that ability…to stand back…and…just see what's going on and what you're doing…and just being aware in that moment of what you're doing…"* (Participant 13)

Characterisations of mindfulness also extended to physiological meanings, such as*"…systems of the body"* (Participant 9). This was exemplified by a physiotherapist, who characterised mindfulness in terms of the nervous system,

"…understanding the difference between the sympathetic and the parasympathetic nervous system. And that when you're in chronic pain, chronic stress, that you often get stuck in the sympathetic nervous system" (Participant 9)

A traditional Chinese massage therapist/Wing Chun Kung Fu teacher characterised mindfulness in terms of a harmony between certain elements of one's experiences,

"…an internal awareness and communication with the…mental, physical, and emotional/spiritual…trying to synchronize a harmony between all of those and develop a communication, that's as mindful as one can be" (Participant 11)

Another participant, a physiotherapist, reported her practice of clinical hypnosis as aligning with mindfulness-based practice but acknowledged that others may not agree,

> *"…the purist would say there's a difference between mindfulness and clinical hypnosis, but I don't know that there is…it's by definition…focusing your attention on something. So, there are so many overlaps with mindfulness and clinical hypnosis and we…are… …asking our patients to put their rational mind… or the conscious mind to the side, and we're trying to just let that subconscious or unconscious mind…step up to the fore. it's that little voice that is talking to [you] all the time and helping you make decisions about the right thing to do, or, it's like asking that part of your mind to just step forward and consider making some changes."*

Interestingly, both allied health and medical practitioners reported very different perspectives to Buddhist teachers regarding the term "*non-judgemental"*, as used within the JKZ definition of mindfulness. The primary differences seemed to be whether this reflects the traditional Buddhist perspective, and whether being non-judgemental is at all possible during a mindfulness state. Both allied health and medical practitioners commonly reported that the term 'non-judgemental' is a Buddhist concept, and that it is desirable in the process of reducing suffering. For example, a psychiatrist suggested that,

> *"As soon as we have an experience, we immediately judge it, like it, dislike it, want more of it, want less of it…which the Buddha said was the cause of suffering…the idea is that you're being non-judgmentally accepting of whatever's happening in the present moment, … to give yourself time to settle and then take skilful action"* (Participant 7)

An allied health practitioner reported similar sentiments,

> *"…be non-judgmental…helps us to be more aware of how we are judgmental…to be able to choose more wisely as to how we respond to stuff, rather than it just being based on our judgments" (Participant 15)*

In contrast, Buddhist teachers disagreed with the above view, and commonly reported that the term *'non-judgemental'* is not a term related to mindfulness practice within the context of Buddhism,

> *"…non-judgmental awareness…in terms of what the Buddhist tradition defines as mindfulness…it's actually completely incorrect…] it is judgment from go to woe. Are you sitting down? Are you standing up? …Are you breathing in or breathing out? That's a judgment…To describe what you're thinking about…that's a judgment…So I think that [the JKZ] definition has bedevilled the work of mindfulness ever since" (Participant 2)*

Another viewpoint of Buddhist teachers suggested that many practices in MBSR and MBCT are similar to types of Buddhist meditation, but that these actually fall within the category of "*Shamantha*", or *"calm and concentration"* meditation, and not in the category of mindfulness. Participant 3, a Buddhist teacher, outlined how these different streams of practice fit within the overall scope of Buddhist practice,

> *"…there's four…different strands of [Buddhist] teaching…you've got…ethics, calm and concentration, mindfulness that leads into insight, and…integration, which is the tantra*

stream…they're the four streams. …and the mindfulness stream…links into insight" (Participant 3)

Other Buddhist teachers explained that *"Shamantha"*, or *"calm and concentration"* meditation, aims to calm and focus the mind, to guide the meditator into deepening states of meditative absorption. According to these Buddhist teachers, this category of meditation can lead to non-judgemental awareness, or equanimity, but it does not qualify strictly as mindfulness within the Buddhist context,

"[MBSR] to me…is straight calm and concentration…and that's fine, not a problem. But it's just not mindfulness…that's actually slightly different…So calm and concentration is the basic skills of calming the mind. Then mindfulness is a very specific subset…it's about tracking the four levels [of mindfulness]…if you want non-judgmental, that's equanimity…no problem…there is definitely a case for being non-judgmental, but [it's] just not in that definition [of mindfulness within Buddhism]" (Participant 2)

Participant 4, another Buddhist teacher, further clarified that *"Shamantha"*, or *"calm and concentration"* meditation, is a foundational skill upon which the practice of mindfulness is built, "*…where you're looking into the nature of the mind…once you're established in…a calm and concentrated or tranquil abiding, and you're not getting distracted…then you choose to stay in a calm state and then you do various insight practices to look at the nature of the* mind"

Transformation of mindfulness

Many participants reported different interpretations regarding how mindfulness has transformed over time.

Participants discussed the term "mindfulness" within the context of Buddhism and Yoga when referring to changes in the use of the term mindfulness over time. For example, participant 4, a Buddhist practitioner, reported never hearing the term 'mindfulness' within a Buddhist context until the late 1970s;

> *"…the term mindfulness certainly wasn't…in the air in the early seventies when…everybody was…learning transcendental meditation or…Zen…so when the word came…mindfulness…I remember a period of practice say[ing], okay, I'm gonna practice mindfulness…be mindful"* (Participant 4)

Similarly, participant 16 explained that the term mindfulness was not used in her post-graduate training in Yoga in her home country of India. Although she could understand where the term fit within the system of Yoga, she did not use the term until after migrating to Australia.

> *"…when I did my masters, I never used the word mindfulness. Nobody used the word mindfulness throughout the practice…in the recent times, lots of mindfulness …I can connect…what mindfulness means…but this term has originated from somewhere, I don't know…it's around everywhere."* (Participant 16)

Participant 7, a psychiatrist, had a different perspective on the transformation of mindfulness. She reported the development of MBCT as an evolution of MBSR.

"*MBCT was…a modification of MBSR…the three people that developed MBCT … spent a lot of time training and learning from Jon Kabat-Zinn. And then they developed MBCT, which was a modification of MBSR, using the research on what causes…relapses of depression, realizing it was a tendency to ruminate, to think negatively, to be so critical…and to be mindless, to be on automatic pilot and not actually be present in here and now... So they were looking at modifying CBT, which was a treatment of the time…to try and address some of those to try and get better relapse prevention rates."* (Participant 7)

There was a common belief among participants, across a variety of backgrounds, that there has been a "*cheapening"* of mindfulness as it transformed from its origins in eastern philosophy to allied health and medical practice, particularly in relation to how the word mindfulness has come to be used. Other participants suggested that mindfulness began to lose rigor and be "*trivialized or superficial[ised]"* following the development of MBCT once the term mindfulness had gained popularity,

"…mindfulness really captured the public imagination and…has become widely applied…but also somewhat trivialized or superficial…[people are] very cloudy about what they mean by mindfulness…people started calling their meditation mindfulness meditation, whereas it might not have been mindfulness" (Participant 7)

This sentiment was echoed by a Buddhist teacher who suggested that *"…we're verging on…diluting its value as a word by applying it to everything"* (Participant 4). A yoga teacher

similarly stated that *"…it's like everybody's using the term yoga, but the essence or the goal of the yoga is…completely missing"* (Participant 16).

Participant 5 shared a similar view on the evolution of Tai Chi, with its shift away from a martial arts application, towards a more health focused approach. She suggested that if Tai Chi is practiced within a martial arts context, the benefits to mindfulness may reach a deeper level,

"I respect [the] martial arts side and I really think…today because everybody focus[es] on…health…some of the really important skill[s] get diluted…the authenticity has been challenged…it's just lacking…It's more dynamic but gives people…another layer [of] depth that I like to see my students do" (Participant 5)

3.3 Multiplicity in use

Captured within the theme of Multiplicity in use, were three subthemes: therapeutic choice, application to clinical practice, and adaptations of mindfulness. Therapeutic choice referred to both indications for use (i.e. instances where mindfulness is used, desired, and/or expected to have benefits) and contraindications to use (i.e. instances where mindfulness is not desirable). Application to clinical practice related to the different ways participants engaged in mindfulness practices across various disciplines. Adaptations of mindfulness related to participants perspectives that mindfulness has become cheapened and less rigorous along with its drastic rise in popularity.

Therapeutic choice

Participants reported many different indications for the use of mindfulness, which appeared to align with the participant's primary discipline backgrounds. The primary indications of use included pain, depression, anxiety, and spiritual growth.

A Buddhist teacher outlined several reasons why someone might pursue the practice of mindfulness. It was suggested that these desired outcomes may be best sought from mindfulness practitioners of differing backgrounds,

> *"…there are three reasons why you learn to meditate...first…to manage the mind…second…is for personal development…for therapeutic reasons. So, you become fully self-actualized…that you become a mature, wholesome, healthy ego…the third reason to meditate is for spiritual reasons where…the goal [is] self-transcendence or self-realization"* (Participant 4)

Two different acupuncturist/Qigong teachers reported similar, but also different indications. One stated that the *"…one thing I see…all the time is stress"* (Participant 12). The other practitioner indicated that *"…people come to the class for different reasons…to learn some gentle movement…[to help with] knee replacements… to strengthen [the] legs. …[for]anxiety…to calm their minds…[to] scan [their] body and see if there's any…tension"* (Participant 13)

A physiotherapist reported being *"particularly interested in working with…complex pain…[using] MBSR"* (Participant 15), while a practitioner of Tuina Massage and Wing Chun Kung Fu reported using mindfulness exercise for a variety of physical issues,

> *"...pain complaints…rolled shoulders and anterior backs…those postures…can all be rectified with just the basics of the CST [Chu Shong Tin Wing Chun] postural stance"* (Participant 11)

Regarding situations where mindfulness is contraindicated, all 16 participants agreed that there are situations where mindfulness is not indicated, "*... anything that's powerful will have side effects or problems"* (Participant 7), although some relayed this information in differing terms. Commonly reported contraindications were schizophrenia, acute post-traumatic stress syndrome (PTSD), and suicidal tendencies. For example, a psychologist explained that someone experiencing acute PTSD would likely encounter difficulties practicing mindfulness safely,

> *"...[in] acute phase of PTSD, I wouldn't do it because that's too much sitting with the unpleasant…and…it's just not the appropriate time or…treatment"* (Participant 10)

A Buddhist teacher reported that with *"...severe depression, schizophrenia or bipolar…you'd want to go fairly gently…I can see that it could be an incredible benefit, but I guess that I would be cautious…I think everyone can benefit from it, but…there's an assumption that people will be disciplined about it."* (Participant 3)

An acupuncturist/Qigong teacher also reported avoiding mindfulness in cases of suicidal thoughts or self-harming,

> *"…there's a lot of suicidal kids out there…self-harming…I would not be going down the mindfulness road…it's way…beyond [them]…They've already got psychologists and psychiatrists. …when I'm with them, I totally focus on just body work"* (Participant 13)

A physiotherapist reported drawing upon the advice of a multi-modality team, which included psychotherapists, to determine whether mindfulness would be right for a client that exhibits common contraindicated conditions,

> *"…I like to understand more about what support services they've got outside of this…So asking them what other support networks they've got…if they have got a mental health practitioner, I'll…collaborate with them. Do you think this is appropriate…for your client"* (Participant 15)

All participants reported a strong belief about the safety of mindfulness practices, if properly practiced, and where indicated. Several participants reported minimal to no adverse reactions in their experience of providing mindfulness, although some argued that it was important for a practitioner to recognise situations where mindfulness would be contraindicated for a client,

> *"…I've only ever had one person that after the first session I contacted her and said, I don't think this is…the right pathway for you"* (Participant 15)

It was also suggested that there was a fine line between actual contraindications and when the practice of mindfulness becomes difficult. Participant 15 outlined the importance of understanding this sensitive aspect as at times, mindfulness causes people to address

difficult thought patterns and behaviours and that level of practice is often not a contraindication,

> *"...midway through an MBSR course, week four or five is challenging for a lot of people…when you actually start noticing your patterns…you recognize…that tendency to wanna judge yourself…you're turning towards the difficulty and the challenging work. So, it's not a cruise through the park… But…that's actually where people really get their benefits from. So is that an adverse reaction? I think often it's not, if it's managed properly. What's actually so liberating with doing the course is going through that little bit"* (Participant 15)

One Tai Chi teacher also highlighted that in movement-based mindfulness practices, certain injuries may make practice less beneficial or dangerous,

> *"People don't look at Tai chi as…difficult or physical. It's a moderate intensity cardiovascular exercise, but also resistance on the legs can be demanding…for people who have total knee replacement, for example…I would advise to…have [a] break and sit and then come back and do it again, that's absolutely fine"* (Participant 5)

Several Buddhist teachers emphasised the importance of understanding the scope of mindfulness practice, and how it relates to the overall goals of the client. One Buddhist practitioner highlighted that, in a Buddhist context, mindfulness often focuses on spiritual growth, that is, to increase the likelihood of experiencing certain spiritual insights, such as the *"dissolution of self",* or "*transcending the ego"*. The practitioner also explained that if

not done appropriately, mindfulness can lead to concerning outcomes such as psychosis, and so self-dissolution is often not a desirable outcome for those that are not expecting that level of depth,

> *"…[for] some people who have the strong experience of not being their ego…it's a psychotic state, so…you need to have a healthy ego before you can…transcend [it]…If you [are] doing it for spiritual reasons, then that's your goal. A lot of people think they're doing meditation for spiritual reasons when they're not. They…wanna become…a fully fulfilled ego…[for their] relationships to be all positive…[or to] make money…which is a very worthy goal. I'm not degrading it…but it's not transcending the ego…[for] most people who come to it, it is just for…body mind health…when we're looking at the spiritual reasons, it's a form of mindfulness to see the illusion of the mind"* (Participant 4)

Another Buddhist teacher echoed these sentiments, adding that mindfulness practitioners that are not trained to teach Buddhism specifically should not be referring to Buddhism when providing mindfulness. Difference were highlighted in the aims and outcomes of Buddhist and non-Buddhist mindfulness practice in terms of whether the aim is building a healthy ego or transcending the ego,

> *"I see a bit of a problem….in the mindfulness world, some of the proponents of it are looking for status and cred[ibility] from the Buddhist tradition…So…if you really are from the wisdom side…we're heading into the no-self territory…you can't plug that on someone who's looking for a therapeutic intervention…there's…confusion [in] wanting to have the cake and eat it too. Mindfulness…in inverted commas…is a great therapeutic intervention…fine…we'll keep it to that in everyday level but it is also this wonderful*

Buddhist [practice]…if you really are claiming the Buddhist thing, the therapy side is…of no relevance…If you're really going to…come at it…with the Buddhist backing and…pantheon behind you, take out the therapeutic side, that's not what Buddhism is for…[and] there's a danger if it's not done with awareness" (Participant 2)

These Buddhist teachers also emphasised that practicing mindfulness for health reasons (i.e. developing a well-functioning mind and ego) is an important part of the practice, and accordingly can be utilised to support both health and spiritual growth,

"Those…reasons [to use mindfulness] aren't mutually exclusive. In fact, they build on each other. The fundamental one is having a healthy mind and body. And mindfulness is useful in that because…you train yourself to realize when you're out of balance and you do something to bring yourself back into balance… but there is a danger that…[to] approach… mindfulness from the health model…is just for that - for health, it's not for spiritual development….It's for…mental and bodily health….personal development…strengthening a healthy ego." (Participant 4)

Participant 2, a Buddhist teacher, suggested that approaching mindfulness with the goals of spiritual insight (which he referred to as the "*wisdom side"* of mindfulness) may be indicated providing that the practitioner is skilled in these areas of spiritual growth, and that the client is properly informed,

"…if…the teacher and client…both know what they're doing…[it's] fine to cross that boundary…but if the client doesn't…I think it's cruel and unfair for a teacher to lob that on [someone] if they're coming for a therapeutic intervention" (Participant 2)

Application to clinical practice

Participants used diverse mindfulness practices, which varied within and across disciplines. Each participant also reported implementing mindfulness in different ways, from regular classes to one-on-one sessions (usually performed within a clinical setting), to more structured group-based programs delivered over a specific period of time.

The benefits of practicing mindfulness in a group setting, as opposed to one-on-one teaching, was discussed by several participants. According to one psychiatrist,

> *"…There's something very powerful about the group effect and…it's not just the camaraderie of being in a group, there's something about learning from other participants that can be a lot more powerful than if you're with a therapist who says, do this, try that…"* (Participant 7)

The same sentiment was echoed by a physiotherapist,

> *"...there's something quite powerful…in sharing not only that journey, but also seeing other people's…wins and losses…sharing that and holding that space with each other…makes it all that more powerful"* (Participant 9)

Several participants (namely medical and allied health professionals) seemed to favour contemporary western approaches to mindfulness because of their standardised structure.

> *"the eight-week [MBCT] course was really carefully constructed, so it certainly has a kind of an arc to it, and it leads people through a process that is very structured and clear that also builds a certain momentum"* (Participant 7)

Notwithstanding, there were some participants who believed that programs such as MBSR should be able to adjust to the specific needs of a group,

> *"…the…magic of MBSR comes in how you…bring those topics to that particular group…we follow the same sequence of practices…The valuable part…is how we relate and respond to those participants and what's coming up for them through the course, tying into those themes"* (Participant 15)

Participants reported using different styles of mindfulness in their practice, including mixed practices. For example, a Buddhist teacher reported separating a mindfulness class into a breathing meditation (aimed at relaxing and focusing the mind), followed by a more formal meditation where clients were guided through various philosophical topics related to Buddhism,

> *"We go through the basics of…mindfulness of breathing meditation for the first 30 minutes. We have a break, and then we resume with…a guided meditation…the guided meditations are based on a specific topic of the Buddhist teachings…but they're very broad…they range from things like developing self-compassion, developing gratitude, all the ethical, hallmarks of Buddhism are brought into this meditation practice"* (Participant 1)

Similarly, a Yoga teacher indicated that they add practices such as creating sound and focusing on breathing to compliment movement-based mindfulness practices,

> *"I have divided my classes in two sessions. The first half is…the warmup and the physical postures…the second half is…breath work, resonance, sound, and relaxation…sound is very important…one of the yoga practices in which we create the sound…'n' or the humming bee sound…creates an immense sound resonance. There's a resonance in your mind as well, which helps your mind to calm down…and it's the state of awareness as well as relaxation simultaneously"* (Participant 16)

A Wing Chun Kung Fu teacher also outlined how they often combined a *"stance"* exercise in the form of body scanning, and a visualisation technique to help form an *"internal structure"*, in order to foster a greater sense of physical relaxation,

> *"[It's]…about a mind and body connection…that's obtained through stance…and stance training is the baseline of [this] method of training, but it's not just standing there…drawing a mindful line between your [perineum]…and your [crown]…just in front of the spine…to have a line of mental focus from the bottom…to the top…then once you've gotten to the top…a release…just drops all of your external…fascial tissue and…lets that sit on that structure of awareness…and you…just start to become…internally glowy…And so…through the process of…mindfully relaxing the body and replacing that tension with a more efficient structure…you see that remedial effect…on physical pain…[and] emotional anxiety…as well"* (Participant 11)

This same participant also reported using mindfulness differently within a one-on-one clinical setting as a massage therapist. The participant explained that bringing the clients own awareness to their area of pain *"empowers"* them to manage their pain,

> *"...pain can sometimes blind our awareness of what's going on…there's a really nice diffusing of stress and anxiety just by walking them through the [pain]…and letting them feel it…and if we apply force here, you can see how that pain refers and they can start to actually [become] aware of it. So, the anxiety calms down just by empowering them with understanding"* (Participant 11)

Another practitioner working in the area of pain, a physiotherapist, outlined how they used multiple mindfulness practices to prepare clients for subsequent therapies, such as clinical hypnosis,

> *"...I use it [clinical hypnosis] as a relaxation option… to reduce a lot of the anxiety and stress around the pain ...patients will lie down…[or] sit in a chair…close their eyes and start [focusing] on their breathing, calming their body, [through] progressive muscular relaxation…once they're very relaxed and comfortable, I ask them to put their focus on…not…what they may be feeling at the time, but what they would like to feel instead...and work on building that up in their mind…"* (Participant 6)

Adaptations to Mindfulness

There were criticisms of the ways in which some people practiced and provided mindfulness. There was a sense that mindfulness was becoming "*less rigorous*" or "*watered down"* over time, which was a view shared by participants across various backgrounds,

> *"…mindfulness-based interventions, I guess are what a lot of psychologists not trained in MBCT are using cuz it's sort of become a little bit…you know, let's just use it a bit everywhere"* (Participant 10)

A similar view was shared by a Yoga teacher, who believed that Yoga was becoming "*cheapened*" by its widespread popularity, indicating that there has been a movement away from the meditative and spiritual foci of yoga, towards a more physical based practice that focuses on stretching and strengthening,

> *"…Less deep and…more movements…and recently, more of [a] fashion statement…because whatever is being taken from yoga, be it the physical postures or the mindfulness…it's more like business…like a marketing strategy"* (Participant 16)

Many participants echoed the belief that "*marketing strategies*" and "*business type mindfulness*" are having a negative effect on the rigor of mindfulness.

> *"…the dangers of the whole Mac mindfulness movement…is confusion and people not really understanding what are the consequences of mindfulness… And…that they are likely…to be confronted with those sort of traumas"* (Participant 4)

"It might have been…a concentration practice or a mantra practice. Or a movement practice. But everybody would put the word "mindfulness" in front of things because it was a very good marketing ploy…And that also happened in the research world where people were saying, all right, we've taught…a bunch of university students, some mindfulness meditation, and now we're going to see what's happening to the thinking five minutes later. And it's like…well that's not quite how mindfulness works" (Participant 7)

Many of the criticisms about mindfulness were aimed at people with less to no experience or training in providing mindfulness. There were also concerns about the growing popularity of MBI and how this popularity has led to these practices being used in ways that may not be indicated by the literature.

"…you don't…know…how people train…are they getting their training through…the evidence-based pathways or are they sort of reading a book and delivering it, or have they…done a two week course and then they're delivering it?...so that probably makes a difference…you don't wanna judge others training…but it should be a requirement…of teachers to have their own practice…if I didn't experientially know it myself, and I was just telling people, right, go and meditate 40 minutes a day, and this is gonna help you with depression and anxiety…I would be absolutely not telling the truth" (Participant 10)

An interesting finding was the belief that mindfulness could be implemented in various ways, including through the use of *"colouring in books"*,

"*… for me…yoga is mindfulness. Other people it might be tinkering with a car or it might be knitting or colouring in."* (Participant 14)

On the other hand, two participants, a psychiatrist and a physiotherapist, indicated that such adaptations of mindfulness could be harmful,

> *"I say, never get mindfulness colouring in books…people just scatter a bit of what they think is mindfulness over everything and think it's some kind of sophisticated relaxation exercise, which it's not…you often don't feel relaxed at the end…of a mindfulness meditation."* (Participant 7)

> *"it can be a bit harmful…because…[mindfulness is] not about distraction….it's about engaging and…I think…distracting from what's happening in the body…and [although]…you're in that moment of colouring in…you are also distracted…And I think when it comes to chronic pain, we have to be careful when we are working with mindfulness, sort of that we're not just building in distraction…you don't ever learn how to work with the difficult."* (Participant 15)

4.1 Discussion

This research explored for the first time, the theoretical underpinnings, beliefs, aims and practices of mindfulness amongst mindfulness practitioners. While there were some shared perspectives among practitioners (e.g. contraindications, precautions in use), there was considerable heterogeneity regarding how mindfulness was understood and practised. Similar findings have been previously reported in other studies [10, 12, 34, 35]. This research adds to these findings by identifying several important differences within and between disciplines, as well as across clinical settings. These differences to individual practitioner's approaches to mindfulness were influenced by a range of factors including

their personal background (such as training and philosophical underpinnings) and the clinical or professional purpose for using the mindfulness practice.

An important finding from this study was the variability in the understanding and use of mindfulness in clinical and professional settings. This finding corroborates the conclusions of a recent review undertaken by the research team, which noted that there was considerable heterogeneity in how mindfulness was used in the management of chronic musculoskeletal pain [10]. Other systematic reviews have similarly commented on the diverse ways in which mindfulness is used for managing health conditions, including rheumatoid arthritis, bipolar disorder, and cancer [36-38].

How health care interventions are variably interpreted and applied at the frontline of care is not unique to mindfulness, with similar observations reported in studies of acupuncture, dry needling, and rehabilitation [39-41]. However, understanding variations in practice is important as findings from an umbrella review suggest that even small variations to mindfulness practice, such as duration of the intervention, may impact the effectiveness of mindfulness [10]. These variations in practice can be attributed in part, to the lack of consensus on what constitutes mindfulness, of which there is both varied interpretations and outright disagreements [12].

There are several other possible explanations for the diverse understanding and use of mindfulness. The ideological perspectives of practitioners for instance, may shape how mindfulness is applied and/or adapted to clinical practice, particularly if mindfulness is considered to be either a “judgemental” or “non-judgemental” practice. According to the Buddhist dictionary, the term mindfulness, translated from the Sanskrit word ‘Sati’, refers to the practice of contemplation of the body, the feelings, the mind, and the mind-objects [42]. This contemplation involves finding the sense of self in any of these elements (mind, body,

feelings), which essentially involves judging between self and non-self [43, 44]. This is in contrast to the definition of mindfulness coined by Jon Kabat-Zinn in 1979, which states that Mindfulness is "the awareness that arises from paying attention, on purpose, in the present moment, non-judgementally" [3]. These two ideological perspectives seem to be at the heart of how practitioners understand and use mindfulness. On the one hand, there is a judgmental and analytical perspective (drawn from the Buddhist approach), and on the other, there is a non-judgemental and observational perspective (such as MBSR).

Mindfulness approaches often indicated for the management of conditions such as pain, anxiety or depression (e.g. MBSR and MBCT), typically require users to purposefully pay attention to (aka observe) the present moment without making judgement (non-judgemental). By doing so, users can develop an ever-present awareness that forms a foundation for the development of healthy behaviours, psychological and emotional resilience, and overall wellbeing [3]. A notable implication of present moment awareness is that it gives the user greater agency over catastrophizing and ruminating behaviours, which are known to exacerbate symptoms such as pain [45], depression [46], anxiety [47]. Several participants in this study believed that this agency is achieved by cultivating mindfulness within a state of non-judgemental awareness.

The Buddhist approach to mindfulness on the other hand, involves analysing and judging (judgemental) one's subjective experience of four different levels of mindfulness, which are the body, emotions, mind, and mind contents [42]. The overall goal of Buddhism is the cessation of Dukka, which is often translated as suffering or dissatisfaction [42, 43, 48]. Buddhists believe that this suffering is caused, in large part, by a disconnect between the reality of what is happening now, and what a person desires to be happening now [43, 48, 49].

This state of dissatisfaction and craving is thought be caused by a fundamental misinterpretation about the nature of how we, and all phenomena exist [43, 44]. And so, the aim of mindfulness within Buddhism appears to be to analyse the nature of all phenomena including self and others, to raise the chances of having an experience of one's selfless nature, and to maintain a level of awareness that helps to manage the habits related to dissatisfaction as it relates to the concept of Dukka. The anticipated outcome of this practice is an awakening to the true nature of the way things exist instead of being mentally lost in a fictional fantasy about the way we would like things to be [43].

Another possible explanation for the variable understanding and use of mindfulness among practitioners is the differences in training. Buddhist-trained practitioners in our study, while still maintaining individual perspectives and practices, tended to draw their beliefs of mindfulness from their traditional texts, such as the Mahasatipatthana Sutta. [50]. This text gives instructions for mindfulness practice and points repeatedly to the importance of making certain judgements (e.g. "…While breathing in long, he knows "I am breathing in long", or, while breathing out long, he knows "I am breathing out long") [50]. This type of instruction, which is consistent throughout the entire text, was interpreted by several of the Buddhist-trained participants as describing a discrimination between different sensations and was believed to be essentially judgemental. This difference of characterisation as "judgemental" vs "non-judgemental" may have occurred when MBSR was introduced in the late 1970s. In developing MBSR, JKZ may have attempted to make meditation more palatable for Western communities [51]. Although it is thought that MBSR was developed from Buddhist practices, JKZ has been challenged for removing mindfulness from the overall framework of the Buddhist pantheon while promoting some of its benefits [51, 52].

Except for some Tai chi and Yoga instructors who had undertaken formal training, CAM practitioners were less likely to be formally trained in the provision of mindfulness relative to allied health, medical or Buddhist practitioners. The understanding and use of mindfulness among CAM practitioners relied upon a diverse range of practices and personal experiences, rather than a reliance on predesigned systems of practice such as MBSR. The practices used by CAM practitioners were broad in range and were often formed using a mixture of several techniques and practices that included mindful breathing techniques, Yoga practices, Qigong exercises, Tai Chi and Kung Fu practices, and body scanning techniques that were often integrated into the normal process of manual therapies such as massage and acupuncture. CAM practitioners appear more likely to make large adaptations to their mindfulness practice over time. The precise reasons for this are unclear but may in part relate to the same barriers that CAM practitioners experience when accessing and implementing research evidence into practice (e.g. Lack of resources, inadequate governance/leadership, lack of communication within and outside of CAM, and lack of research competency) [53, 54].

Research indicates that practitioners are increasingly customising their approach to certain interventions to better suit client needs; and in certain settings, modularity as a treatment model is gaining popularity [55]. This view is supported by findings from our research, with several practitioners indicating that they adapt their practices over time to better suit clients' needs. While customising interventions to cater to the needs of clients is good practice, it may also inadvertently impact the effectiveness of the practice by reducing the fidelity of the intervention.

5.1 Limitations and Strengths

The limitations of this research are important to consider. Despite a comprehensive recruitment strategy, which covered a broad scope of disciplines, some disciplines were represented by only one participant (e.g. Tai chi), and some potentially important disciplines were not represented (e.g. there were no practitioners of Zen or Theravāda Buddhism). The inclusion of such practitioners may have introduced a contrasting narrative, particularly as JKZ had a background in Theravāda and Zen Buddhism prior to his creation of MBSR [9]. Although not all participants of this study reported English as their first language, all interviews were conducted in English. Furthermore, all participants were currently living in Australia. There were also proportionally more female participants than male participants, which could have introduced a degree of gender bias. Self-nominating as a mindfulness practitioner also may have introduced self-selection bias [56].

This study also had many strengths. This was the first study to explore mindfulness practitioners' personal perspectives and practices related to mindfulness. To ensure transferability, this study provided diverse perspectives from a broad range of disciplines, including practitioners with medical, allied health, CAM, and traditional backgrounds. The study also maintained a high level of rigor by piloting the interview guide, triangulating interview data with field notes, performing the analysis with two independent coders, and reporting rich descriptions of the interviews to best represent the participant's voice.

6.1 Implications for practice and future research

Based on the findings from this research, we propose three key recommendations. First, given that the ideological perspectives and practical realities of practitioners seem to influence their understanding and use of mindfulness, it is likely that myriad adaptations of mindfulness practice exist. This has important implications for healthcare stakeholders, such as consumers, who may not be well informed about the practices they are engaged in, how best to undertake

it and what outcomes they can expect. Second, while plurality of understanding and multiplicity in use of mindfulness may be the result of centuries of transformation, it also limits standardisation. While respecting different ideological perspectives, standardised protocols will assist in replication and uniformity of practice. Third, given the popularity of mindfulness it is likely there are other variations of mindfulness currently practiced in the community. As acknowledged in the limitations, despite extensive recruitment efforts, our research was not able to capture the perspectives of practitioners of all known forms of mindfulness. Future research could seek to explore these practitioners' perspectives in order to further our understanding of how practitioners perceive and use mindfulness.

7.1 Conclusion

This qualitative research, the first of its kind, highlights the complexities when seeking to answer the question, "what constitutes mindfulness?". The answer seems to be nuanced and influenced by a range of factors, including the ideological perspectives, training and disciplinary background of practitioners. While the rich diversity and broad application of mindfulness practices may be a strength, it also may be a weakness as the value of mindfulness may be diluted by plurality of understanding and multiplicity in use. This requires careful and considered actions from mindfulness stakeholders. Findings also highlight the need for further development of standardised protocols where possible, and for further qualitative research, expanding on these findings by capturing the perspectives and practices used by a wider range or mindfulness practitioners.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation. All

authors gave final approval of the version to be published, have agreed on the journal to which the article has been submitted, and agreed to be accountable for all aspects of the work.

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4. CHAPTER FOUR - Discussion

This thesis aimed to address a number of knowledge gaps in the field of mindfulness research by (a) synthesising the best available research evidence of the effectiveness of MBI for adults living with CMSP across a range of outcomes (pain, sleep quality, depression, quality of life, physical functioning, and mindfulness), and (b) shedding new light on practitioners' perspectives and practices of mindfulness.

The first stage of this thesis, an umbrella review, revealed that while mindfulness may be beneficial for several outcomes associated with CMSP, the evidence base was constrained by heterogeneity and low methodological quality. The heterogeneity of the evidence base related to the core of the intervention of interest – mindfulness, including how it was defined and implemented in clinical practice. This laid the foundation for the second stage of the thesis, a qualitative research study, which explored practitioners' perspectives and practices of mindfulness. The findings of this study uncovered nuanced understandings of mindfulness and diversity in the application of mindfulness among practitioners, with perspectives and practices often influenced by myriad factors.

The findings of this thesis are consistent with the literature. For example, recent umbrella reviews of mindfulness have reported mixed results for the outcomes of anxiety, depression, stress, and levels of mindfulness (Chang et al., 2023; La Torre et al., 2022). A recent content analysis of meditation-based intervention studies (n=118) similarly found that heterogeneity and low-quality reporting is common across all meditation research, which makes comparisons between studies difficult when measuring the effectiveness of meditation (Pilla et al., 2020). As a means of tackling this challenge, Pilla et al (2020) developed a preliminary framework and reporting checklist for the design of meditation-based interventions (Pilla et al., 2020). The framework incorporates five themes: Project aim, Project time frame, Meditation-based practices (considering practice aims, delivery and elements of practice), Complimentary Activities and Philosophy. Several other theoretical frameworks have been proposed for the classification of various forms of meditation practices, but the scope and variety of these practices makes this a difficult task (Lutz et al., 2008; Nash & Newberg, 2013).

Adaptation and adjustment of treatments over time is common among health practitioners. Such modifications may be implicit rather than deliberate (Yager et al., 2021) as clinicians often adapt their practices to better serve their own clientele (Nash & Newberg, 2013). The mindfulness practitioners in our research often reported this type of natural, personal evolution of practices. However, in other examples, such as between MBSR and Buddhist based mindfulness, these differences were substantial, and at times, set different forms of mindfulness completely at odds with one another. A prime example of this was the practitioners' perspectives of non-judgemental versus judgemental approaches to mindfulness, and their application in practice (as they relate to either building a healthy ego or transcending it).

Adding to this complexity was the proliferation of the term, and the plethora of vastly different practices that collectively identify as "mindfulness" (Lee et al., 2021; Selva, 2019). Although Buddhism itself is not homogenous (partly because the Buddha employed several teaching methods) (Van Gordon et al., 2021), some Buddhists have reported concerns regarding the accuracy of mindfulness once removed from the larger framework of the Buddhist system (Monteiro et al., 2015), particularly when removed from the traditional ethical training and foundational practices on which mindfulness practice is traditionally built (Monteiro et al., 2015). Other authors have similarly reported that unscrupulous implementation of mindfulness may have ignored the spiritual roots of these practices (Trousselard et al., 2014) and the principals of clinical therapy (Hyland, 2017) in the quest for business acceleration. In other words, mindfulness may have expanded without conceptual and methodological criticism.

Findings from the literature (umbrella review) and from the frontline of clinical practice (qualitative research) seem to suggest that a practitioner's understanding of mindfulness may be influenced by a range of factors, including ideological perspectives, training, and disciplinary background. This nuanced finding presents a mixed blessing for stakeholders in the field of mindfulness. On the one hand, there are established concerns about how mindfulness is branded and practiced by individuals, often with little or no formal training, and with no professional or statutory registration requirements to either teach or oversee the training of mindfulness (Farias & Wikholm, 2016). On the other hand, although it is tempting to want to form a universal definition of mindfulness, and to aim towards the standardisation of mindfulness practices, this may limit one's ability to adjust and adapt mindfulness to the

varying needs of individual clients (Sacristán & Avendaño-Solá, 2015). As knowledge evolves, so should interventions derived from such, so that they are able to benefit the wider community.

While this thesis has addressed a number of knowledge gaps, it has also identified several areas in need of further investigation:

1. Continue to explore and seek to understand nuances in the interpretation and application of mindfulness in clinical practice across disciplines.
2. Explore consumers' and end-users' perspectives of mindfulness and triangulate these with the perspectives of mindfulness practitioners. This research would help understand whether those who seek mindfulness interventions and those that provide it, share similar or differing perspectives.
3. Discern the core elements of, and the common underpinnings for, mindfulness interventions that could assist in developing guidelines for the reporting of mindfulness research.

5. CHAPTER FIVE - Conclusion

This thesis has revealed for the first time, the complexities when seeking to answer the question, “what constitutes mindfulness?”. The answer seems to be nuanced and influenced by a range of factors, including the ideological perspectives, training, and disciplinary background of practitioners. While rich diversity and broad application of mindfulness practices may be a strength, it also may be a weakness as the value of mindfulness may be diluted by plurality of understanding and multiplicity in use. The findings of this research require careful and considered actions from mindfulness stakeholders. The findings also highlight the need for further development of standardised protocols where possible, and for further qualitative research, expanding on these findings by capturing the perspectives and practices used by a wider range or mindfulness practitioners.

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7. Appendices

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Appendix 2: Participant Information Sheet

University of South Australia

Participant information sheet

Title:	**A qualitative exploration of the beliefs and practices of mindfulness within clinical and professional settings**
Project number:	205109
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Supervisors:	**Professor Saravana Kumar** B. App. Sc (Physiotherapy), MPhty, PhD UniSA Allied Health & Human Performance, University of South Australia Saravana.Kumar@unisa.edu.au; Tel: +61 8 8302 2085 **Associate Professor Matthew Leach** DipAppSc (Naturopathy), BN, BN(Hons), PhD National Centre for Naturopathic Medicine, Southern Cross University Matthew.Leach@scu.edu.au; Tel: +61 2 6620 3298 **Dr Maureen McEvoy,** DipTechPhysio, GradDipManipPhysio, MAppScPhysio, PhD UniSA Allied Health & Human Performance, University of South Australia Maureen.McEvoy@unisa.edu.au **Yasamin Veziari** AdvDip NAT/NUTR Med/WHM, BN, BH Sc (Hons), PhD South Australian Health and Medical Research Council, yasamin.veziari@sahmri.com

You are invited to take part in this novel study that aims to explore the practice of different types of mindfulness-based interventions in a clinical or professional context and also to explore the understanding, definition, and philosophy/belief of mindfulness-based practice among clinicians.

An umbrella review conducted by this team identified many variations in mindfulness-based practices. The range of what is included in mindfulness practices appears to differ between professions and we have found evidence in this umbrella review which illustrates that the term mindfulness can mean different things to different groups of people. This has raised questions about the definition of mindfulness and the set of practices referred to as mindfulness-based interventions. A recommendation was made to further explore the actual practice of different types of mindfulness-based interventions.

The aims of this master's project are:

1. to explore how the different types of MBI were actually practiced in a clinical context.
2. to explore the underlying philosophy/belief/aim of the practice, of/by the clinician during the mindfulness practice.

We would like to invite you to take part in this research and to share your beliefs and practices of mindfulness within clinical and professional settings. The duration of the interview will be approximately 30 minutes. Interviews will be conducted either face-to-face or via electronic means (e.g., telephone, Skype or Zoom) at a date and time of your convenience. I anticipate conducting the interviews from 1st May 2023 to 30th June 2023.

Eligibility

This research focuses on practitioners/clinicians that use mindfulness-based practice/interventions. For this study, "practitioner" refers to any healthcare clinician or any professional who practices mindfulness-based techniques/ interventions including, **but not limited to,** psychologists, physiotherapists, occupational

therapists, nurses, and complementary and alternative medicine professionals (e.g., acupuncturists, naturopaths, yoga and meditation teachers).

Risks

There are no foreseen risks to you in participating in this study beyond those encountered during everyday life. It is important to understand that your participation in this study is voluntary. You may withdraw from the study at any time before the end of data collection period. Your choice to withdraw will not affect your position or relationship with the University of South Australia or the research team, now or in the future. If you choose to withdraw, your data will be excluded from the study.

Confidentiality

As per the Australian Code for Responsible Conduct of Research, all personal information will remain confidential. Data obtained will be used ONLY for the purpose of this research. No information that could lead to the identification of an individual will be released, unless required by law. However, the confidentiality or anonymity of material transferred by email, or the internet cannot be guaranteed. All interviews will be audio-recorded. The names of participants will be codified as soon as practicable after their participation in the research in order to protect their identity. The audio-recordings and codification system will be stored on a password-protected computer in a restricted key-card access facility, City East campus, of the University of South Australia. Data will be retained for five years. After the completion of the five-year period, all saved data will be permanently deleted to remove all latent information.

Findings

Findings from the study may be published in a peer-reviewed journal and presented at a conference. A summary of the study findings can be provided to you upon request.

This study has been approved by the University of South Australia's Human Research Ethics Committee. If you have ethical concerns about the project, questions about your rights as a participant or you wish to lodge a complaint about either the study or the way it is being conducted, please contact the Executive Officer of this Committee, Tel: + 61 8 8302 3118; Email: humanethics@unisa.edu.au If you have any questions about the study, please contact me as per my contact details. However, if you understand the above information and would like to participate in this important study, please sign the attached consent form and return it via reply email.

The interview transcript will be made available to participants upon request.

We thank you in advance for your consideration.

Sincerely,

Paul Cardle

Appendix 3: Social Media Invitation



AN INVITATION

-Do you use mindfulness-based practices in your profession?

-Are you a clinician or practitioner (psychologist, physiotherapist, occupational therapist, acupuncturist, naturopath, yoga instructor, or meditation teacher)?

If yes, we would love to hear from you!

This first-time study invites you to give us your views regarding what mindfulness-based practices mean to you and how you use them to help your clients. Your participation in a 30-minute semi structured, informal interview, will help us understand the variations in mindfulness-based practices.

To indicate your interest to participate, please reply via Facebook messenger with your name and email address, to receive the no obligation participant information sheet, the consent form and to make a suitable time for the interview.

This project has been approved by the University of South Australia's Human Research Ethics Committee (Ethics Protocol 205109)

Thank you in advance.

Photo: Pixabay.com

Appendix 4: Email Invitation

Re: An invitation to participate

Dear XXX,

I am a master's candidate at the University of South Australia. My supervisors are Professor Saravana Kumar, Associate Professor Matthew Leach, Dr Maureen McEvoy, and Dr Yasamin Veziari. I am undertaking research to gather the perspectives of clinicians and practitioners to help to understand the underpinning beliefs and practice variations of mindfulness-based interventions when used in a clinical context. This project has been approved by the University of South Australia's Human Research Ethics Committee Ethics Protocol number 205109.

You have been identified as being able to provide valuable insight on this topic. Therefore, I would like to invite you to participate in this research study.

Your participation in this research will involve approximately 30 minutes of your time for an interview which can occur at a time convenient to you through electronic means (telephone, Skype, Zoom) or face-to face.

A more detailed participant information sheet describing the aims and objectives of this research and a consent form, are attached to this email. I anticipate conducting the interviews from 1st March 2023 to 30th April 2023. Should you wish to participate, I would appreciate your timely response to please sign the attached consent form and return it via reply email. This will allow me to proceed to book a convenient date and time to conduct this informal interview.
If you have any questions about the study, please contact me as below.

Kind regards,
Paul Cardle

Mob: [redacted] Email: paul.cardle@mymail.unisa.edu.au

Appendix 5: Demographics Form

A qualitative exploration of the beliefs and practices of mindfulness within clinical and professional settings

Primary Investigator : Mr Paul Cardle; Chief Investigator

Primary supervisor : Prof Saravana Kumar; Supervisor

Participant Demographic Form

Can you please tell me about yourself?

- **What is your name? (Please type below)**

.....

- **What is your age (please type yes or highlight)**

between 20-30 .....
between 30-40.....
between 40-50 .....
between 50-60 .....
above 60.....

- **Your gender (if you feel comfortable, please type yes or highlight)**

Male.....
Female.....
Other.....
I prefer not to say.....
Do you have a preferred pronoun?.....

- **What mindfulness-based practice(s)/intervention(s) have you been trained in?** (Please type below)

- **Can you please tell me your highest level of qualification?** (Please type below)

.....

- **What is your profession?** (Please type below)

.....

- **How long have you been working in this profession?** (Please type below)

.....

- **How long have you been using mindfulness-based practice(s)/intervention(s) in your work?**

(Please type 'yes' or highlight).
Between 0-5 years.....
Between 5-10 years.....
Between 10-15 years.....
Between 15-20 years.....
20 years and more.....

Thank you.

Appendix 6: Human Ethics Approval

Human Ethics: Application approved

N

no_reply@unisa.edu.au <no_reply@unisa.edu.au>
3/02/2023 5:07 PM

To: Cardle, Paul David - carpd004; Maureen McEvoy; Saravana Kumar; Yasamin.Veziari@sahmri.com; Matthew Leach...

Dear Applicant

Re: Ethics protocol "Ethics application: A qualitative exploration of the beliefs and practices of mindfulness within clinical and professional settings." (Application ID: 205109)

Thank you for submitting your ethics protocol for consideration. Your protocol has been considered by the E1 Committee Review Group.

I am pleased to advise that your protocol has been granted ethics approval and meets the requirements of the National Statement on Ethical Conduct in Human Research. Please note that the E1 Committee Review Group's decision will be reported to the next meeting of the Human Research Ethics Committee for endorsement.

Please regard this email as formal notification of approval.

Ethics approval is always made on the basis of a number of conditions detailed at https://i.unisa.edu.au/staff/research/research-ethics/human-research-ethics/ethics-management-for-research-projects/ (under the heading 'What are the Standard Conditions of Approval?'). It is important that you are familiar with, and abide by, these conditions. It is also essential that you conduct all research according to UniSA guidelines, which can be found at https://i.unisa.edu.au/staff/research/research-ethics/human-research-ethics/ethics-policies-guidelines/

Please note, if your project is a clinical trial you are required to register it in a publicly accessible trials registry prior to enrolment of the first participant (e.g. Australian New Zealand Clinical Trials Registry http://www.anzctr.org.au/) as a condition of ethics approval.

Best wishes for your research.

Executive Officer
UniSA's Human Research Ethics Committee
CRICOS provider number 00121B

This is an automated email and cannot be replied to. Please direct your query to humanethics@unisa.edu.au.

Appendix 7: Contribution of Authors – Umbrella Review

The below outlines the contribution of authors in ***Chapter 2: Mindfulness and Chronic Musculoskeletal Pain; An Umbrella Review.***

Title of the paper: Mindfulness and Chronic Musculoskeletal Pain; An Umbrella Review.
Publication status: Published
Publication details: J Multidiscip Healthc. 2023; 16: 515–533 doi: 10.2147/JMDH.S392375

Principal Author 1: Paul Cardle
Percentage of contribution 60% - Development of proposal, literature search, critical appraisal, data extraction, preparation of first draft of the manuscript, subsequent manuscript revisions.

This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.

Signed: 

CO-AUTHOR CONTRIBUTIONS
By signing the Statement of Authorship, each author certifies that:
I. the candidate's stated contribution to the publication is accurate (as detailed above);
II. permission is granted for the candidate in include the publication in the thesis; and
III. the sum of all co-author contribution is equal to 100% less the candidate's stated contribution.

Author 2: Saravana Kumar
Contribution to the paper - - Development of proposal, revision and editing of the manuscript, approval of final version.
Percentage of contribution - 10%

Signed: 

Author 3: Matthew Leach

Contribution to the paper - De- Development of proposal, revision and editing of the manuscript, approval of final version.

Percentage of contribution 10%

Signed: 

Author 4: Maureen McEvoy

Contribution to the paper - D- Development of proposal, revision and editing of the manuscript, approval of final version.

Percentage of contribution - 10%

Signed: 

Author 5: Yasamin Veziari

Contribution to the paper - Development of proposal, critical appraisal, data extraction, revision and editing of the manuscript, approval of final version.

Percentage of contribution - 10%

Signed: 

Appendix 8: Contribution of Authors – Qualitative Study

The below outlines the contribution of authors for the submitted manuscript in ***Chapter 3: Qualitative Descriptive Study.***

Title of the paper: *"Diluting its value as a word by applying it to everything":* a qualitative study exploring perspectives and practices of mindfulness practitioners
Publication status: Submitted for Publication
Publication details: Complementary Therapies in Clinical Practice

Principal Author: Paul Cardle
Contribution to the paper - Development of proposal, development of ethics application, development of participant information sheet, consent form, demographics form, email invitation, and social media invitation, development of ethics application, planning of interview schedule and question design, revision of structure and questions for interviews, data extraction, sorting and coding, preparation of first draft of the manuscript, subsequent manuscript revisions.
Percentage of contribution - 60%

This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.

Signed: 

CO-AUTHOR CONTRIBUTIONS
By signing the Statement of Authorship, each author certifies that:
I. the candidate's stated contribution to the publication is accurate (as detailed above);
II. permission is granted for the candidate in include the publication in the thesis; and
III. the sum of all co-author contribution is equal to 100% less the candidate's stated contribution.

Author 2: Saravana Kumar

Contribution to the paper - Approval of participant information sheet, consent form, demographics form, email invitation, and social media invitation, approval of ethics application, approval of interview schedule and question design, revision and editing of the manuscript,
approval of final version.

Percentage of contribution - 10%

Signed: 

Author 3: Yasamin Veziari

Contribution to the paper - Development of proposal, approval of participant fact sheet, consent form and demographics form, approval of ethics application, sorting and coding, revision and editing of the manuscript, approval of final version.

Percentage of contribution- 10%

Signed: 

Author 4: Maureen McEvoy

Contribution to the paper - Development of proposal, approval of participant fact sheet, consent form and demographics form, approval of ethics application, revision and editing of the manuscript, approval of final version.

Percentage of contribution -10%

Signed: 

Author 5: Matthew Leach

Contribution to the paper - Development of proposal, approval of participant fact sheet, consent form and demographics form, approval of ethics application, revision and editing of the manuscript, approval of final version.

Percentage of contribution - 10%

Signed: 